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Assessment of Agricultural Information Needs and Accessibility Methods Used by Smallholder Farmers in Ilorin West Local Government Area, Kwara State, Nigeria

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ABSTRACT

This study assessed agricultural information needs and accessibility methods used by smallholder farmers in obtaining agricultural information in Ilorin West Local Government Area of Kwara State. Structured interview schedule was used to elicit information from a total of one hundred and ten (110) respondents selected through a multistage sampling procedure. The results showed majority of the respondents (73.6% and 72.7%) indicated the need for information on 'fertilizer usage to increase their productivity' and 'improved seeds and seedlings' respectively. Also, 77.3% needed information on crop variety to grow at a given season to ensure marketability of such crop. Radio was most prominently used means of obtaining agricultural information (2.0). Extension agents, with a mean score of 1.67, was fifth most common used source for obtaining agricultural information. Prominent among the constraints to agricultural information accessibility were inability to understand technical language used during information accessibility (2.0) and language barrier (1.79). Also, gender (χ^2= 4.56) and age category (χ^2 = 5.32) had significant association with information accessibility method (at $p < 0.05$). The need to enhance extension agents' performance in reaching smallholder farmers with requisite and timely agricultural information on various areas of agriculture particularly in their local languages is recommended.

***Keywords**:* Agricultural information, information needs, accessibility methods, smallholder farmers.

INTRODUCTION

Nigeria has a land area of 98.3 million hectares, with 74 million hectares good for farming; yet half of its arable land has not been exploited to produce crops and livestock to stem the threat of hunger and poverty through efficient production system (Opara, 2011). It is obvious from a growth point of view that immense opportunities abound within the agricultural sector in Nigeria. Smallholder farmers are the nation's main food suppliers. In fact, it has been reported that more than 80 per cent of the country's farmers are smallholders (Akinsuyi, 2011). They are the backbone of the Nigerian agricultural sector and deserve every support to produce more food, generate more raw materials for the agro-industrial sectors and contribute towards ending food supply deficit (Mgbenka and Mbah, 2016).

Despite their potentials, smallholder farmers have poor access to market information, innovation, and strategies, leading to low farm productivity (Otekunrin *et al.,* 2019). Access to timely and quality information have a significant role to play in the transformation process of any agrarian economy. When farmers lack access to knowledge and information that would help them achieve optimum agricultural yield, they would only continue to grope in the dark and often time leading to their mass exodus to the urban centers in search of greener pastures (Munyua, 2000; Oyeniyi and Olofinsawe, 2015). Timely agricultural information is therefore considered as an essential input to agricultural education, research and development and extension services (Ahmed, 2018) and thus germane towards enhancing agricultural outputs of smallholder farmers.

To effectively communicate improved agricultural practices to farmers entails the use of appropriate medium of information exchange or channels which help farmers to better understand new farming practices, which they can later incorporate into their normal farming activities. The lack of access to basic agricultural knowledge and information by rural farmers may have been responsible for their attachment to and preference for old traditional methods of farming system. Thus, adequate access to knowledge and information in areas of new agricultural technologies, early warning systems (drought, pests, diseases etc.), improved seedlings, fertilizer, credit, market prices, among others have been recognized as low-cost inputs for improved rural agricultural development (Balit, 1996; Akanni *et al*., 2019). Among major barriers to efficient agricultural information

dissemination to local farmers is language barrier. Leaflets, newsletters and other print information resources often have limited use in reaching rural farmers as majorities are not sufficiently literate in the language of communication used in these outlets (Uzuegba and Naga, 2017). The significance of local languages in information dissemination to farmers has been equally stressed by Sokoya *et al.* (2014).

