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IMPACT OF INFORMATION ON IMPROVED TECHNOLOGIES ON THE PRODUCTIVITY OF SMALL-SCALE FARMERS IN KWARA STATE

Saka, Z. T.^{1*} and Ambali, O. Y.¹

¹Department of Agricultural Economics and Extension Services, Kwara State University, Malete, Nigeria.

*Corresponding author: temitopesk@gmail.com

ABSTRACT

Low productivity and income of farmers has been ascribed to lack of adequate information and low utilization of improved technologies among small-scale farmers in Nigeria. Therefore, this study assessed the impact of information on improved technologies on the productivity of small-scale farmers in Kwara State. A three-stage random sampling technique was used to select 120 respondents. Data were collected through structured questionnaires and analysed using descriptive and inferential statistics. The study showed that the use of extension agents as a source of information on improved technologies was ranked first (mean= 3.56), and herbicides were found to be the most used among the selected improved technologies (mean = 3.63). Age, education, farming experience, and membership of a cooperative society were identified to be positively significant as factors determining the source of information used by farmers in accessing improved technologies at 5% level. The use of improved technologies had a positive and significant effect on the productivity of farmers. Inadequate capital (46.7%), illiteracy (35.0%) and poor access to improved technologies (29.2%) were severe constraints hindering the usage of improved technologies. Therefore, it is recommended that Agricultural programs should be aired in the local languages of farmers, for better understanding of information passed on technologies and practices.

Keywords: Information, Improved technologies, Productivity, Small-scale farmers

INTRODUCTION

Agriculture plays a crucial role in the economy of developing countries with most of the population deriving their livelihood from the agricultural sector. Access to agricultural information plays a pivotal role in facilitating and enhancing the progress of agriculture and consequently determining the degree of productivity (Ndimbwa *et al.*, 2020).

The adoption of technological innovations in agriculture has garnered significant attention among development economists as it offers opportunities to increase production and productivity. Technological advancements in agriculture have the potential to revolutionize farming methods, improve farmers' access to marketing information, and ultimately enhance farm productivity. The adoption of innovative agricultural technologies can have a

transformative effect on the lives of farmers in developing countries (Khanal *et al.*, 2020).

The adoption of novel agricultural methods relies on the accessibility of information pertaining to such agricultural methods. For an innovation to be embraced, farmers must be educated about its existence, application, and effects on their overall productivity levels. Agricultural information plays a transformative role in enhancing farmers' capabilities and agricultural outcomes as it serves as a catalyst for economic growth through improved agricultural productivity

Before the advent of modern information technology, farmers depended exclusively on extension agents and fellow farmers for acquiring agricultural knowledge. However, this source of information had a notable drawback in terms

of the disparity between the number of farmers and available extension agents, as well as concerns regarding the reliability and credibility of information received from other farmers.

Numerous studies have emphasized the importance of access to timely and relevant information for small-scale farmers in improving agricultural practices and enhancing productivity. One of such studies was the study carried out by Kelil, Girma and Hiruy (2020) in Africa, where they observed that insufficient rural information access is a key factor that has incredibly restricted farming headway in Africa. As such, prosperity in the sector significantly depends on smallholder farmers' ability to access, acquire, and use reliable agricultural information (Ndimbwa *et al.*, 2019). Although there have been numerous advancements in information technologies and the availability of agricultural knowledge from various sources, smallholder farmers are not experiencing the full impact of these improvements.

For Nigeria farmers to compete effectively with farmers in other countries, there is a need to have adequate information and proper knowledge of improved technologies since the significance of information cannot be over emphasized on modern agriculture.

Therefore, the main objective of this study was to address the knowledge gaps that still exist concerning the effect of information on improved technologies on the productivity of small-scale farmers in Kwara state. The specific objectives were to:

1. Measure the level of usage of improved technologies among small-scale farmers.
2. assess the sources of information available to the farmers in the study area,
3. examine the factors affecting the usage of the various sources of information on improved technology.
4. examine the impact of the usage of improved technologies on crop productivity, and

5. identify the constraints that hinder the use of improved technologies.

