



ASSESSMENT OF INFORMATION INFRASTRUCTURE ON ADOPTION OF AGRONOMIC PRACTICES AMONG SMALL SCALE FARMERS IN IDO LOCAL GOVERNMENT, OYO STATE

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ABSTRACT

The objective of this study was to assess information infrastructure on adoption of agronomic practices among small scale farmers in Ido Local Government Area. Multi-stage Sampling Procedure was used in selecting the respondents for the study. One hundred and twenty questionnaires were administered in twelve (12) villages. Data collected were statistically analyzed using inferential statistics such as Chi-square and PPMC. The study revealed that majority (81.7%) of the respondents strongly agreed that they sourced their information from Contact farmers. The study also showed that myriads of constraints are always encountered by the small-scale farmers of which the major constraint is illiteracy with a percentage of 81.7%. The study revealed that increased production is a very beneficial factor in respect to benefit of agricultural information infrastructure with (63.5%). The study revealed that majority of respondents' (35.6%) chose Etisalat as the most preferred network. The result shows that gender ($x^2 = 0.9777$, $P = 0.986$), education ($x^2 = 28.518$, $P = 0.239$) and members of farming association ($x^2 = 9.969$, $P = 0.126$) has no significant relationship on adoption of information infrastructure of respondents, while, age ($x^2 = 248.40$, $P = 0.001$), Marital status ($x^2 = 182.115$, $P = 0.003$) has significant relationship on the adoption of information infrastructure. PPMC result shows that there is significant relationship between the sources of information and preferred network infrastructure ($r = 0.209$, $P = 0.033$) in the study area. Therefore it is recommended that problem in adoption practices will be solved if barriers to information infrastructure happen to be eliminated. This calls for a well-coordinated policy intervention compatible with the dynamics of rural institutions and other location bottlenecks.

Keywords: Assessment, Information infrastructure, Adoption, Small scale, Farmers

INTRODUCTION

Information can be seen as a resource that can liberate man. In other words, "an informed mind is an enriched mind". Every rational being needs some information for his day-to-day existence and well-being. No society can grow beyond its level of information awareness, acquisition and appropriation. Due to its importance, all human beings need information, no matter where they live or find themselves. It is a vital factor that influences all persons be rural or urban dwellers, old or young,

literate or illiterate. Information is an important tool used in the realization of any objective or goal set by Individual. It is a valuable resource required in any society, thus acquiring and using information are critical and important activities. It is also man's related knowledge in all subjects in all forms and from all sources, which will help users to make rational decisions. The rural farmers need critical information to meet their information needs to enhance their productivity. Over the years, our rural farmers depend on indigenous or local knowledge

for improved farming system/ animal husbandry. Such knowledge (indigenous and local knowledge) refers to skill and experience gained through oral tradition and practice over many generations.

Acquisition of such primitive skills by our rural farmers has not helped to improve agricultural yield. Improved agricultural production is the major weapon in the fight against world hunger, improving rural livelihood and increasing economic growth. In Africa, agriculture provides a livelihood for about seventy-five per cent of the people who live in the rural areas. Ironically, the rural areas in Africa have the largest concentration of poverty and food insecurity. One of the causes of the low incomes in the rural Africa is low agricultural productivity. Lack of technology and information has been variously given as part of the reasons for this low productivity in African agriculture. Information is a vital resource and has its application in rural, agricultural, social and industrial development (Nwachukwu *et al.*, 2009). A prime challenge of the typical Nigerian rural farmer is the dearth of timely, up to date agricultural information in spite of several research findings lying in shelves in various research organizations. For instance, inadequate information may be responsible for the Low level of yields among farmers in spite of availability of improved seed varieties (Idachaba 2000). Accurate and timely market information, particularly of perishable items, can significantly reduce transaction and travel costs.

Knowledge and innovation are now widely regarded as key drivers of economic growth and it is clear that information and communication technologies (ICTs) are deeply implicated in knowledge flow and innovation (Verlaeten, 2002). Although farmers usually have rich knowledge of local conditions and valuable practical knowledge or experience of how best to successfully exploit their environment, they require timely and innovative information generated from research and development to cope with exigencies of weather and pestilence (Correa et al, 1997 cited in Ziip 2002). Olawoye (1996) observed that agricultural messages could enhance the productivity of farmers when they have access to it. Jonston (1986)

observed that extension programmes have been largely tailored to provide sufficient information that is relevant to rural farmers. Mass media communication therefore, should be a major concern in the dissemination of agricultural information. Users of information use it for different reasons. Some use it for health; others use it for advancement in knowledge, others for politics. To all these people information seeking is a fundamental human process closely related to learning and problem solving (Goldfrab, 2006).

