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Farmers' Perception towards Agricultural Technologies and their Influence on Knowledge-Seeking Behaviour: A Case of Farmers Research Network Project in Singida District, Tanzania

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Abstract:- The study aimed at examined farmers' perception towards agricultural technologies and their influence on knowledge-seeking behaviour. The study was conducted Singida District, Tanzania. Specifically, aimed at determine perceived knowledge adoption on agricultural technologies to improve smallholder farmers livelihood, asses their knowledge seeking behaviour in communities, examine the approaches deployed by farmer research networks in knowledge sharing with the farmers. The study adopted a cross-sectional research design whereby data were collected using a survey questionnaire from 205 respondents including 16 key informants and 18 focus group discussion were involved. Descriptive and inferential analysis were used to study the quantitative data, and content analysis was used to analyze the qualitative data. Farmers' perception was revealed to be a significant predictor of the respondent's likelihood of engaging in knowledge-seeking behavior (p=0.043). This implies that farmers who have a positive perception of the agricultural project are more likely to make use of all the knowledge sources that the project has made available for knowledge sharing, which will aid them in enhancing productivity and agricultural production through the application of the knowledge provided by the project. According to the study, in order to maintain the sustainability of agricultural project technologies, agricultural projects should incorporate agricultural technologies that farmers need in order to increase the knowledge of smallholder farmers.

Keywords:- *Perception, agricultural technologies, knowledge-seeking behaviour, Farmers Research Network.*

I. INTRODUCTION

Smallholder farmers in Sub-Saharan Africa (SSA) cultivate less than 2 hectares of land to feed the urban population and support the national economy (Naab et al., 2017). Many interconnected issues, such as a lack of information about agricultural technologies, a protracted drought, and unsustainable agricultural practices, hinder smallholder farmers in SSA, which includes Tanzania (Mahapatra, 2016). The majority of smallholder farmers do not have access to knowledge and information that could increase agricultural output due to shifting agricultural technologies and climatic conditions, knowledge has emerged as the most critical component of agricultural production (Gebru et al., 2017). Farmers will be able to increase the output of their crops with proper access to knowledge and information. Smallholder farmers seek and share knowledge from social events, farmer's groups, other farmers, input suppliers, extension agents, non-governmental organizations, agricultural exhibition and exchange visit (Tamako et al., 2022). According to Kassem *et al.,* (2021b) defined knowledge as necessary element in the adoption of agricultural technologies. Low production results from agricultural systems that are inefficient and disempowered due to smallholder farmers' lack of knowledge and skill development.

The most crucial factor in increasing the productivity of smallholder farmers is their willingness to seek out agricultural knowledge (Tamako et al., 2022; Mahapatra, 2016). Therefore in order to address agricultural issues, a farmer should seek information from different knowledge sources. Also smallholder farmers must possess the necessary knowledge and information to improve agriculture sustainable and economic benefits (Ume, 2020). Various stakeholders, including projects funded by development partners in Singida District, have introduced various technologies to smallholder farmers who use farmers groups where they can share different knowledge in order to improve food security and nutrition while ultimately minimizing poverty.

Therefore, the study aimed to examine the approaches deployed by farmer research networks in knowledge sharing with the farmers, determine perceived knowledge adoption on agricultural technologies to improve smallholder farmers livelihood and assess the their knowledge seeking behaviour in communities in Singida District. It has been pointed out (Wossen et al., 2017) that development of improved agricultural technologies, transfer to, and adoption by smallholder farmers are critical to improving the productivity, income and ultimately reducing poverty. The adoption of improved technologies also may have positive and significant effects on the welfare of communities (Ayenew et al., 2020).Furthermore; the study tested the hypothesis that the smallholder farmers' perception of agricultural projects does not influences smallholder farmers' knowledge-seeking behavior in the study area.

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This paper is guided by the Theory of Planned Behavior (TPB) which explains individual's intention to engage in a behavior at a specific time and place (Icek Ajzen, 1990). The individual intention is driven by behaviour intentions with the determinant of perceived behaviour control which emphasizes that individual's perception increases when individuals perceive they have more resources and confidence (Ajzen, 1985; Hartwick & Barki, 1994; Lee &Kozar, 2005). Knowledge-seeking behaviour is the most important capital for improving smallholder farmers' production. Individual farmers should seek knowledge from different sources to solve their agricultural problems for sustainable agricultural and economic benefits and smallholder farmers should have relevant knowledge and information to improve agriculture.