METHODOLOGY

Study Area: This study was carried out in Kwara State, Nigeria. Kwara State is a state in Western Nigeria, it is located at latitude 8° 30' 0" N, and longitude 5° 0' 0" E (Onyeakagbu, 2021). With a population of about 2.37 million, the State consists of 16 Local Government Areas and has a total land area of about 36,825 square kilometres with a total projected population of 4,719,844 people in 2021, and most individuals work in small-scale farming (NPC, 2022).

The State is bordered to the east by Kogi state, to the north by Niger state, and to the south by Ekiti, Osun, and Oyo states, while its western border makes up part of the international border with Benin republic (Onyeakagbu, 2021). The two main seasons in Kwara State are wet season which span between early April to late October and dry season between November to late March. The annual rainfall ranges from 1000 to 1500 millimetres and the average temperature ranges between 30 and 35 °C (Kwara State Ministry of Environment and Forestry, 2020). **Sampling Procedure:** The sampling procedure involved three-stage sampling techniques; the first stage involved random selection of one (1) Local Government Area from each of the four (4) Agricultural Development zones; Kaiama (zone A), Patigi (zone B), Asa (zone C) and Ifelodun LGA from (zone D). The second stage involved random selection of twelve (12) farming communities; with three communities randomly selected from each (LGA). Third stage involved the random selection of ten (10) respondents from each of the selected farming communities. The sample size covered a total of 120 respondents.

Data Collection: The data used in this study were mainly primary data, collected through a well-structured questionnaire and supplemented with oral interviews with the respondents. Variables measured include socio-economic characteristics, sources of information on improved technologies, impact of

improved technologies on productivity. Information on constraints affecting the use of different sources of information were also obtained.

Data Analysis: Data obtained were analysed using descriptive and inferential statistical tool. The level of usage of improved technologies and sources of information on improved technologies were analysed using the descriptive statistics while a 5-point Likert Scale was used to measure the constraints hindering the usage of improved technologies. Multinomial logit model was used to examine the factors affecting the usage of the various sources of information on improved technologies.

The model is specified below:

$$Y_t = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, e)$$

Where:

Y_t = Sources of information on improved technology (t = number of information sources)

X_1 = Age of respondent (years)

X_2 = Household size (number)

X_3 = Educational status of respondent (years)

X_4 = Farming experience (years)

X_5 = Sex (1=if male, 0= female)

X_6 = Marital status (1=if married, 0=if otherwise)

X_7 = Cooperative membership (1=if yes, 0=if otherwise)

X_8 = Primary occupation (1=if farming, 0=if otherwise)

e = error term

Impact of usage of improved technology on productivity of farmers was analysed using analysis of variance (ANOVA).

RESULTS AND DISCUSSIONS

Socio-economic characteristics of respondents: The socio-economic characteristics of respondents are presented in Table 1. The distribution of the respondents by gender shows that, 65% of the sampled respondents belong to the male gender group while the remaining 35% were from the feminine gender group. This shows the dominance of male in the study area.

The distribution of respondents based on their age indicates that 43.3% of the respondents were found to belong to the active agricultural age group of 41-50 years. This is a good indication as most of the captured respondents are still actively involved in agriculture. This differs from the findings of Afodu *et al.*, (2021) who found that 30-39 age group were the active age where youthful energy permits people to exert a lot of agility on the farm and are most likely to adopt technologies.

It was discovered that only 15% of the respondents were single, 52.5% were married which is the most captured marital status in the study area.

The educational background of the respondents revealed that majority (45%) of the population had primary school certificate as their highest level of education, 33.3% had secondary education and 21.6% of the respondents were with no formal education. This is in line with the findings by Sennuga *et al.*, (2020) who stated that respondents obtained the basic education required for better understanding and ability to embrace new technologies.

In relation to the household size, majority of respondents (71%) were found to have a household size of 1 – 10 persons. Large household size is an indication that family labour is readily available.