The foregoing underscores the significance of both requisite and timely information to farmers, as well as the medium through which they obtain this information. Thus, the documentation of usable information, which is considered necessary for rapid growth and development of nation's agriculture sector (Uddin *et al.*, 2019), as well as various methods of accessibility through which the agricultural information are relayed to the farmers are paramount. Also, where information disseminated to farmers are not based on their needs and priorities or when they are, they are poorly disseminated, agricultural growth and development will remain retarded. It is in these regards that this study assessed agricultural information needs and accessibility methods used by smallholder farmers in obtaining agricultural information in Ilorin West Local Government Area of Kwara State, Nigeria. The study area is notable for arable crop production in the state and enhancing agricultural production of the farmers their will translate to overall enhanced production thus guaranteeing food security in the state. Specifically, the study described the socioeconomic characteristics of the smallholder farmers, document their agricultural information needs, examined information accessibility methods used by the respondents in obtaining agricultural information and ascertained problems associated with accessing agricultural information by the respondents. The hypothesis tested was: There is no significant relationship between socio-economic characteristics of the respondents and agricultural information accessibility methods used by the respondents.

METHODOLOGY

The study area is Ilorin West Local Government Area of Kwara State, Nigeria. It is one of the largest local government areas in the state with twenty-two wards and ninety-five communities. The tribes in the LGA are predominately Yoruba. There are two types of communities in the study area: rural and urban. The study was conducted in the rural areas of the local government area.

A multistage sampling procedure was used to select 110 respondents for the study. At the first stage, four wards in the LGA were purposively selected based on the presence of rural communities therein, namely, Wara-osin /Egbejila ward, Adewole ward, Ubadawaki ward and Oko-erin ward. At the second stage, all rural communities in each of the four (4) wards were purposively selected as follows: 12 communities from Wara-osin / Egbejila ward, 5 communities in Adewole ward, 4 communities in Oko-erin ward and 1 community in Ubadawaki ward. Finally, five respondents were randomly selected from each of the rural communities making a sample size of 110 respondents.

The study used interview schedule to collect primary data for the study. The instrument was divided into four (4) sections, namely: Section A, which focused on the demographic and socioeconomic characteristics of the smallholder farmers. Section B contained questions on information needs of the respondents, while Section C focused on information accessibility methods used by smallholder farmers in obtaining agricultural information. Section D contained questions on problems/constraints associated with accessing agricultural information. The research instrument was validated through content validity. Experts in the department that specialize in the areas of Agricultural Extension and Rural Development were requested to critically examine and review the research instrument in relation to the objectives of the study. Their suggestions and recommendations were employed in the restructuring of the research instrument prior to field survey.

The dependent variable of the study was information accessibility methods. It was measured by requesting the respondents to check from a list of information accessibility methods the ones they use in obtaining agricultural information. Thereafter, they were requested to check the frequency of use of each method on a 3-point Likert-type scale as follows: 'Always used' scored 2 points, 'Rarely used' scored 1 point, and 'Never used' scored 0. The independent variables of the study, such as marital status, gender, level of education, etc., were measured at nominal level, while numerical variables such as age, household size, income, etc, were measured at ratio level and absolute values given were categorized into ordered categories for ease of presentation As for problems or constraints to accessibility methods, respondents were asked which of the option provided was applicable to them; then on a 3-point Likert-type scale, they

were required to indicate the extent of severity of the checked constraints, as follows: 'very severe', 'less severe' and 'not severe' scored 2, 1 and 0, respectively. Both descriptive and inferential statistics were used for data analysis. The descriptive statistical tools used include frequency counts, percentage mean and standard deviation, while chi-square analysis was used for inferential deduction. The chi-square test was considered appropriate given that variables involved in the hypothesis were measured at either nominal or ordinal level; thus, it was an appropriate non-parametric test to use in this circumstance. Also, selected socioeconomic attributes anticipated to be associated with methods of information accessibility were used in the chi-square analysis. For instance, younger individuals might prefer a method which older one might be averse to, while educational level of individuals could also influence their choice method of information accessibility.