II. METHODOLOGY

A. Description of the study area

The study was carried out in Singida District. Singida District is located between 340 and 350 longitudes east of Greenwich and between 30 and 70 latitudes south of the equator. The study area's climate is normally semi-arid, with two distinct seasons: the longest dry season (April to November) and the shorter rainy season (December to March). The average annual minimum temperature is between 15°C and 30°C, and the average annual rainfall is between 600 and 700 mm. There are 225,521 people estimated to live there (URT, 2014). The choice of the study area was based on the presence of FRN project which has been implemented by RECODA, under funding from McKnight Foundation since 2016 to address low agricultural productivity due to inadequate adoption of agricultural technologies by the households on the study area

B. Research design and Procedure

The study adopted a cross-sectional research design which allows both qualitative and quantitative data to be collected at the same time (Creswell, 2012). The reason for choosing this design was based on the nature of the study objectives and its advantage over other designs especially when time and other resources are among the constrains. The sampling unit for the study was the household involving all farmer group members involved in the FRN project. The sampling frame included all group members from 16 farmers groups from 8 villages: Sekoture, Mwakaiti, Mvae, Msimihi, Mdilu, Mughanga, Minyenye and Mtinko. A total of 205 group members from 16 farmer groups were systematically selected in the 8 villages. As defined in Uakarn (2021), Taro Yamane's formula was used to select 205 respondents as shown in Eq 1 and Table 1.

$$n = \frac{N}{1+Ne^2} = \frac{420}{1+420x0.05x0.05} = 204.87 \approx 205 \text{ farmers} \quad \text{Eqn 1}$$

Where,
n = is the optimum sample size, N = Population size,
e = Margin of Error based on 95% confidence level.

Table 1: Number of farmers selected from each group

Wards	Villages	Farmers groups names	Number of group members	Number of farmers selected
Ilongero	Sekoture	Tunaweza	29	14
		Mjindami	21	10
Merya	Mwakiti	Singitu	22	11
		Chapakazi	23	11
	Mvae	Ukombozi	32	16
		Umoja	17	8
		Muungano	35	17
Ikhanoda	Msimihi	Mwitumi	27	13
		Ushindi	39	19
		Uyanjo	33	16
Mwasauya	Mdilu	Mshikamano	31	15
Mtinko	Mughanga	Umoja	28	14
		Muungano	18	9
	Minyenye	Ushirikiano	19	10
		Mshikamano	27	13
	Mtinko	Mchakamchaka	18	9
Total			**420**	**205**

C. Data Collection

The study adopted both qualitative and quantitative approach for data collection. Focus Group Discussion (FGDs) was conducted using four groups making a total of 24 participants. Each of the FGDs comprised 6 participants with slightly more females than males. Data were collected with close-ended and open- ended questions through questionnaire survey, Focus Group Discussion and Key Informant Interview (KII) in which project officer, project facilitator from RECODA and a lead farmer were interviewed using questionnaires, quantitative data were obtained from group members, while qualitative data were gathered through Focus Group Discussion and Key Informant Interview with the aid of FGD guide and checklist of questions respectively.

D. Data Analysis

Data collected using questionnaire were coded and entered in IBM SPSS (version 20). To ensure the quality of data, data cleaning was done. Frequencies, percentages were used describe socio-demographic characteristics of the respondents. Cross-tabulation was used to establish the

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association between farmer's perception and knowledge-seeking behaviour. A binary regression model was used to estimate factors influencing farmer's perception on knowledge-seeking behaviour. The dependent variable knowledge seeking behaviour was measured based on the 3 variables, Frequency, Credibility and Usefulness of use of the knowledge source. Farmers were asked to say the frequency with which they used each knowledge source (10 sources) according to the five point Likert scale (5 = daily, 4 = weekly, 3 = monthly, 2 = seasonally, 1 = yearly, 0 = never). The respondents were also asked to use a better verse the credibility and usefulness of information by the Likert scale (ranging from 5 = very high to 1 = very low). For each knowledge source, the overall scores for the variables of knowledge seeking behaviour were summed up to determine the relative importance of each source. The overall scores for the variables of knowledge seeking behavior were summed up for all knowledge sources and converted into percentages. According to Kassem et al.(2021), average percentages obtained were categorized into two groups: 50 and below were termed as lower knowledge-seeking behaviour, and above 50 were termed as higher knowledge-seeking behavior, which was included in the binary logistic model.

