Use of Information and Communication Technology for Agricultural Marketing Information by farmers in Oyo state, Nigeria

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Abstract

Marketing information is important to agricultural enterprises. Information and Communication Technology (ICT) tools have been used to provide information to various stakeholders in agro-allied activities. This study focused on how farmers used the ICT tools to obtain Agricultural Marketing Information (AMI) for their enterprises. A multistage sampling procedure was used to select 143 respondents for the study. Data was collected using interview schedule and analysed using descriptive and inferential statistics such as PPMC. Results showed that majority of the farmers were mostly male (83.2%), married (92.2%), with a mean age of 45.7 years, a mean year of formal education of 9.5 years and a mean household size of 7.4 persons. The mostly used ICT tools for the AMI by the respondents were radio (weighted score=274.1), mobile phone (232.8) and television (140); the use of ICT tools was relatively low (55.2%). The benefits that accrued to the respondents included easy access to market information (176.2), quick sales of produce (175.5) and improved farmers' income (173.4). A good proportion (51.7%) of the respondents derived low benefits from the use of ICT-facilitated AMI. There was a significant relationship between benefits derived and use of ICT tools for AMI (r=0.520, p=0.000). Farmers' educational status enhanced their use of ICTs for more benefits that is inherent in ICT-based AMI. Hence, relevant policies and strategies should be put in place to promote the use of ICT-facilitated information.

Keywords: Agricultural enterprises, agro-allied activities, ICTs-facilitated information, information usage and the prompt sale of produce

1.0. Introduction

The importance of information for effective functioning of product markets lies in the fact that it explains the equilibrium price dispersion of homogenous goods across markets in developed and developing countries (Jenny, 2008). This type of information is critical for entrepreneurs' successes in the contemporary information society. Information and Communication Technologies (ICTs) are used in collecting, processing, storing, retrieving, disseminating, and implementing data. These include information from microelectronics, optics or intermediate technologies Olaniyi, Adetumbi and Adereti (2013). These technologies provide access to information through the internet, wireless networks, cell phones and other communication mediums like instant messaging, voice over IP (VOIP), video conferencing, and social networking websites like WhatsApp and Facebook. The communication media enable people around the world to contact one another directly, access information instantly, as well as facilitate connection and communication from remote areas (Oye, Iahad and Zairah, 2012 and Omotayo, 2011). The facilities are thus used to achieve Market Information System (MIS). Market Information System is a service that involves the regular collection of information on prices from rural markets, wholesale and retail markets. Also, it involve the processing and dissemination of information on the situation and the dynamics of agricultural markets on a timely and regular basis through various media to farmers, traders, government officials, policy-makers and consumers (Centre for Technical Agriculture (CTA), 2006). ICT-facilitated Agricultural market information (AMI) is a sustainable form of communication that creates easy access to important agricultural markets information to farmers, consumers and helps policymakers in achieving agricultural development at the much-needed pace using the electronic medium.

In many African countries, it is common that two nearby villages, districts or markets have significantly different farm-gate prices beyond transaction costs between locations, assembly, the wholesale or retail market for the same quantity and quality of agricultural produce. This condition can be linked to a lack of market information or poor roads between the markets and/or villages. These disparities are a reflection of the lack of/inadequate agricultural marketing information. One of the actions that can help reduce price differences between locations at the same marketing level e.g. farm-gate, assembly market, or urban wholesale prices is the provision of adequate agricultural market information. The use of such information

can play a pivotal role in giving the farmers awareness about what to produce, when to produce, and how much to produce, as well as when and where to sell, and at what price and form to sell their produce.

Agricultural market price information helps actors in the agriculture value chains to make informed decisions that will promote efficient production and trade. This is especially valuable for producers that sell in local and regional markets as it helps to negotiate with traders, determine at what markets to sell, when to sell at an optimum price or even plan future crops (United State Agency International Development (USAID), 2011). In order to enhance the availability of ICT-facilitated Agricultural Market Information (AMI) to farmers and other marketing stakeholders, there is a national weekly radio broadcast programme through the agencies of National Agriculture Extension Research Liaison Services (NAERLS) of the collaborations between Ahmadu Bello University (ABU), Zaria and Federal Radio Corporation of Nigeria (FRCN) at Abuja, Enugu, Ibadan and Kaduna stations. Radio Borno, Maiduguri and Radio Rivers, Port Harcourt also broadcast the information in their respective local languages.