The occupation prevalent in the study area was found to be farming as 54.2% of the respondents were actively involved in farming as their primary occupation. 7.5% of the respondents were found to involve in activity other than farming, trading and civil service. The involvement of the respondents in farming activity was grouped into major and minor. Respondents' majoring in farming is 54.2% while 45.8% minor in farming activities.

Larger proportion (71%) of respondents had 1 – 10 years of farming experience while only 14.2% had above 20 years of farming experience. About 49.2% of the respondents belong to a cooperative society while 50.8% of the respondent were non-member of a cooperative society. This shows that majority of the respondents didn't belong to a cooperative society even though farming is their major

occupation and are actively involved with farming as their primary occupation.

Level of Usage of Improved Technologies: The types of improved technologies selected for the purpose of this research were improved seeds, fertilizer, herbicide, tractor, irrigation, zero tillage and spacing technique. From the result obtained from the study, it was observed that the use of herbicide ranked first with a mean of 3.63 in their usage by farmers in the study area. It was discovered that 65.8% of the farmers were found to always use the technology in their farming activities with only 0.8% of the farmers acknowledging their non-usage of herbicide in their farming operations.

The use of improved seed ranked second with a mean of 3.43 based on the farmers' usage of the technology, no farmer was found not using improved seeds on their farm. 42.5% of the farmers agree to always using improved seed in their farming operations. This might be because of the level of work that have been implemented in the development of the seeds, which might make the seeds to be disease resistance, and 57.5% of the farmers agreed to the occasional usage of the improved seed technology as a part of their farming operation. No farmer was also found to be rarely using improved seeds technology.

Spacing technology with a mean value of 3.22 ranked third on the farmers usage of the technology in the study area. 46.7% of the farmers agreed to always using the technology, while 4.2% agreed to rare usage of the technology. Use of fertilizer was ranked fourth with a mean value of 2.64, 25% of the respondents agreed to always use the technology on their farms, while 37.5% of the farmers rarely use fertilizer.

The least used of all the selected technology was the irrigation method which had a mean of 2.05, with farmers as high as 59.2% agreeing to the rare usage of the technology. This might be because of the capital outlay involved in the acquisition of the technology and the high maintenance cost accompanying the usage of the technology.

Sources of Information on Improved Technologies Available to Farmers

The information source sometimes determines the credibility, reliability and acceptance of the information. And it is a common belief that information is life, without information, live seizes to exist. Information is needed to make decisions on farm operation and information is also the fuel of development. Farmers adopting improved technologies and practices typically rely on information sources before their adoption; their choice is motivated either by the perceived quality of the information or by the trust they have in the source.

For the course of the study, the information sources selected are radio, television, newspaper, mobile phones, Extension agents (EA), family/friends and other farmers. These are not the only information sources, but these were selected based on the scope of the study.

From the result in Table 3, the use of Extension agents ranked first as majority of farmers; about 65% make use of this medium as a source of information on improved technologies. The high percentage of farmers who make use of extension agents could be because of the ability of these farmers to have face-to-face contact with this source of information. This indicates that other respondents preferred to exchange agricultural information within themselves and via direct contact with extension officers. Such finding implies that still, the methods used by some of the farmers are ineffective because it takes time for agriculture information to spread from farmer to farmer, and also original information can be altered during the process of passing it from the first person to the last one, also, agricultural information can reach to users as secondary or passive and that can affect the quality of the intended message from the source. This could also be attributed to the fact that no cost implication is involved in using this source of information.

The use of other farmers ranked second with 72.5% of the respondents agreed to always using fellow farmers as a source of information. The use of radio ranked 3rd with about 70.8% of the farmers agrees to

always using this medium in getting information on improved technologies.

Factors Influencing Usage of Information Sources on Improved Technologies: To identify the determinants of usage of information sources, multinomial logit model was fitted to determine farmers' preference of one information source over another. According to the model, the decision to choose a particular information source were determined using their socio-economic characteristics such as sex, age, marital status, educational level, household size, level of involvement in farming, farming experience and membership of cooperative society. Further analysis to determine the proportion of the effect of the factors on the usage of the information sources was provided by analysing the marginal effects.