According to Field, (2009) and Kassem et al.(2021b) a binary logistic regression model which was used to analyse the data is presented in equation 2.

$$ln\left(\frac{P_i}{1-P_i}\right) = \beta_i X_i + u_i \text{ ....……..Eq2}$$

Where, Xi is the set of independent variables, βi are coefficients of independent variables, and ui is an error term. Table 2 shows all variables included in the binary logistic regression model. The dependent variable in the model was knowledge-seeking behaviour.

Table 2: Variables included in the model

Variables	Types	Hypothesized Outcome
Knowledge-seeking behaviour of the farmer	Ordinal	+/-
Farmers Perception	Ordinal	+
Sex of the farmers	Nominal	-
Marital status of the farmers	Nominal	+
Number of trainings farmers attended	Scale	+
Age groups of the farmers	Scale	+
Level of Education of the farmers	Ordinal	+

III. RESULT AND DISCUSSION

A. Socio-Demographic Characteristics of the Respondents

The socio-demographic characteristics of the respondents who participated in the study presented in table 3. The findings indicate that middle-aged of respondents made up 59.5% of the sample (41-60 years). This implies that middle-aged of respondents made up the majority of those involved in the project. This implies that most of the farmers who participated in the project were middle-aged. Middle-aged people have greater familial responsibilities than those in their younger years. As the farmer's age increases, the numbers of dependents increase, making them see any agricultural project as an opportunity to acquire knowledge for solving family problem and meeting family needs through agricultural production. The findings indicate that women made up 54.6% of the respondent. Since they can better employ themselves than men can in this field, women make up the majority of the farmers in the study area. .. According to the data, 87.8% of respondents were married. These show that, in comparison to other marriage statuses, the majority of farmers involved in the project were married. Due to their greater manpower than those in other marital statuses, married people must redistribute themselves for various agricultural activities in order to provide for their families' food and other necessities. The findings align with Ringo and Malisa (2020), who found that married farmers employ a larger labor force for agricultural purposes.

Table 3: Socio-demographic characteristics of the farmers (n=205)

Socio-Economic Characteristics		Frequency	Percent
Age of the respondents	18-40 (Youth)	67	32.7
	41-60 (Middle Age)	122	59.5
	61 and above (Elder)	16	7.8
Sex	Female	112	54.6
	Male	93	45.4
Marital status	Single	7	3.4
	Married	180	87.8
	Widowed	9	4.4
	Divorced	9	4.4
Level of Education of the respondents	Not educated	7	3.4
	Primary	179	87.3
	Secondary	17	8.3
	Tertiary	2	1.0

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Further, 87.3% of respondents had only completed their primary education. This implies that farmers with the primary level of education are mostly engaged in agriculture compared to people with other levels of education. Farmers' literacy will help farmers to seek more knowledge concerning agricultural activities to improve production. These findings align with Umeet al. (2020), who reported that farmers' literacy boosts their capacity to utilize information to improve their productivity and production. Specifically, farmers who are more literate will be better able to seek out additional knowledge regarding agricultural activities in order to improve production.

B. Approaches Deployed for Knowledge Sharing

The results presented in table 4 show the various strategies used by farmer research networks in knowledge sharing. Findings indicate that (93.7%) of respondents used demonstration plots as their primary means of exchanging knowledge. This implies that farmers used the demonstration plots as their primary source of information by attending various training sessions provided by implementing organizations. The findings are supported by the result of the FGD, which showed that every project group had demonstration plots for learning by doing.

Table 4: Multiple responses showing approaches deployed for farmers' knowledge sharing (n=205)

Approaches for knowledge sharing	**Responses**		**Percent of Cases**
	n	**Percent**	
Internet approach	69	7.7	33.7
Media approach	55	6.2	26.8
Agricultural extension officers approach	87	9.8	42.4
Agricultural exhibition approach	73	8.2	35.6
Exchange visit approach	137	15.4	66.8
Demo plots approach	192	21.5	93.7
Fellow farmer approach	184	20.7	89.8
Seminar approach	94	10.5	45.9

Demonstration plots in the study area were used to demonstrate and test new agricultural technologies and provide technical information with the farmers. These results are consisted with Kiptot & Franzel (2014) and Tamako et al. (2022), who found that farmers can learn technical skills by taking part in field demonstrations that development organizations host. Using their demonstration plots, the FRN project has trained farmers to use locally accessible resources to learn new agricultural technologies. Farmers can exchange their experience and knowledge for different technologies and practices

The findings show that, 89.8% of the respondents employed the fellow farmers' approach. This indicates that in addition to looking for information from outside sources, farmers also exchanged knowledge with one another. Farmers are more likely to share agricultural knowledge when they engage with other members of their local network. When farmers interact with one another, they observe farms and exchange ideas about how to overcome problems in agriculture. These results are in line with those of Tamako et al. (2022), who noted that farmers engaged in local networking with other farmers to exchange information on how to handle problems related to agriculture.