Similarly, Novus Agro Nigeria Commodity Index (NANCI) provides AMI on some food crop in 'AM business' page of the Punch newspaper in arrears. This is done on the basis of market information from some major food markets of Nigeria, such as Bodija market in Ibadan on Mondays, Dawanau market in Kano state on Tuesdays, Igbudu market in Delta state on Wednesdays, Mile 12 market in Lagos state on Thursdays and Relief market in Anambra state on Fridays. Furthermore, the Nigeria Agri-Market Information Network (NAMIN) provides daily SMS to subscribers through "OVI" tool in Nokia phones at a cost of ₦250/month or ₦30/day. This particularly has a broader application based on the widespread use of SMS messaging services in developing countries, ranging from market information to extension services and to mobile banking (Kerry, 2009). These ICT tools were rated as highly relevant to procure information on farm produce marketing (Ogbonna and Agwu, 2013). The availability of these ICT-facilitated AMI sources to the farmers indicates that the use of ICTs for such purposes has witnessed an upsurge in recent years in almost all areas of rural lives in Nigeria (Omotayo, 2011).

Given the increased usage of ICTs in Nigeria since the turn of the century and the availability of other AMI initiatives on radio, newspapers, phones among others, it is important to assess the extent to which the facilities are used by the farmers to facilitate their enterprises. To this end, this study seeks to analyse the use of ICT-facilitated AMI by farmers in Oyo state.

The general objective of this study is to assess the use of ICT-facilitated AMI farmers in Oyo state. Specifically, the study intends to;

1. describe the personal characteristics of the respondents in the study area,
2. ascertain the extent to which the respondents use the ICT-enabled agricultural market information in the study area;
3. identify the various benefits derived by the respondents from the use of ICT-facilitated agricultural marketing information in the study area.

The study postulated a hypothesis to test if there was a significant relationship between the benefits derived from the use of ICT-facilitated agricultural market information and extent of their use of the ICTs in agricultural marketing.

2.0. Methodology

The study was carried out in Oyo state. The population of the study consists of all farmers in Oyo state. A multistage sampling procedure was used to select respondents for the study area. The first involved a random selection of 50% of the four agricultural zones in the state. The second stage involved a random selection of one local government area from each of the selected agricultural zones. The third stage involved the random selection of 10% of farmers from the farmers' lists in the respective local government areas, which gave a sample size of 143 respondents for the study. Data were collected using interview. Data collected were analysed using descriptive and inferential statistics such as Pearson Product Moment Correlation (PPMC).

3.0. Results and Discussion

3.1. Personal characteristics of respondents

Distribution of respondents based on their personal characteristics, in Table 1, shows that 72.8% of them were within the age bracket of 33 and 52 years while 14.7% were below 33 years of age and a mean age of 45.7 years, it implies that most respondents were young and expected to make effective use of ICT for agricultural marketing. Majority (83.2%) of the respondents were male while 16.8% were female. Also, 79.0% of the farmers had a formal education; with the mean of 9.6 years of education. It implies that there is an appreciable level of literacy among the farmers. This finding is a critical component for successful use of AMI for commercial farming (Anthony and Adwinmea, 2013).

The study result also shows that 92.3% of the respondents were married and 63.0% of them had between six and ten persons in their households. The proportion of married

respondents' shows that they were responsible adults that may have kin interest in getting AMI that will aid the sales of their produce as suggested by Oladeji and Oyesola (2012) that being married is a social status that comes with a given task in a household. With the mean household size of seven persons, the finding implies a fairly large household sizes among the respondents. A study by Olajide (2011) found a similar trend of household size among rural populations.