The importance of information as a factor for increasing agricultural production is far beyond doubt. Experts agree that there is need for agricultural information specialist to be more involved in information provision to the various user groups in agricultural sector. When the rural farmers lack access to knowledge and information that would help them achieve maximum agricultural yield, they are not only grope in the dark but are driven to the urban centres in search of formal employment, as the only option for survival (Munyua, 2000). Information and its dissemination appropriately are seen as critical resource for people and communities in both rural and urban areas (Okogbe, 2002). Radio has been proved as the important tool for the enhancement of agriculture in the rural area. In the developing countries, radio is the powerful and effective medium to project the information and knowledge related to agriculture. (Nakabugu, 2001; FAO, 2001). According to Chapman and Slaymakers (2002), internet is fast providing a relatively cheaper and faster medium of gaining access to agricultural information. Its applications are making drastic changes both in electronic and social development (Chaka, 2008).

In this modern day of information technology, telecentres provide the rural farmers with prompt and reliable information about what is happening in areas of improved seedlings, better methods of cultivation and fertilizer application, pest and weed control/eradication, new advances in livestock production and disease control etc. Where rural farmers are not faced with constraints in accessing agricultural information, traditional media such as rural radio, has been used in delivering agricultural

messages to rural farmers (Munyua, 2000). Other ways of delivering these messages or information to the rural farmers include print, video, television, films, slides, pictures, drama, dance, folklore, group discussions, meetings, exhibitions and demonstrations (Munyua, 2000). Arokoyo (2003) observed that, so far, the radio and TV have been the main ICT tools used in agricultural extension delivery in Nigeria.

It was noted that constraints to information access in rural areas are the kind of information delivered to the rural communities is very much system oriented to which most of the rural dwellers cannot understand and benefit from it, and the provision is dependent on the availability, extent of content, Government interest, format and available modes of delivery. This is particularly obvious in developing countries like Africa where infrastructures and development policies are minimally provided due to unplanned development efforts by the Governments.

Information infrastructure is a technical structure of an organizational form, an analytical perspective or semantic network. Pironti (2006) defined information infrastructure as all the people, processes, procedures, tools, facilities and technology which supports creation and use, transport, storage and destruction of information. They are important tools to facilitate information delivery and also communications networks and associated software that support interaction among people and organisations. Therefore, Information as an important factor in sustainability of agricultural development depends on availability of information infrastructure to facilitate information dissemination and accessibility. When people are aware of where to get help they usually go for it to solve their problem. There may be government programs, even availability of international aid but without information going round, people will not know about it. Information distribution is a key to eradicating poverty and hunger. Farmers in the rural areas also need to know what and how their counterparts are doing in advanced countries and this can improve their harvest and productivity.

Without adequate information, particularly to the rural farmers, there will be lack of awareness about new developments within the agricultural sector and this may lead to low productivity and consequently a danger to the survival of the nation. The inability of the rural farmers to seek for information may result in poor production output, food insecurity, inability to feed the nation. Lack of investment in information infrastructure may also result in the creation of an information-poor society.

Moreover, most farmers cannot access improved agricultural innovation through television and radio because they are conservative and ignorant of agricultural programme or announcement made through the sources. The objectives of the study are to study the socio-economic characteristics of respondents in the study area, identify sources of information among respondents, ascertain the constraint to adoption practices among the respondents, identify the benefits of agricultural information among the respondents, and access the preference of Adopted information infrastructure among the respondents in the study area.

MATERIALS AND METHODS

Study Area

This study was carried out in Ido Local Government Area (LGA) of Oyo State Nigeria. The local government is located in the rain forest zone of Nigeria between latitude 6° 45' N and 9° 41' N and longitude 2° 30' E and 5° 15' E. It occupies a land mass of 865,490 km with about 57% of the total land being used for agricultural purposes (NPC, 1996). The local government area has a population of 103,261 according to the 2006 census (NPC, 2006). Ido local government shares boundaries along the side of Akinyele, Oluyole, Ibarapa East, Ibadan South West and Ibarapa North West Local Government Area in Oyo State. The area of study has contributed immensely to the sector of agricultural production in Oyo State and Nigeria economy. The people who dominate this area are predominantly farmers and the major crops produced in the area are yam, cassava, maize among others.