RESULTS AND DISCUSSION

Socioeconomic characteristics of respondents

Results in Table 1 show that majority (76.4%) of the respondents were male, while 23.6% were female. This indicates that male dominated the farming activities in the study area. This is may be due to fact that farming demands a lot of strength and energy which may deter the female counterpart from actively participating in strenuous and fatigue-prone activities. It is a known cultural practice that males engage in agricultural activities that are labour-intensive, such as weeding and harvesting, while females carry out less labour-intensive activities such as planting, processing and transporting farm produce. Besides, most of the women in the study area prefer to engage in non-farm enterprises. The result is supported by the findings of Igwe *et al.* (2020) that male dominates agricultural activities in rural areas in Nigeria, with 77% of male. Similarly, Akanni *et al.* (2019) reported that majority of farmers (70.9%) in Ido Local Area of Oyo State, Nigeria were male. Table 1 also shows that 41.8% of the smallholder farmers were married. This finding supports those of Udoh (2005), Oluwatayo *et al.* (2008), Onubuogu *et al.* (2012) and Onubuogu *et al.* (2013) that married farmers tend to have easy access to production resources such as land and large family size which are traditionally owned and provided by household heads (husbands) to compliment family labour to enhance production, reduce the cost of hired labour and resource use efficiency of the household farmers. The mean age of the respondents was 56 years. This implies able-bodied youths were not involved in farming activities in the study area. This has implications on kind of information accessibility methods used by the respondents. Furthermore, less than half (43.6%) of the respondents had no formal education. Well-educated farmers can easily access information from various sources and can create knowledge out of those sources. As just above average amongst the respondents reportedly had formal education, efforts in enhancing the educational status of the respondents would enhance their capacity to better utilize information sources available at their disposal in obtaining agricultural information. Results in Table 1 also show half (50%) of the respondents had farm sizes of 4-6 acres, while about 45.5% had below 3 acres of farmland. Average farm size was 3.74 acres, with a standard deviation of 1.49. These findings concurred with Ojo *et al*. (2012) who defined small-scale farmers as those farmers that cultivate the land of 0.1 hectare to 5 hectares. The majority (90%) of the respondents were engaged in the farming occupation. In addition, some (26.4% and 13.6%) were involved in the petty trading and selling of farm produce, respectively. This implies that farming was the commonest occupation amongst the respondents, although few engaged in other non-farm activities too.

Crops cultivated by respondents included rice (100%), cassava (53.6%), yam (51.8%) and cowpea (25.5%). Furthermore, 55.5% and 40.9% of the respondents were engaged in rearing of goats and sheep respectively, while 59.1% reared poultry birds. These results indicate that respondents cultivated a variety of crops while rearing livestock at the same time. This has been reported as peculiar characteristics of farmers in rural areas whereby they engaged in combination of activities to make ends meet, ranging from cultivation of a variety of crops, rearing of livestock, as well as engaging in some other non-farm activities (Yusuf, 2011). All the respondents (100%) were members of cooperative union association. Also, the majority (70%) belonged to vigilante group, while few (20.9% and 22.7%) belonged to some village group and community development associations, respectively. The results indicate that respondents were members of different associations in the study area. Association membership could have implications for utilization of information sources amongst respondents, whereby members may influence one another in the utilization of different accessibility methods in meeting their agricultural information needs.

Table 1: Socioeconomic characteristics of smallholder farmers (n=110)

Variables	Frequency	Percentage	
Gender			
Male	84	76.4	
Female	26	23.6	
Marital Status			
Single	43	39.1	
Married	46	41.8	
Separated	8	7.3	
Widow	9	8.2	
Divorced	4	3.6	
Age (years)			
30 and below	6	5.4	
31-40	18	16.4	Mean=56
41-50	32	29.1	Standard deviation = 1.54
Above 50	54	49.1	
Level of Education			
No Formal Education	48	43.6	
Quranic Education	12	10.9	
Adult Education	13	11.8	
Complete Primary Education	5	4.5	
Incomplete Primary Education	12	10.9	
Complete Secondary Education	12	10.9	
Incomplete Secondary Education	4	3.6	
Tertiary Education	4	3.6	
Religion			
Islam	84	76.4	
Christianity	26	23.6	
Farmland Acquisition			
Inherited	68	61.8	
Purchased	39	35.5	
Communal	2	1.8	
Rent/Lease	1	9	
Farm size(acres)			
Below 3	50	45.5	
4 – 6	55	50	Mean = 3.74
7- 10	5	4.5	Standard deviation = 1.49
Occupation*			
Farming	100	90.0	
Petty trading	29	26.4	
Selling of farm produce	15	13.6	
Crop cultivated*			
Rice	110	100.0	
Yam	57	51.8	
Cassava	59	53.6	
Cowpea	28	25.5	
Animal reared*			
Sheep	45	40.9	
Goats	61	55.5	
Poultry birds	65	59.1	
Association Membership*			
Village group	23	20.9	
Cooperative society	110	100.0	
Community development association	25	22.7	
Vigilante	77	70.0	