The sources of information available to the farmers were grouped into five:

- Electronic media which consist of radio and television,
- Mobile phone,
- Extension agents and,
- One-on-one interaction which consists of family/friends and other farmers,
- Print media: Newspaper as base outcome.

As shown in the multinomial logit result presented in Table 4, four socio-economic characteristics (age, education, farming experience, cooperative membership) were significant factors influencing choice of information source on improved technologies.

To begin with, age of the farmers had a negative and significant effect on the usage of electronic media and negatively significant for mobile phones as a source of information on improved technologies at 5%. The negative coefficient of age indicates that the probability of using mobile phone as a major source of information on improved technologies decreases with age relative to the base category at 0.15% based on the result of the marginal effect presented in Table 4. This implies that younger

farmers are likely to prefer use of mobile phones as source of information on improved technologies.

On the other hand, the negative coefficient indicates that age reduces the probability that respondents would remain in category 1 (electronic media). This implies that the probability of older farmers using electronic media reduces with age at 3.6% as obtained from the marginal effect result. This could be attributed to the fact that as age increases; a farmer's planning horizon shortens, making the farmer less likely to spend time and/or money searching for information about new technologies.

Duration of farming experience is negatively significant to the usage of mobile phone and one-on-one interaction with other farmers at 5% as sources of information on improved technologies. The result of the marginal effect indicates that farming experience reduces the probability of using mobile phone at 0.13% and one-on-one interaction at 0.09% relative to the base category. This could be attributed to the fact that the longer the farming experience, the less farmers search for information on improved technologies since they are adapted to the old ways of doing things and it is possible that as experience with improved farming technology increases, the utility from improved technology information-source use decreases, given that information had already been acquired through experience.

Education of farmers had a positive impact on the usage of all the sources used in acquiring information about improved technologies at 5%. Years of formal education attained by respondents increased the probability of using all the available sources of information on improved technologies relative to the base category. This implies that farmers with higher level of education are more likely to use electronic media, print media and mobile phone as major sources of information. On the other hand, farmers with low level of formal education are less likely to select the mentioned sources instead they would prefer to use extension agents and other farmers as major source of information on improved technology.

The result of the current research reveals that farmers with higher education level tend to use different sources in accessing information on improved technology. This goes in line with the findings of Yakubu *et al.*, (2019) who posit that western education facilitates the adoption of modern technologies and improved farm practices. Therefore, farmers with higher levels of education are more likely to make informed decision on improved technologies in order to boost their production.

The positive coefficient of membership of cooperative society increases the probability of using any of the sources of information on improved technologies at 5% significance level. Being a member of cooperative society increases the probability of using mobile phone, extension agents and one-on-one interaction with other farmers. This could be attributed to the fact that Cooperative is regarded as an instrument for socio-economic transformation. Agricultural cooperatives are also responsible for educating farmers on how to enhance their productivity and subsequently farmers' income. In view of this, they educate farmers on the invention of new improved technologies. It also increases farmers' awareness of improved technologies and consequently increases their search for information on improved technologies to boost their productivity.

Impact of Improved Technologies on Productivity:

The productivity of the farmer in relation to their level of usage of improved technologies was measured with analysis of variance. The farmers were placed in the respective groups based on their level of usage of improved technologies.

The result indicates a change in the level of output of the productivity of the farmers across the groups based on their level of usage of improved technology.

From the result presented in Table 7, the low and medium users of improve technology were found to have similar outputs with the high users having the highest output. The implication of this result is that

the output of the farmers using improved technologies the least is lowest when compared with the output of the medium and high users though the difference in the output of the medium and low users was not high enough to cause a significant difference at $p < 0.05$.

From the result, the use of improved technologies in the farm practices of the farmers enhance production. This is evident in the mean output of the various production groups. This shows the relevance of advances made in the invention of improved technologies on the productivity of the farmers in the country.