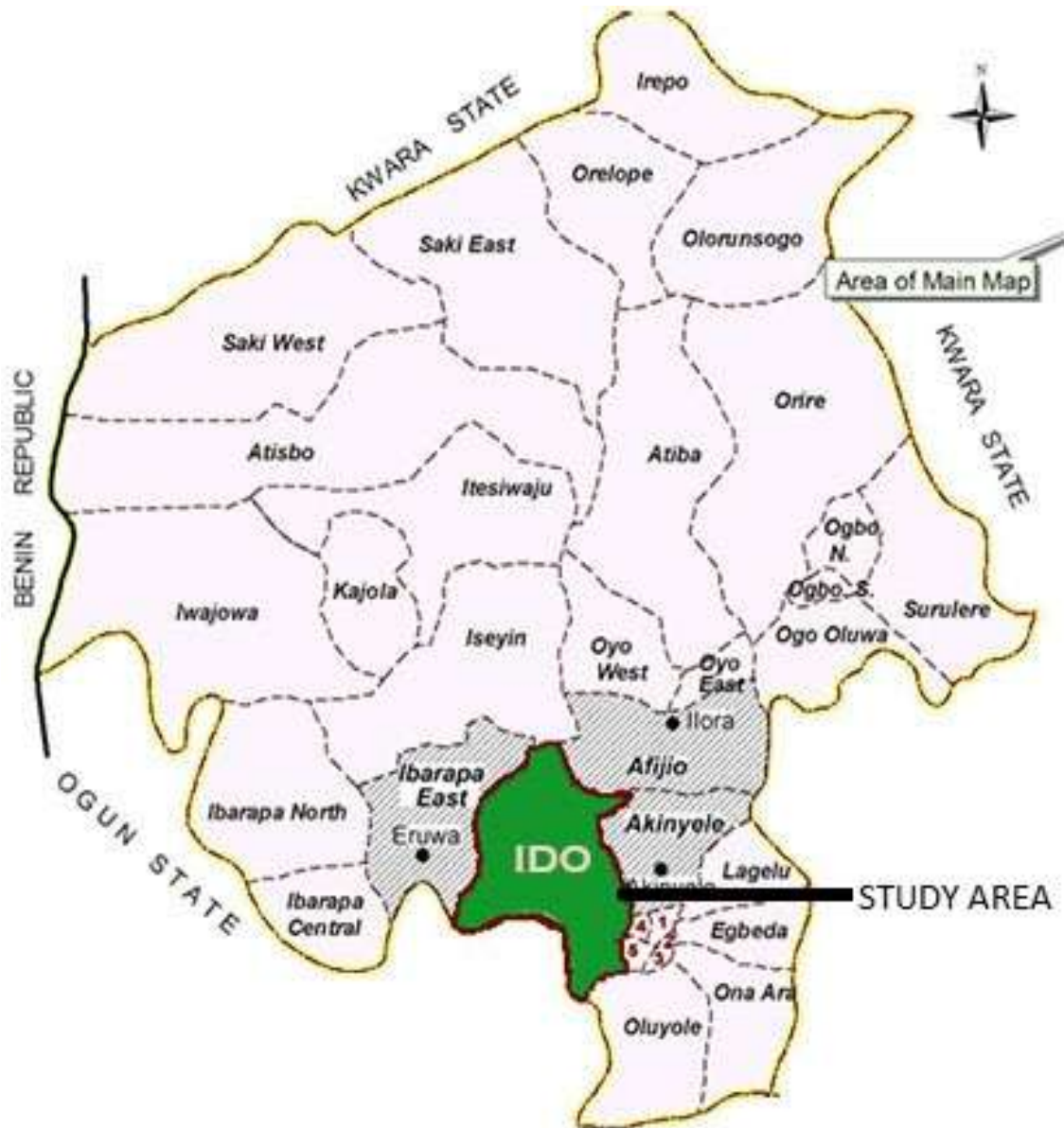


Figure 1: Map of Oyo State showing IdO Local Government

Experimental Design

The population of the study was the people of IdO LGA while the target population of the study was the farmers in IdO local Government Area of Oyo state. Multi-stage sampling procedure was used in selecting the respondents for the study. Random sampling was used to select four (4) wards out of ten (10) wards in the local government. Second stage, three (3) villages were randomly selected in each ward to give a total number of twelve (12) villages. In third stage, Ten (10) farmers were systematically selected based on their performance in farming activities in each village to give a total

number of 120 sampled respondents, out of which 104 questionnaires were retrieved and utilized for this study.