Source: Field Survey, 2017

*Multiple responses applicable

Agricultural Information Needs of Smallholder Farmers

Results in Table 2 show that majority (77.3%) of the respondents indicated needing information on 'crop variety to grow at a given season with the marketability of such crop' and 'pesticide usage'. Also, 76.4% and 75.5% of the respondents indicated they required information on 'storage' and 'processing techniques' respectively. In the same vein, 73.6% of the respondents indicated that they needed information on 'fertilizer usage to increase their productivity and sources of obtaining agricultural credit and loans'. Furthermore, 72.7%, 71% and not less than 60% indicated need information on 'improved seeds and seedlings', 'forecast of market trend' and other various aspects, such as information on 'timing of sales', 'information on what is required to be done at pre-harvest to enhance productivity and post-harvest to minimize post-harvest loss', respectively. The results are supported by the findings of Babu *et al.* (2012) that the important information needs for small-scale rice farmers were concerned with pest and disease management, pesticide and fertilizer application, the best time to plant, planting method, storage and seed treatment. Also, Lwoga (2009) established that 66.3% of the small-scale farmers interviewed needed information on controlling plant diseases and pests, 59.1% on marketing, 58.6% on credit facilitates, 54.7% on control of animal diseases and 29.3% on irrigation practices. These results signify that agricultural information needs of respondents were diverse and cut across several aspects of the agricultural value chain, ranging from production, management practices, harvesting and even marketing. The implication is that availing smallholder farmers with requisite information that cover broad areas of agriculture would not only enhance their agricultural productivity, but also ensure farmers' enterprises become profitable ventures for them.

Table 2: Distributions of smallholder farmers by agricultural information needs (n=110)

Variables	Frequency	Percentage	Ranking
Fertilizer usage for higher productivity	81	73.6	5th
Crop disease and treatment	69	62.7	12th
What needs to be done in pre-harvest to enhance productivity	73	66.4	10th
What needs to be done in post-harvest to minimize loss	67	60.9	14th
Improved varieties of seed/seedlings	80	72.7	7th
Time of sowing	74	67.3	9th
Pesticide usage	85	77.3	1st
Storage technique	84	76.4	3rd
Processing technique	83	75.5	4th
Agricultural credit, including loans and credit source	81	73.6	5th
Extension education needs/updates	73	66.4	11th
What crop variety to grow at a given season with the marketability of such crop	85	77.3	1st
Information on current price	64	58.2	15th
Information on a forecast of market trend	78	70.9	8th
Marketing information	69	62.7	12th

Source: Field Survey, 2017

Information Accessibility method available to smallholder farmers

Results in Table 3 show that respondents identified radio (mean score = 1.69) as the most available source of information accessibility method. A majority (69.1%) indicated that it was readily available, while only 30.9% said it was rarely available. This was followed by mobile telephone (mean score = 1.58), where about 54.6% and 43.6% indicated that it was readily and rarely available, respectively. 'Cooperative union staff' (mean score = 1.47) ranked third, 'fellow farmers' and 'extension officer' ranked fourth and fifth, with a mean score of 1.36 and 1.34, respectively. As for cooperative staff union, 57.3% and 32.7% indicated that information accessibility through this source was readily and rarely available, respectively. While 40.9% and 53.6% indicated that fellow farmers as a source of information accessibility was readily and rarely

available, respectively, 48.2% and 37.3% indicated that extension officers as a source of information accessibility method was readily and rarely available, respectively. Other sources, such as contact farmer, agricultural exhibition and agricultural poster recorded low mean score values below 1, while television and agricultural bulletin recorded lowest mean score of 0.29 and 0.27. These results agree with submission of Olaniyi (2013) that farmers in developing countries use radio, television, and mobile phones to access agricultural information. These results also in concur with that of Lucky *et al.* (2012) that radio still remains the best mode of reaching farmers. The results indicated that various sources of agricultural information accessibility methods were available to the farmers with radio and mobile telephone rated as most available.