Constraints Hindering Usage of Improved Technologies: Different constraints were faced by farmers while accessing improved technologies but a few of these were selected for the purpose of this study which were illiteracy of farmers, insufficient capital, poor access to improved technologies, lack of technical know-how and adaptability of improved techniques to the local environment. The constraints were ranked according to the mean value.

From the result presented in Table 5, it was observed that the major challenge faced by the respondents in the use of improved technologies was inadequate capital with mean of 4.26. This constraint was ranked 1st, about 46.7% of farmers strongly agreed to the severity of this constraint while just 2.5% strongly disagree to the severity of insufficient capital as a constraint hindering the usage of improved technologies. This corresponds with the findings of Okonji and Awolu (2020) who reported that inadequate capital constituted a very serious constraint to accepting improved technologies in maize production.

Illiteracy of farmers ranked second with mean of 4.15 with about 35% of farmers strongly agreed to the severity of illiteracy among the rural farmers as a constraint hindering the use of improved technologies and about 5.8% disagreed to the severity of illiteracy.

About 29.2% of farmers strongly agreed to the severity of poor access as a major factor hindering the usage of improved technology.

Constraints Hindering the Usage of the Various Sources of Information: From the survey, seven (7) problems were identified; the constraints were ranked based on their mean value. The identified constraints include cost of accessing information, poor radio and television signal, inadequate to lack of rural electricity, odd hours of agricultural information aired on the radio and television, language of presentation, problem of reliability of information source and inability to read and write. Five-point Likert scale was used to determine the relative severity of each of the identified constraints. From the results presented in Table 4, illiteracy of farmers ranked 1st with a mean value of 3.83 among the identified constraints. About 22.5% of farmers consider illiteracy as very severe constraints while majority of respondents 35.8% consider this as not severe. This probably affected their decision in sourcing information from printed media since no newspaper presents agricultural information in local languages understood by the farmers.

The problem of inadequate rural electricity ranked 2nd with mean value of 3.80, about 32.5% of farmers consider this constraint as very severe while 25.8% consider it as a severe constraint. About 31.7% of respondents identified this as mildly severe while 9.2% agreed to the non-severity of this constraint. Erratic power supply experienced by the farmers in the study area could be a big handicap to the effective utilization of mass media and electronic media by farmers. This outcome explains the constraints faced by farmers in accessing information from mobile phone, television and radio as majority of the farmers complained of no electricity to charge their mobile phones or watch agricultural programs on television set.

The cost of accessing information ranked 3rd with a mean value of 3.48 on the scale of severity. It was observed that about 28.3% of farmers consider the cost of accessing information as a very severe constraint while 18.3% respondent identified this as severe constraints. This probably influenced their decision of which medium to use in seeking information about improved technologies. This

explains why majority of the farmers prefer extension agents to other sources of information since no cost implication is involved in using this medium.

Therefore, level of education, inadequate to lack of rural electricity and inadequate fund were identified to be the major constraints faced by farmers in accessing agricultural information on improved technologies.

CONCLUSION

Based on the outcome of the research it can be concluded that the adoption of improved technologies has a beneficial and substantial effect on productivity, although the magnitude of this impact is directly related to the extent to which these improved technologies are employed.

From most of the sampled respondents primarily depend on extension agents for information on improved technologies. This is because media broadcasts and publications do not generally present information in local languages spoken by rural farmers. The study identified capital, illiteracy and poor access to improved technologies as major setbacks hindering the usage of improved technologies.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

Agricultural programs should be aired in the local languages of farmers, for better understanding of information passed on technologies and practices. It is also recommended that farmers should be motivated to form agricultural societies; this will help address the problem of insufficient fund faced by farmers in accessing improved technologies.

Government should make effort to address the technological needs of the rural farmers by providing improved technologies to farmers at subsidized rate. This will greatly improve the productivity of farmers and consequently their overall standard of living.