Data Analysis

Descriptive statistical tools such as percentage and frequency and inferential statistical tools such as Chi-square (X^2) and PPMC were used in the analysis of the data.

RESULTS

Table 1 shows that 39% of the respondents were within the ages of (26-33years), 24% of them were

within the age category of (34-41years), 19.2% of the respondents' were within the range of (18-25years), while respondents within the age bracket of (42-49years) and (50-57) accounted for 12.5% and 4.9% respectively. The implication of this is that majority of the farmers are still within the active age and strong enough to participate in farming. The result corresponds with Akinbile L.A (2007) who found that population between 21-40 years of age constitute the active work force.

In gender distribution of the respondents, the table reveals that 70.2% of the respondents are male and 29.8% of the respondents were female. While distribution of the respondents also revealed that 51.0% were Muslims, respondents practicing Christianity accounted for 38.5%, while traditional worshippers accounted for 10.6%

This study also shows that 57.7% of the respondents were married, 24.0% were single, 10.6% were divorced and 7.7% comprises of widows and widowers respectively. This study shows that majority of the respondents are adults and responsible.

The table also shows that majority (69.2%) of the respondents have family size of 5-8, followed by (1-4) family size with 17.3%, and (19-12) have 12.5% of total population. Majority (59.5%) of the respondents had years of farming experience within (1-5years), while respondents with farming experience within (11-20), (21-30), (31-40) accounted for (31.6%), (5.9%), (3%) respectively.

The study further revealed source of labour with family as 38.5% which has the highest percentage, hired has a percentage of 19.2%, self with a percentage of 34.6% and Others has the least percentage with 7.7%. Majorities (87.5%) of the respondents belong to one association or the other, while (12.5%) of the respondents said they did not belong to any association. The results revealed that majority (75%) of the respondents are engaged in other occupation while (25%) did not engage in other occupation except farming. It can also be inferred from the table that majority (53.8%) of the respondents cultivates land ranges from (1-10), while respondents that cultivates (11-20), and (21-30) hectare of land accounted for 35.6% and 10.6% respectively.

Table 1: Socio-economic Characteristics of the Respondents

Variable	Frequency	Percentage
Gender		
Male	73	70.2
Female	31	29.8
Total	104	100
Religion		
Christian	40	38.5
Islam	53	51.0
Traditional	11	10.6
Total	104	100
Age		
18-25	20	19.2
26-33	41	39.4
34-41	25	24.0
42-49	13	12.5
50-57	05	04.9
Total	104	100
Marital status		
Single	25	24.0
Married	60	57.7
Divorce	11	10.6
Widow/Widower	08	07.7
Total	104	100
Members of association		
No	13	12.5
Yes	91	87.5
Total	104	100
Level of Education		
No formal education	21	20.2
Adult education	34	32.2
Primary education	22	21.2
Secondary education	18	17.3
Tertiary education	09	08.7
Total	104	100
Years of farming		
1-10	62	59.5
11-20	33	31.6
21-30	06	05.9
31-40	03	03.0
Total	104	100
Source of Labour		
Family	76	73.1
Hired	20	19.2
Others	08	07.7
Total	104	100
Other occupation		
No	78	75.0
Yes	26	25.0
Total	104	100
Hectares of Land		
1-10	56	53.8
11-20	37	35.6
21-30	11	10.6
Total	104	100
Household number		
1-4	18	17.3
5-8	72	69.2
9-12	14	12.5
Total	104	100

Table 2 shows that majority (81.7%) of the respondents strongly agreed that they sourced their information from Contact farmers. This could be attributed to the high level of illiteracy among the respondents as most of them had adult education and primary education coupled with the fact that most of the rural farmers lack basic amenities such as electricity that might be the reason for the to seek

information from contact farmers. (50.0%) agreed that they got their information from extension service. Thirty six percentages (36.5%) of the respondents were undecided with Radio sources. 38.5% disagree with the internet as a source of information and Majority of the farmers in study area strongly disagree with internet as a source of information with percentage of 42.3%.