Table 3: Distribution of respondents by the availability of information Accessibility methods (n=110)

	Frequency of availability				
Variables	**Readily available** *Freq. (%)	**Rarely Available** Freq. (%)	**Not Available** Freq. (%)	**Mean Score**	**Ranking**
Extension officer/ agent	53(48.2)	41(37.3)	10(9.1)	1.34	5th
Fellow farmer	45(40.9)	60(53.60)	5(4.55)	1.36	4th
Contact farmer	16(19.5)	59(53.6)	35(31.8)	0.83	6th
Private firm/NGO	0(0.0)	40(36.4)	70(63.6)	0.37	8th
Radio	76(69.1)	34(30.9)	0(0.0)	1.69	1st
Television	0(0.0)	32(29.1)	78(70.9)	0.29	10th
Agricultural bulletin	0(0.0)	30(27.3)	80(72.7)	0.27	11th
Agricultural poster	0(0.0)	35(31.8)	75(68.2)	0.31	9th
Cooperative union staff	63(57.3)	36(32.7)	11(10)	1.47	3rd
Mobile telephone	62(54.6)	48(43.6)	0(0.0)	1.58	2nd
Agricultural exhibition	1(9)	52(47.6)	57(51.8)	0.48	7th

Source: Field Survey, 2017.
*Freq.-Frequency; % - Percentage

Frequency of Use of Information Accessibility Methods

Results in Table 4 show that all the respondents (100%) indicated that they made use of radio in obtaining agricultural information. This made it the most used information accessibility method with a maximum mean of score 2.0 recorded. Mobile telephone which ranked second recorded a mean score of 1.83, with a majority (82.7%) frequently used it for obtaining or accessing agricultural information. Fellow farmer and cooperative union staff both ranked third with a mean score of 1.76 each, while extension ranked fifth with a mean score of 1.67. All the information accessibility methods recorded at least a mean score of 1.1 and 1.0, respectively. The results indicated that respondents made use of a variety of information accessibility methods for obtaining agricultural information in the study area. However, radio and mobile telephone were most prominently used, while television and agricultural exhibition were least used amongst the information accessibility methods. This finding is similar to that of Ango *et al*. (2013) that majority of the rural farmers in Zaria, Kaduna State, had access to source of agricultural information through radio while few of them had access to agricultural information through other means apart from radio. Olajide (2015) also reported that radio is the most preferred tool of mass communication in Nigeria and this is due to its numerous advantages, it has been accorded a high priority as a means of reaching farmers.

Table 4: Distribution of Respondents by Frequency of Use Information Accessibility Methods

Variables	Frequency of use				
	Always Freq. (%)	**Rarely** Freq. (%)	**Never** Freq. (%)	**Mean Score**	**Ranking**
Extension agent	74 (67.3)	36(32.7)	0(0.0)	1.67	5th
Fellow farmer	84(76.4)	26(23.6)	0(0.0)	1.76	3rd
Contact farmer	21(19.1)	89(80.9)	0(0.0)	1.19	6th
Private firm/NGO	21(19.1)	89(80.9)	0(0.0)	1.19	7th
Radio	110(100)	0(0.0)	0(0.0)	2.0	1st
Television	12(10.9)	98(87.4)	0(0.0)	1.11	8th
Agricultural poster	66(60.0)	44(40.0)	0(0.0)	1.60	6th
Cooperative union staff	84(76.4)	26(23.6)	0(0.0)	1.76	3rd
Mobile telephone	91(82.7)	19(17.3)	0(0.0)	1.83	2nd
Agricultural exhibition	0(0.0)	110(0.0)	0(0.0)	1.00	9th

Source: Field survey, 2017
Freq.-Frequency; % - percentage

Constraints Associated with Accessing Agricultural Information by Smallholder farmers