Table 1: Distribution of respondents according to personal characteristics, n=143

Variable	Frequency	Percentage
Age		
22-32	12	8.4
33-42	43	30.1
43-52	61	42.7
53-62	19	13.3
63-72	8	5.6
Sex		
Male	119	83.2
Female	24	16.8
Years of formal education		
None	30	21.0
1-6	25	17.5
7-12	45	31.5
>12	43	30.1
Marital status		
Single	6	4.2
Married	132	92.2
Divorced	5	3.5
Household sizes		
1-5	36	25.2
6-10	90	63.0
11-15	8	5.6
16-20	6	4.2
21-25	2	1.4
26-30	1	0.7

Source: Field survey (2014)

3.2. Use of ICT-facilitated AMI in the study area

Table 2 presents the results on the use of ICT facilities of AMI in the study area. The weighted score (derived from the responses) to the use of the tools showed that radio (274.1) was the most frequently used ICT for AMI by the farmers in the study area. This was followed by mobile phone (232.8), television (140.0), poster (114.8), handbills (112.70) and cinema (13.3). This shows that a majority of the respondents still rely on the use of radio for receiving Agricultural marketing information and that the efficiency of the dissemination efforts would be limited to what could be conveyed by these tools. However, the picture in Fig 1shows the use of mobile phone for marketing of cassava by a farmer in the study area. The result of this study was in line with the finding of Usman, Adeboye, Oluyole and Ajijola (2012) and that of Ogbonna and Agwu (2013) that radio, mobile phones and television were the mostly used ICTs by farmers.

Table 2: Distribution of respondents by use of ICT-facilitated AMI, n=143

ICT tools	Always (%)	Occasionally (%)	Rarely (%)	Never (%)	Weighted score	Rank
Radio	76.2	21.7	2.1	0.0	274.1	1st
Mobile phone	64.3	12.6	13.7	8.4	232.8	2nd
Television	23.1	25.2	20.3	31.5	140.0	3rd
Poster	7.0	33.6	26.6	32.9	114.8	4th
Hand bill	16.1	25.9	19.6	38.5	112.7	5th
Newspaper	12.6	16.1	25.2	46.2	95.2	6th
Notice board	12.6	20.3	18.2	49.0	86.6	7th
Internet	11.9	6.3	11.2	70.6	49.5	8th
Media van	2.1	7.0	19.6	71.3	39.9	9th
Magazine	4.2	10.5	10.5	74.8	34.1	10th
Cinema	1.4	2.1	4.9	91.6	13.3	11th

Source: Field survey (2014)

On the level of usage of ICT for AMI by the respondents, the index of ICTs usage was used to categorise respondents into low and high levels, using above and below the mean criterion. Results in Table 3 shows that 55.2% of the respondents were in the category of low-level users of the ICT-facilitated AMI while 44.8% were categorised as high-level users. This implies that the respondents' reliance on ICTs for crop related AMI might be to a lesser extent in the study area. This finding is in line with that of Usman, Adeboye, Oluyole and Ajijola (2012) that the level of access and utilisation of ICTs facilities are generally low among farmers.

Table 3: Distribution of respondents by level of Use of ICT for facilitating AMI

Level of use	Frequency	Percentage
Low	79	55.2
High	64	44.8
Total	143	100.0

Source: Field survey (2014)

3.3. The benefit derived from use of ICT-facilitated Agricultural Marketing Information

Table 4 shows the result of the weighted score derived from responses to benefits derived from the use of ICT-facilitated AMI by the farmers in the study area. The mostly realised benefits from the use of ICT-facilitated AMI include easy access to market information (176.2), prompt sales of produce (175.5) and improvement in the income from sales (173.4). Other benefits derived include facilitation of better negotiation for farmers (167.8), planning marketing strategies (162.9), stability/prediction of prices (141.4), enhanced farm size (139.1) and reduction in the cost of input procurement (105.9). Interestingly, when market information is at the fingertips of farmers, there will be prompt sales of their agricultural produce including the perishable ones like vegetables and fruits. The availability of AMI to farmers may as well averts the exploitation activities of the middle men towards the farmers as they will have good bargaining power at the farm gate and may eventually put an end to glut of agricultural produce in the market. These at the long run may enhance the farmers' income as they might have been aware of where and when to sell their produce. This implies that the use of ICT-facilitated AMI was very helpful to farmers that used them in the study area (Fig 1). This was in agreement with the finding of Ogbonna and Agwu (2013) and Oyeyinka and Bello (2013) that farmers who use ICTs had better communication with producers, customers, suppliers and institutions, and access to the new market.