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Table 1: Socioeconomic characteristics of the respondents

Characteristics	Frequency	Percentage
Sex		
Male	78	65
Female	42	35
Age (Years)		
21 - 30	9	7.5
31 – 40	34	28.3
41 – 50	52	43.3
>50	25	20.8
Marital status		
Single	18	15
Married	63	52.5
Widowed	21	17.5
Divorce	18	15
Education status		
No formal education	26	21.6
Primary education	54	45
Secondary education	40	33.3
Household size		

1 – 10	71	59.2
11 – 20	40	33.3
>20	9	7.5
Primary occupation		
Farming	65	54.2
Trading	25	20.8
Civil servant	21	17.5
Others	9	7.5
Level of involvement in farming		
Major	65	54.2
Minor	55	45.8
Farming experience (years)		
1 – 10	71	59.1
11 – 20	32	26.7
>20	17	14.2
Membership of cooperative societies		
Yes	59	49.2
No	61	50.8
Total	120	100

Source: Field survey, 2016

Table 2: Level of usage of improved technologies

Improved Technologies	Always Freq. (%)	Occasionally Freq. (%)	Rarely Freq. (%)	Not at all Freq. (%)	Mean	Rank
Improved seeds	51 (42.5)	69 (57.5)	0 (0.0)	0 (0.0)	3.43	2 ND
Fertilizer	30 (25.0)	31 (25.8)	45 (37.5)	14 (11.7)	2.64	4 TH
Herbicide	79 (65.8)	38 (31.7)	2 (1.7)	1 (0.8)	3.63	1 ST
Tractor	24 (20.0)	30 (25.0)	55 (45.8)	11 (9.2)	2.55	5 TH
Irrigation	5 (4.2)	20 (16.7)	71 (59.2)	24 (20.0)	2.05	7 TH
Zero tillage	15 (12.5)	40 (33.3)	48 (40.0)	17 (14.2)	2.44	6 TH
Spacing	56 (46.7)	47 (39.2)	5 (4.2)	12 (10.0)	3.22	3 RD

Source: Field survey, 2016.

Table 3: Sources of information available to farmers

Source of information	Always Freq. (%)	Often Freq. (%)	Rarely Freq. (%)	Not at all Freq. (%)	Mean	Rank
Friends/family	69 (57.5)	30 (25.0)	9 (7.5)	12 (10.0)	3.30	4 TH
Television	32 (26.7)	48 (40.0)	3 (2.5)	37 (30.8)	2.63	6 TH
Newspaper	16 (13.3)	25 (20.8)	23 (19.2)	56 (46.7)	2.01	7 TH
Other farmers	87 (72.5)	11 (9.2)	2 (1.7)	20 (16.7)	3.38	2 ND
Extension agents	78 (65.0)	30 (25.0)	9 (7.5)	3 (2.5)	3.56	1 ST
Radio	85 (70.8)	11 (9.2)	5 (4.2)	19 (15.8)	3.35	3 RD
Mobile phones	46 (38.3)	26 (21.7)	8 (6.7)	40 (33.3)	2.65	5 TH

Source: Field survey, 2016.

Table 4: Multinomial logit estimation result for factors influencing usage of information sources