According to the results, 66.8% of exchange visits used the methods for knowledge sharing. This suggests that in order to exchange knowledge and improve performance in various agricultural practices, farmers were travelling between innovators and farmer groups of innovators. In the course of a FGD, participants claimed that

> *"We visit other better farmers from in villages and better group members who have performed well in agricultural activities to seek knowledge from them" (FGD participants, Sekoture Village, December2021)*

Similarly, Khisa (2003) observed that exchange visits are an effective way to facilitate sharing of ideas and improved agricultural practices among farmers.

C. Farmers' Perception towards Famers Research Network

Table 5 displays the results of the study, which include various statements that were used to gauge farmers' opinions of the FRN project. The project's activities served as the basis for the statements' creation. 62.4% of the respondents agreed that the FRN project offered training on soil conservation, 61.5% agreed that the project offered training on food and nutrition security, 60.0% agreed that the project offered training on postharvest management, and 57.1% agreed that the FRN farmers group assisted in facilitating access to loans and savings.

The findings demonstrate that the farmers in the study area had positive perception of the loans and savings education that was offered. Farmers who received training on savings and loan associations were better able to manage their finances and the loans they obtained from the farmers' group. Farmers' groups became more sustainable as a result of VSLA, which encouraged members to remain united for additional training.

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Table 5: Farmers' perceptions of the FRN project (n=205)

Statements	Agree %	Neutral %	Disagree %
The FRN project provides ready markets for agricultural products	14.1	23.9	62.0
The FRN project helps to produce products with high quality for market	51.2	22.0	26.8
The FRN project helps to provide credit access	9.3	22.4	68.3
The FRN project farmers group helps to provide loans and savings access	57.1	11.2	31.7
The FRN project helps to provide equipment and tools	29.8	25.4	44.9
Extension officers provide updated information through the FRN project	40.5	19.5	40.0
Extension officers provide in-service training through the FRN project	39.5	23.9	36.6
The FRN project provides training on soil conservation	62.4	5.4	32.2
The FRN project provides training on food and nutrition security	61.5	10.2	28.3
The FRN project provides training on postharvest technologies	60.0	10.2	29.8

The findings show that farmers perception of soil conservation was beneficial. This implies that in order to boost agricultural productivity, the farmers had received training on how to adapt to the quickly changing climate. By using resources that were readily available to them locally, farmers who received training on soil conservation were able to lower their production costs. Crop rotation and intercropping are two methods of soil conservation that, when compared to conventional methods, improve the quality of the soil. The outcomes align with the findings of Naab et al. (2017), who found that, in comparison to conventional practices, conservation agricultural practices, crop residue retention, and crop rotation/intercropping maintain higher soil quality.

Regarding food and nutrition security, farmers expressed a favorable opinion about it. This implies that farmers who received training on food security were better able to determine which crops to plant in order to provide all the nutrients needed for their household. Farmer income and food and nutrition security have increased by teaching farmers to intercrop various crops in their fields through FRN projects. Participants in the FGD affirmed the outcome by saying that:

> *"FRN project has trained us to intercrop pigeon peas with maize and lablab to have protein included in our meals to reduce the effect of stunting to our children, not only that but also increasing our income to our families"(FDG participants Msimihi village, December 2021).*

Intercropping crops, farmers can increase their income, diversify their sources of food crops, preserve soil, manage weeds, and meet the nutritional and food needs of their families. Matusso & Mucheru-Muna (2014) made a similar finding, stating that intercropping helps smallholder farmers balance their nutrition, reduce weeds, and improve soil fertility.

Additionally, Table 5 of the results demonstrated that farmers had a favorable opinion of the postharvest management training that was provided to them. Educating farmers on postharvest crop management practices lowers crop losses and improves crop quality, which raises crop values for market. Ikoja-odongo & Ocholla (2003) report, which stated that farmers with inadequate postharvest management cause crop loss and lower-quality crops to be sold at a lower market price.