Index of benefits derived by farmers in the use of ICT-facilitated AMI was used to categorise them into low and high benefits using above and below the mean criterion. The result in Table 5 shows that 48.3% of the respondents had a high level of benefits from the use of ICT-facilitated AMI in the study area, while 51.7% had low-level benefits. The implication is that respondents' reliance on ICTs for AMI was to a lesser extent, which might be due to the low level of use of the facilities as revealed in the result in Table 3.

Table 4: Benefits derived from the use of ICT-facilitated AMI, n=143

Benefits derived	To a large extent (%)	To a lesser extent (%)	Not at all (%)	Weighted score	Rank
Making information easily accessible	76.2	23.8	0.0	176.2	1st
Prompt sale of produce	76.9	21.7	1.4	175.5	2nd
Improvement in income of farmers	74.8	23.8	1.4	173.4	3rd
Facilitation of better negotiation for farmers	67.8	32.2	0.0	167.8	4th
Helps to plan for the future market strategies	62.9	37.1	0.0	162.9	5th
Improvement in the awareness of market realities	62.2	37.1	0.7	161.5	6th
Saving time and cost for effectiveness marketing activities	61.5	37.1	1.4	160.1	7th
Facilitation of information exchange among farmers and customers	58.0	41.3	0.7	157.3	8th
Increment in market transparency	58.0	39.2	2.8	155.2	9th
Facilitation of marketing activities	56.6	39.9	3.5	153.1	10th
Provision of opportunity for the best prices in the market	54.5	44.1	1.4	153.1	11th
Facilitation of appropriate marketing decision	55.2	42.0	2.8	152.4	12th
Guide to costs of production	59.4	32.9	7.7	151.7	13th
Bridging of information gaps	53.1	45.5	1.4	151.7	14th
Encouragement of cooperative marketing	47.6	49.0	3.5	144.2	15th
Stability/predictability of prices	46.9	47.6	5.6	141.4	16th
Enablement of large farm size	60.1	18.9	21.0	139.1	17th
Reduction in costs incurred on input procurement	51.0	39.9	9.1	105.9	18th

Source: Field survey (2014)

Table 5: Level of Benefits derived from the use of ICT-facilitated AMI by the respondents, n=143

Level of benefit	Frequency	Percentage
Low	74	51.7
High	69	48.3
Total	143	100.0

Source: Field survey (2014)

Fig 1: Use of mobile phone as a conduit to AMI

3.4. The hypothesis of the study

The hypothesis, which was set to test for a relationship between the benefits derived from the use of ICT-facilitated agricultural market information and extent of their use of the ICTs in agricultural marketing, was tested using PPMC. The results shown in Table 6 indicates that there was significant (r=0.520; p=0.000) relationship between the benefits derived from the use of ICT-facilitated AMI and the extent of use of the ICT facilities. This implies that the farmers who used the facilities had more benefits for their enterprises. Hence, the benefit derived by the respondents is directly proportional to the use of the ICTs, since the benefit derived is expected to be a motivating factor for more use of the ICT-based AMI in the study area. The finding is in consonance with that of Ogbonna and Agwu (2013)

Table 6: PPMC for test relationship between benefit derived by respondents from the use of ICT-facilitated AMI and their extent of use of the facilities

Variables	r-value	p-value	Decision
Benefit derived vs. use of ICT-facilitated AMI	0.520	0.000	Significant

Source: Field survey (2014)

4.0. Summary, Conclusion and Recommendation

The respondents were in their active age, married and dominated by male. They had appreciable level of literacy with large household size. Also, radio, mobile phone and television were the most accessible and frequently used ICT tools for AMI. Furthermore, farmers' easy access to market information and prompt sales of produce were the major benefits to their use of ICTs for AMI in the study area. Hence, the respondents' benefits derived from the use of ICT-facilitated AMI is directly proportional to their use of ICTs. Moreover, the fact that those who used the ICT-facilitated AMI had substantial benefit would encourage the continous use of the facilities and may stimulate other entrepreneurs to adopt the use of the facilities. Based on the findings of the study, it is recommended that the relevant policies and strategies should be put in place to promote the use of ICT-facilitated information so that more respondents can benefit from their use.

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