Characteristics	Category 1 (electronic media)		Category 2 (mobile phone)		Category 3 (extension agents)		Category 4 (one-on-one interaction)		Base outcome
	Coefficient (marginal dy/dx)	z	Coefficient (marginal dy/dx)	z	Coefficient (marginal dy/dx)	z	Coefficient (marginal dy/dx)	z	
Sex	1.4162 (0.2013)	1.76	0.0062 (0.1375)	0.01	0.5771 (0.0245)	0.78	0.3216 (0.0087)	0.35	-2.3211
Age	-0.2055** (-0.0363)	2.00	-1.0230** (-0.0015)	- 2.79	0.0205 (0.0249)	0.28	-0.0584 (-0.0009)	- 0.69	-0.8554
Marital Status	-0.0809 (-0.1317)	-1.08	0.5575 (0.0190)	1.07	0.1192 (0.0965)	0.23	0.9109 (0.0235)	1.40	-1.5067
Education attained	0.6000** (0.0257)	-1.86	0.3718** (0.0344)	- 1.17	0.7724** (0.0722)	- 2.43	0.7685** (0.0152)	- 1.97	-2.5127
Household size	0.0529 (0.0048)	0.56	-0.0084 (-0.0117)	- 0.09	0.0715 (0.0099)	0.78	0.0759 (0.0024)	0.66	-0.1919
Involvement in farming	0.1268 (-0.0967)	0.18	0.9892 (0.1229)	1.31	0.5239 (0.0067)	0.73	1.6461 (0.0529)	1.42	-3.2860
Farming experience	-0.0359 (-0.0052)	-0.45	-0.0101** (-0.0013)	- 0.12	-0.0468 (-0.0084)	- 0.61	-0.1632 (-0.0099)	1.88	0.2560
Membership of cooperative	0.4599 (0.0469)	0.64	0.5468 (0.0294)	0.75	1.0299** (0.0958)	1.45	2.0544** (0.0829)	2.14	-4.0910

Source: computed from field survey, 2016The reference category is newspaper
LR χ^2 (32) = 87.76** Regression is significant at 5%
Probability > χ^2 = 0.0000Number of observations=120
Log likelihood = -143.80059Pseudo R^2 = 0.2338**Table 5:** Impact of improved technology on the productivity of farmers

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	4.588E11	2	2.294E11	38.839	.000
Within Groups	6.911E11	117	5.907E9		
Total	1.150E12	119			

GROUP	OUTPUT
Low users	141750 ^a
Average users	186750 ^a
High users	316570 ^b

Source: computed from field survey, 2016Outputs group with different superscripts are significantly different at $p < 0.05$ **Table 6:** Constraints hindering the usage of improved technologies

Constraints	SA Freq. (%)	A Freq. (%)	N Freq. (%)	D Freq. (%)	SD Freq. (%)	MEAN	RANK
Capital	56 (46.7)	48 (40.0)	10 (8.3)	3 (2.5)	3 (2.5)	4.26	1 ST
Poor access to improved technologies	35 (29.2)	66 (55.0)	6 (5.0)	6 (5.0)	7 (5.8)	3.97	3 RD
Lack of technical-know-how	30 (25.0)	62 (51.7)	11 (9.2)	7 (5.8)	10 (8.3)	3.79	4 TH
Illiteracy	42 (35.0)	63 (52.5)	8 (6.7)	7 (5.8)	0 (0.0)	4.15	2 ND
Adaptability	21 (17.5)	39 (32.5)	13 (10.8)	28 (23.3)	19 (15.8)	3.13	5 TH

Source: Field survey, 2016.

Table 7: Constraints to the usage of information sources on improved technologies

Constraints	VS	S	N	MS	NS	Mean	Rank
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)		
Cost of accessing information	34 (28.3)	22 (18.3)	0 (0.0)	29 (24.2)	35 (29.2)	3.48	3 RD
Poor radio and television signal	28 (23.3)	8 (6.7)	10 (8.3)	25 (20.8)	49 (40.8)	2.96	6 TH
Inadequate to lack of rural electrification	39 (32.5)	31 (25.8)	1 (0.8)	38 (31.7)	11 (9.2)	3.80	2 ND
Odd hours of agricultural information aired on radio and television	11 (9.2)	17 (14.2)	13 (10.8)	38 (31.7)	41 (34.2)	2.77	7 TH
Language of presentation	22 (18.3)	27 (22.5)	1 (0.8)	16 (13.3)	54 (45.0)	3.13	5 TH
Problem of reliability of information source	19 (15.8)	44 (36.7)	0 (0.0)	32 (26.7)	25 (20.8)	3.46	4 TH
Inability to read and write	27 (22.5)	35 (29.2)	0 (0.0)	15 (12.5)	43 (35.8)	3.83	1 ST

Source: Field survey, 2016.

VS = Very Severe

S = Severe

N = Neutral

MS = Mildly Severe

NS = Not Severe