D. Overall Farmers' Perception of Farmer Research Network

The level of farmer perception of agricultural projects is depicted by the results in Figure 1. According to the findings, 54.1% of the respondents had good perception of agricultural projects. Perceptions among farmers directly impact the sustainability of agricultural projects. The majority of farmers who took part in the FRN project thought favorably of agricultural initiatives.

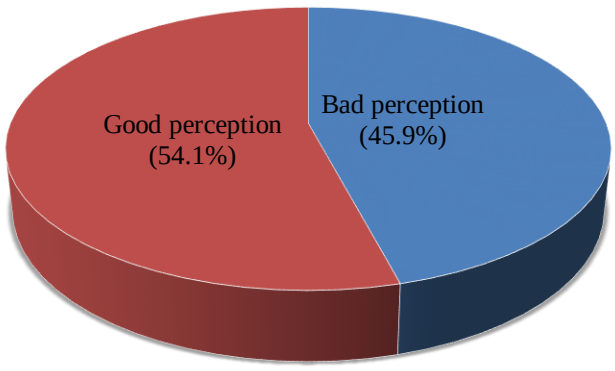

Fig. 1: Overall farmers' perception of the FRN project

E. Knowledge Sources for Smallholder Famers.

The findings presented in Table 6 show the distribution of knowledge sources according to accessibility of knowledge sources utilized by farmers. The results show that the most accessed knowledge source was demonstration plot (47.3%), fellow farmer source (54.1%), and Internet source (33.7%). These indicate that information from demonstration plots, fellow farmers, and internet was easily accessible, making these knowledge sources more utilized more by smallholder farmers than other sources of knowledge. In the project area farmers met weekly increasing knowledge sharing among them. As for fellow farmers, knowledge sharing occurred both when they met in demonstrations during group meetings as well as when they met with fellow farmers in the village, making knowledge source from fellow farmers accounting for more frequencies of access. Internet source was used to get updated knowledge and help farmers to solve the problems that occurred during the adoption of new agricultural technologies. Famers quickly got information about the day to day activities to improve their knowledge and perception regarding agricultural technologies.

Table 6: Accessibility of knowledge sources to smallholder farmers

Knowledge sources	**Never (%)**	**Yearly (%)**	**Seasonally (%)**	**Monthly (%)**	**Weekly (%)**	**Daily (%)**
Internet sources	22.9	0	21.0	17.1	5.4	33.7
Media sources	56.6	3.4	4.9	11.7	12.7	9.8
Extension sources	45.9	14.1	6.3	11.7	14.1	7.8
Exhibition sources	44.9	28.8	22	2.9	1	0.5
Exchange visit sources	42.9	5.9	14.1	35.1	1.5	0.5
Demonstration plots sources	0	0	17.6	33.7	47.3	1.5
Fellow famer sources	0.5	0	54.1	33.7	7.3	4.4
Seminar sources	46.8	28.8	14.6	5.9	2.9	1
NGO sources	**25.9**	**7.8**	**13.7**	**28.8**	**16.6**	**7.3**
Agro vet/ Inputs supplier sources	20.5	10.7	17.1	16.1	20	15.6

The findings presented in Table 7 show the distribution of knowledge sources according to the credibility and usefulness of the knowledge sources utilized by farmers. The findings show that the demonstration plot source credibility and usefulness were higher (65.4% and 62%) respectively, followed by the fellow farmer which recoded higher credibility and usefulness of the knowledge sources (62.4 % and 56.6 %) respectively. These indicate that knowledge obtained from demonstration plot and fellow farmer is highly practical and relevant to famers. Farmers believe in seeing and learning practically the whole process of change. The results are supported by Ume, (2020) who found that a farmer should seek knowledge from different sources to solve agricultural problems for sustainable agriculture and economic benefit, and smallholder farmers should have relevant knowledge and information to improve agriculture.