The results in Table 5 show that 'inability of farmers to understand technical language used during information dissemination' was rated most severe constraint (mean score = 2.0) hampering effective accessibility of agricultural information to the respondents. Similarly, 'language barrier as a limitation to effective understanding of message' ranked second highest, with a mean score of 1.79. Constraints, such as 'inappropriate timing of airing information to target audience', and 'poor reception quality of broadcasting' recorded mean score of 1.62 and 1.35, respectively. 'Social status difference between extension agent and farmers' was regarded least constraint (mean score = 1.29) to accessing agricultural information by farmers. These findings are in line with Daudu *et al.* (2009) who pointed out some of the problems encountered by farmers in Nigeria in accessing agricultural information include financial problems, inadequacy of facilities/professional, incomplete or irrelevant information. They also supported the findings of Tologbonse *et al*. (2008) that constraints associated with effective dissemination of agricultural information were outdated information, language barrier, lack of awareness on the existence of different information sources, lack of funds to acquire information and poor format of the information carrier. The findings equally underscored the significance of local language in information dissemination to farmers as buttressed by Uzuegba and Naga (2017) and Sokoya *et al.* (2014).

Table 5: Distribution of respondents by constraints associated with accessibility of agricultural information

S/N	Extent of severity				
Constraints	**Very severe** Freq. (%)	**Less severe** Freq. (%)	**Not severe** Freq. (%)	**Mean Score**	**Ranking**
Social status differences between extension agent and client/farmers	32(29.1)	78(70.9)	0	1.29	5th
Poor reception quality of broadcasting	39(35.5)	71(64.5)	0	1.35	4th
Inappropriate timing of airing information to target audience	69(62.7)	41(37.3)	0	1.62	3rd
Language barriers as a limitation to effective understanding of the message	87(79.1)	23(20.9)	0	1.79	2nd
Inability of farmers to understand technical languages used during information dissemination	110(100.0)	0	0	2.0	1st

Source: Field survey, 2017

Results of chi-square test of association between selected socioeconomic variables and information accessibility methods

The results in Table 6 show that gender (χ^2= 4.56) and age category (χ^2 = 5.32) had a significant association with information accessibility method at p < 0.05. Other variables such as marital status, religion, household size and years of formal education did not have any significant relationship with information accessibility methods. This finding is similar to that of Benard *et al.* (2018) in which age was found to be significantly related to information accessibility by farmers in Southern highlands of Tanzania. Daudu *et al.* (2009) similarly reported that age influence farmers information source preferences. The significant association between gender and information accessibility methods suggests the need for special consideration of gender relations in the decision of information methods used in reaching smallholder farmers. This will ensure that the peculiar nature of both genders is well taken care of.

Table 6: Relationship between selected socioeconomic characteristics and information accessibility methods

Variable	χ^2	p-value
Gender	4.56*	0.03
Age	5.32*	0.046
Marital Status	3.20	0.525
Religion	0.003	0.960
Household size	0.108	0.372
Years of formal education	0.025	0.796

*sig. at p< 0.05
Source: Field Survey, 2017

CONCLUSION AND RECOMMENDATIONS

The study assessed agricultural information needs and accessibility methods of obtaining agricultural information amongst smallholder farmers in Ilorin West Local Government Area of Kwara State. Based on the main findings, it is concluded that agricultural information needs of smallholder farmers were diverse, cutting across several aspects of the agricultural value chain, ranging from production, management practices, harvesting, marketing, and financing. Similarly, farmers made use of a variety of methods in obtaining agricultural information with radio being the most prominently used while 'extension officer' ranked among the least used channels. Prominent among constraints inhibiting farmers' access to agricultural information were 'inability to understand technical language used during information dissemination' and 'language barrier as a limitation to effective understanding of message'.

Based on the foregoing, it is recommended that language barrier and use of technical terms that impede effective agricultural information dissemination be addressed by the state extension agency and other development practitioners involved in the business of rural development through breaking down into simple understandable terms with rendition in common local language of the farmers. Also, efforts should be intensified by the state extension agency and other development practitioners to intensify use of farm radio programmes in reaching the smallholder farmers with timely agricultural information covering broad areas of agriculture given that most rural farmers in the study area sourced agricultural information through the radio.

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