Table 2: Sources of information among small scale Farmers in Ido LGA of Oyo State

Sources of information	SA F(%)	A F(%)	U F(%)	D F(%)	SD F(%)
Cooperative society	78(75.0)	23(22.1)	01(1.0)	02.0(1.9)	00(0.0)
Television	13(12.5)	26(25.0)	31(29.8)	19(18.3)	15(14.4)
Radio	24(23.0)	27(26.0)	38(36.5)	06(5.8)	9.0(8.7)
Publications	08(7.7)	14(13.5)	36(34.5)	32(30.8)	14(13.5)
Internet	10(9.6)	5(4.8)	05(4.8)	40(38.5)	44(42.3)
Telecommunication	20(19.2)	48(46.2)	21(21.2)	04(3.8)	11(10.6)
Extension services	18(17.3)	52(50.0)	27(26.0)	04(3.8)	3.0(2.9)
Friends and family	34(32.7)	38(36.5)	24(23.1)	06(5.8)	2.0(1.9)
Contact farmers	85(81.7)	09(8.7)	08(7.7)	02(1.9)	0.0(0.0)

Table 3 shows that from this study, myriads of constraints are always encountered by the small-scale farmers' respondents in their quest to access agricultural information for increased production. Various constraints were discovered to militate against information adoption by farmers. Major constraints is Illiteracy with the highest percentage of 81.7%, minor constraint is the factor of

maintaining profit among the small scale farmers with a percentage of 49.0% and culture appeared to be "not a constraint" with percentage of 34.6%. This study shows illiteracy is the most problem faced in the adoption of agricultural information. These results showed some level of literacy among the farmers in the study area.

Table 3: Constraints to adoption of agricultural information by small scale Farmers in Ido LGA of Oyo State

Constraint to adoption of agricultural information	Major Constraint	Minor Constraint	Not a Constraint
	F(%)	F(%)	F(%)
Illiteracy	85(81.7)	14(13.5)	5.0(4.8)
Poor networking signals	45(43.3)	54(51.9)	5.0(4.8)
Financial status	73(70.2)	27(26.0)	4.0(3.8)
Culture	37(35.6)	31(29.8)	36(34.6)
Inadequate electricity supply	67(64.4)	22(21.2)	15(14.4)
Maintaining Profit	47(45.2)	51(49.0)	6.0(5.8)
Lack of knowledge and skill	56(53.9)	36(34.6)	12(11.5)
Road Network	33(31.7)	49(47.1)	22(21.2)
Insufficient extension agents	48(46.2)	45(43.3)	11(10.5)
Government Policy	64(61.6)	28(26.9)	12(11.5)
Lack of credit and loans	83(79.8)	18(17.3)	3.0(2.9)

Table 4 shows how factors were used to determine the benefits of agricultural information infrastructure. Majority of respondents (63.5%) in study area agreed that increased production is a very beneficial factor in respect to benefit of agricultural information infrastructure. From the table, it is revealed that profit maximization is ranked as a beneficial factor of information infrastructure by

forty eight per cent (48.0%) of the respondents in the study area. It was also revealed that agricultural information infrastructure is slightly beneficial in terms of travel cost and latest technology with (45.2%) and (45.2%) respectively. Additionally, a proportion of farmers (15.4%) stated that agricultural information is not beneficial on the use of farm machineries and travel cost.

Table 4: Benefits of Agricultural Information Infrastructure to small scale Farmers in Ido LGA of Oyo State

Benefits of agricultural information infrastructure	Not Beneficial	Slightly Beneficial	Beneficial	Very Beneficial
	F(%)	F(%)	F(%)	F(%)
Management Decision	15(14.4)	4.0(3.8)	42(40.4)	43(41.3)
Market information	1.0(1.0)	27(26.0)	41(39.4)	35(34.0)
Credit and loans	8.0(7.7)	10(9.6)	28(26.9)	58(55.8)
Farming methods	6.0(5.8)	28(26.9)	45(43.3)	25(24.0)
Pest and disease control	12(11.5)	25(24.0)	31(29.8)	36(34.6)
Use of farm machines	16(15.4)	40(38.5)	23(22.1)	25(24.0)
Weather Conditions	8.0(7.7)	47(45.2)	35(33.7)	14(13.5)
Travel Cost	16(15.4)	47(45.2)	28(26.9)	13(12.5)
Latest technology	12(11.5)	47(45.2)	23(22.1)	22(21.2)
Profit Maximization	11(10.6)	9.0(8.7)	50(48.0)	34(32.7)
Increased production	4.0(3.8)	6.0(5.8)	28(26.9)	66(63.5)

Table 5 shows that majority of respondents' (35.6%) chose Etisalat as the most preferred information infrastructure. It can be deduced that this is as a result of favourable networking signal and also favourable tariff plan in which the network provider has provided to respondents in the study area, others are MTN(34.6%),(23.1%) and (19.2%) respectively. The study further revealed more

preferred information infrastructure as GLO network with (37.5%) which is followed by AIRTEL (29.8%), MTN (26.0%) and Etisalat with (16.3%). MTN emerged as the preferred information infrastructure of the respondents in research area with (51%). Lastly not preferred information infrastructure appeared to be Etisalat with 36.5%, this result is due to the factor

fluctuations in the service of network provider, since it very necessary for individual farmers to

have to the network services at situations when it is needed.