Table 7: Credibility and Usefulness of knowledge sources

Knowledge sources	**Very low (%)**		**Low (%)**		**Medium (%)**		**High (%)**		**Very High (%)**	
	Credibility	**Usefulness**	**Credibility**	**Usefulness**	**Credibility**	**Usefulness**	**Credibility**	**Usefulness**	**Credibility**	**Usefulness**
Internet sources	**32.2**	**34.1**	**8.8**	**4.4**	**15.1**	**18.0**	**24.9**	**26.8**	**19.0**	**16.6**
Media sources	**60**	**58.0**	**5.9**	**2.9**	**17.6**	**15.6**	**9.8**	**12.7**	**6.8**	**10.7**
Extension sources	**46.3**	**47.3**	**13.2**	**5.9**	**20.5**	**21.0**	**14.6**	**13.7**	**5.4**	**12.2**
Exhibition sources	**44.4**	**43.9**	**6.3**	**3.9**	**22.9**	**28.8**	**10.7**	**16.1**	**15.6**	**6.8**
Exchange visit sources	**44.4**	**44.9**	**7.8**	**4.9**	**18.0**	**29.8**	**21.0**	**18.0**	**8.8**	**2.4**
Demonstration plots sources	**0.0**	**0.0**	**0.0**	**0.0**	**20.0**	**23.4**	**65.4**	**62.0**	**14.6**	**14.6**
Fellow Farmer sources	**0.5**	**1.0**	**0.0**	**0.0**	**21.0**	**26.8**	**62.4**	**56.6**	**16.1**	**15.6**
Seminar sources	**46.3**	**45.9**	**0.0**	**0.0**	**15.1**	**21.5**	**26.3**	**27.8**	**4.9**	**12.2**
NGO sources	**28.3**	**31.7**	**2.9**	**3.9**	**29.8**	**35.1**	**23.4**	**21.0**	**15.6**	**8.3**
Agro vet/ Inputs supplier sources	**22.4**	**21.5**	**2.4**	**2.9**	**30.7**	**40.0**	**35.1**	**31.7**	**9.3**	**3.9**

F. Farmers' Knowledge-Seeking Behavior

The finding presented in table 8 show (54.6%) of respondents in the study area had high knowledge-seeking behavior. This implies that farmers were keen to learn from all of the available knowledge sources. The findings are corroborated by Kaske (2020), who reported that farmers had a great need for agricultural knowledge, which enabled them to accept and employ newly introduced agricultural technologies. Farmers seek knowledge to overcome various agricultural challenges and to acquire good agricultural practices. By reducing risk in production through the use of improved seeds and high-quality agricultural technologies, knowledge seeking helps farmers achieve higher yields.

Table 8: Status of farmers' knowledge-seeking behavior

Level of Knowledge-seeking behavior	Frequency	Percent
Low Knowledge-seeking behavior	93	45.4
High Knowledge-seeking behavior	112	54.6

FRN project has introduced variety of knowledge source where farmers can obtain knowledge from different source. Farmers are well-versed in various agricultural technologies because they have been trained as researchers who study various agricultural technologies. The findings of the FGD, which showed that the project had given farmers the ability to become researchers who study various agricultural technologies to determine which ones should be adopted in their area.

G. Association between Farmers' Perception and Knowledge-Seeking Behaviour

The findings presented in table 9 findings show that there was a significant correlation between farmers' perceptions and their knowledge-seeking behavior (x2 = 6.939, P = 0.011). This implies that farmers who had positive agricultural project technologies were also more likely to behave well when seeking out new information. Perception of agriculture project technologies was substantially correlated with knowledge-seeking from various information/knowledge sources.

Table 9: Cross-Tabulation to show a comparison between farmers' perception and knowledge-seeking behavior

Knowledge seeking behavior	Farmers perception		Chi Squire	Sig
	Bad perception	Good perception		
Low Knowledge seeking behavior	52(55.9)	41(44.1)	6.939	0.011
High Knowledge seeking behavior	42(37.5)	70(62.5)		

Good perception of agriculture project cause farmers to seek information on different technologies offered by the project leading to more knowledge seeking from the farmers. Farmers who possess knowledge are better able to comprehend the reasons behind their use of various farming techniques. The findings showed that research, NGOs, and the experiences of fellow farmers were the primary sources of information for farmers. Researchers, educational institutions, and NGOs are the main sources of scientific knowledge for smallholder farmers, according to Tamako et al. (2022) who found a similar outcome.

H. Influence of Farmers' Perception on Knowledge-Seeking Behavior.

The findings of binary logistic regression indicate that socioeconomic factors, such as farmers' perception and the number of training sessions they have attended, have a significant impact on their knowledge-seeking behavior at the 1 and 5 percent levels, respectively (Table 10). However, the results showed that even at 10%, the number of information sources accessed, the respondent's sex, marital status, age group of farmers, and educational attainment were not significant.