Table 5: Preference of adopted information infrastructure by small scale Farmers in Ido LGA of Oyo State

Adopted information Infrastructure	Not Preferred	Preferred	More Preferred	Most Preferred
	F(%)	F(%)	F(%)	F(%)
MTN	4.0(3.8)	53(51.0)	27(26.0)	20(19.2)
GLO	14(13.5)	15(14.4)	39(37.5)	36(34.6)
AIRTEL	17(16.3)	32(30.8)	31(29.8)	24(23.1)
ETISALAT	38(36.5)	12(11.5)	17(16.3)	37(35.6)

The table below reveals that at 5% level of significance, gender ($x^2=0.986$), education ($x^2=28.518$) and members of farming association ($x^2=9.969$) has no significant relationship on adoption of information infrastructure, while age ($x^2=248.40$), marital status ($x^2=44.592$) and

farming experience ($x^2=182.115$) has a significant relationship on the adoption of information infrastructure. This implies that gender, education and members of farming association do not have effect on the adoption of information infrastructure among small scale farmers in Ido LGA.

Table 6 HO₁: Chi- square analysis on Relationship between some selected socio-economic characteristic and information infrastructure of respondents in the study area.

Variable	X^2 - value	P-value	Decision
Gender	0.9777	0.986	NS
Marital status	44.592	0.007	S
Age	248.40	0.001	S
Education	28.518	0.239	NS
Member of farming association	9.969	0.126	NS
Farming experience	182.115	0.003	S

NS=Not Significant at 0.05; S= Significant at 0.05

The table below shows that at 5% level of significance, there is a significant relationship between the sources of information and preference of adopted information infrastructure in the study area. This implies that the source of information has

effect on the preference/choice of adopted information infrastructure among respondents in the study area.

Table 7: PPMC Analysis On relationship between the source of information of respondents in the study area and Preference of Adopted information infrastructure in the study area

Variable	r- value	P-value	Decision
Sources of information and Adopted information infrastructure	0.209	0.033	S

DISCUSSION

The result is in line with Sokoya *et al* (2012) who stated that agriculture is generally regarded in Africa as an occupation for men. The low presence of women in Agriculture in Ido was similar to the findings of Odewale (1995) who noted that only about a quarter of farmers sampled were female. The result also agreed with the findings of Akinbile, (2007) who states that marriage confers responsibility. This showed that most of the respondents were family men and women who require family income to cater for their families. Zijp, (2003) pointed that radio has become a valuable medium of communication and dissemination of information, as well as for training and education for broad segments of rural communities.

However in many countries, the developed communities (developed areas) have gone into intricate networks and information superhighways whereas the indigenous communities of (under-developed areas) have not heard of computers and Internet (Rajjora 2002). Okigbo (1998) also reported that there was a strong positive correlation between the level of farmers' education and their ability to meaningfully utilize ICT for agricultural development. The problem of agricultural development highlighted in Rilwani and Gbakeji (2009) include technological development, inconsistency, government policies, low level of investment, cropping systems and Market imperfection.

Mobile telecommunications technology can help deliver prices and trading information (Aker, 2008).

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Baye et al. (1999) observed that mobile services can facilitate transactions by connecting farmers with various buyers and traders. It can help them in deciding where and what price to sell their produce, and can reduce search costs associated with locating outlets (Abraham, 2007). This in turn will have increased efficiency, increased yields and reduced wastage and have an overall positive effect on farmer.

CONCLUSION

From the study, it could be concluded that, the sources of information to small scale farmers were from cooperative societies, television, radio, publications, internet, extension workers, families and friends and Contact farmers. It was also observed that the factors militating against the information delivery were illiteracy, poor network signals, financial status, culture, inadequate electricity, road network, insufficient extension agents, government policy and lack of credit and loans in the study area.

Recommendations

Based on findings, it is recommended that effort should be made to incorporate information infrastructure in all endeavours related to agricultural development. Awareness should be generated among young and middle-aged farmers about availability of information infrastructure services in order to increase farmers' participation in information infrastructure initiatives. Strong interfaces should be developed at village level so that the problem of computer illiteracy among farmers may be resolved.

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