At 5%, the farmers' perception coefficient was positive and statistically significant. The positive sign means that farmers who have good perception are more likely than farmers who have bad perception by 0.667 units. This implies that farmers who have good perception of the agricultural project are more likely to make use of all the knowledge sources that project deployed for knowledge sharing. Therefore enhancing agricultural production by using the knowledge provided by the project to increase productivity and agricultural research. The results align with the findings of Gebru et al. (2017), who found that farmers' perceptions of the agricultural project are important factors that influence their behavior in search of knowledge. The FRN project collaborates with nearby farmers in the village to exchange information and knowledge. The farmer then disseminates this knowledge to the village's community, encouraging the farmers there to adopt agricultural technologies.

Table 10: Binary logistic regression showing the influence of farmers' perception on farmers' knowledge-seeking behavior

Independent Variables	B	S.E.	Wald	df	Sig.	Odds ratio	95% C.I.for EXP(B)	
							Lower	Upper
Farmers perception	0.667	0.330	4.089	1	0.043**	1.948	1.021	3.719
Number of Information sources exposed to	0.027	0.107	0.063	1	0.801	1.027	0.832	1.268
Sex of respondent	-0.224	0.326	0.471	1	0.492	0.799	0.422	1.515
Marital status	0.741	0.499	2.208	1	0.137	2.098	0.790	5.574
Group of farmers age			0.965	2	0.617			
Group of farmers age(1)	-0.220	0.629	0.122	1	0.726	0.803	0.234	2.752
Group of farmers age(2)	0.122	0.606	0.040	1	0.841	1.129	0.345	3.703
Level of education	-0.764	0.524	2.128	1	0.145	0.466	0.167	1.300
Number of training a farmer attended	0.702	0.132	28.274	1	0.000***	2.019	1.558	2.615
Constant	-3.272	1.131	8.369	1	0.004	0.038		

Notes: * is significant at 10%, ** is significant at 5% and *** is significant at 1%

Number of training sessions farmers had attended significantly predicted farmers' knowledge-seeking behavior at p=0.000. The positive sign indicate that farmers attended training have a higher probability of having high knowledge seeking behavior than farmers who did not attending training by 0.702 units This implies that, as farmers increase the number of training session attended they have better understanding of the project and a good perception of the project. Farmers in the project attended various training sessions which required them to adopt the practices/ agricultural technologies they were trained on and apply to their field, leading to more knowledge-seeking behaviour for better performance and adoption of the agricultural technologies introduced to the farmer. Similar results were reported by Kassem & Diab, (2020) and Gebru *et al*, (2017) who reported that farmers performing various agricultural activities have higher knowledge-seeking behavior than farmers involved in single activities. This is because the FRN project has been training farmers to intercrop different crops which require farmers to know how to intercrop them. Training has a direct influence on farmers' perception through an understanding of the project activities leading to more knowledge-seeking behavior of the farmers. Training farmers on specific agricultural technologies tend to influence farmers to seek more information concerning the agricultural technologies increasing knowledge-seeking behavior among the farmers.

Therefore, based on the study findings, smallholder farmers' perception significantly predicted the likelihood of the smallholder farmers' knowledge-seeking behavior. The study hypothesized that the smallholder farmers' perception of agricultural projects technologies does not influence smallholder farmers' knowledge-seeking behavior in the study area..

IV. CONCLUSION AND RECOMMENDATIONS

The study examined farmers' perception towards agricultural technologies and their influence on knowledge-seeking behaviour. Generally, it has been shown that smallholder farmers' knowledge seeking behaviour is influenced by how farmers perceive agricultural technologies introduced by agricultural project. The study also has shown that smallholder farmers with good perception of agricultural technologies introduced are more likely to utilize all possible knowledge sources deployed by the project for knowledge sharing helping them to improve agricultural production in terms of agricultural research, and productivity through the utilization of the knowledge offered by the project. The study has also shown that farmer should seek knowledge from different sources to solve agricultural problems for sustainable agriculture and economic benefit, and should have relevant knowledge and information to improve agriculture.

The study recommends to the government and agricultural sector and development agencies that, for increasing income, agricultural projects must have a component on agricultural technologies that smallholder farmers require for improving their agricultural production. Further, the study recommends that agricultural technologies introduced by the project should be selected in a participatory way to receive positive perceptions from smallholder farmers for more adoption of the technologies and project sustainability.

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