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Socio economic characteristics of farmers using ICT tools for agricultural information in South Gujarat

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Abstract

Agriculture is the mainstay of Indian economy. The 21st century which is well known as "Information Age", is the sphere which influenced by information and who may have can command the world. Agricultural information is an essential aspect that affects all production factors. By providing relevant, reliable and useful information by extension services, research institutions and other agricultural organizations can aid farmers decision making process and effects overall productivity factors, such as land, labour, capital and managerial. ICT in agriculture is an emerging field that aims to boost India's agricultural and rural development. It involves applications of modern innovative and scientific ways that can effective in rural domain. It can deliver on time accurate information necessary for the farmers which facilitates better agricultural output. Keeping this in view, the present paper explores the socio economic characteristics of farmers using ICT tools for agricultural information. The present study was conducted in South Gujarat region. The study covered three districts (Navsari, Valsad and Surat) of South Gujarat. Total 300 farmers were selected for the study and data were collected using structured interview schedule. It was found from the study that majority of the respondent farmers were male in medium age group, possessed graduate degree and had four members in their family having 5 to 10 hectare of land holdings with farming experience of 10 to 15 years and were having agriculture and animal husbandry as a major source of income with annual income of more than five lakhs. The study also revealed that majority of the farmers had received training on ICT and were using ICT tools from last three years. About one third of the farmers were engaged with farmers associations and majority of the farmers were having high level of extension contact, innovative proneness, economic orientation, scientific orientation and medium level of risk orientation.

Keywords: ICT, socio economic characteristics, agricultural information, South Gujarat

1. Introduction

ICT is a broad term that includes any communication device and applications such as radio, television, cellular phones, computer, hardware, software, satellite systems and many more as well as the various services and applications associated such as videoconferencing and distance learning. ICT is the integration of technologies and the processes that conveys the desired information to the target audience and making them more participative in nature by delivering accurate, complete, concise information on time in user friendly language, easy to access and cost effective.

Agricultural information spread awareness among farmers about adoption of new agricultural technologies. Therefore, the existence of robust agricultural information system is a necessity to support agricultural development. Information and Communication Technology plays a key role in agriculture. Farmers have always searched for ways to improve the crop production. Information plays a crucial role in empowering farmers and to improve their livelihoods. Major essential information related to sowing, improving soils, seeking the best price of their produce and tools and techniques to combat pests and diseases have helped the farmer and their decision making capabilities. Information and Communication Technology services provide access to the knowledge, information and technology that farmers require to boost the productivity and to improve the quality of their lives and livelihoods. It is hence essential to deliver farmers the knowledge and information in a quality and timely way.

Farmers have sometime faced difficulties in searching the answers even after many years of experiences in the typical cropping system. Seasonal variability, weather patterns, deterioration in soil conditions and occasional climatic events such as drought, floods, pest and disease outbreaks affects the decision making process of the farmers and that influences the need of on time information.

So, there is a quick need of adoption of vibrant, innovative, scientific and dynamic approach for agricultural development in order to serve farmers better and boost their livelihoods. Further, land and water resources are almost reaching their limits; hence, achieving food security strongly relies on a resource called "Knowledge".

At this juncture, considering the importance of Digital India, a study entitled "A study on socio economic characteristics of farmers using ICT tools for agricultural information in South Gujarat" is proposed. In this background the present study was undertaken with the following objective: A study on socio economic characteristics of selected farmers in the research area.

2. Materials and Methods

The present study was conducted in South Gujarat region. Out of total 7 districts in South Gujarat study covered three districts (Navsari, Valsad and Surat) of South Gujarat. Multistage sampling method was used. In a multistage sampling method the researcher divides the population into groups at various stages for better data collection, management, and interpretation. This method is often used to collect data from a large, geographically spread group of people in surveys. A total of 300 farmers from three districts of South Gujarat were selected randomly for the study. Out of

300 farmers, 100 farmers each were randomly selected from Navsari, Valsad and Surat districts of South Gujarat. 5 farmers from 20 villages were randomly selected from 4 talukas of Navsari district based on their presence and availability. 5 farmers from 20 villages were randomly selected from 4 talukas of Valsad district based on their presence and availability. 5 farmers from 20 villages were randomly selected from 4 talukas of Surat district based on their presence and availability to make the total sample size of 300 farmers. The primary data with respect to the farmers using ICT tools were collected using separate interview schedule. The information gathered were grouped into categories. The frequency of each category was summed up and converted into a percentage and in some parameters respondent wise score was summed up and grouped into three categories based on mean and standard deviation.

3. Result and Discussion

Socio economic characteristics of respondent farmers using ICT tools were studied in terms of their socio economic parameters such as gender, age, level of education, years of farming experience, training received etc. Table 1 shows the distribution of farmers according to their socio economic characteristics.

Table 1: Distribution of farmers according to their socio economic characteristics

(N=300)				
Sr. No.	Characteristics	Category	No. of Farmers	Percentage
1.	Gender	Male	241	80.30
		Female	59	19.70
2.	Age	15 to 25 years	22	7.30
		25 to 35 years	76	25.30
		35 to 45 years	112	37.30
		Above 45 years	90	30.00
3.	Education	Not Literate	30	10.00
		Primary	73	24.30
		HSC	60	20.00
		Diploma	31	10.30
		Graduate	92	30.70
4.	Family Size	Post Graduate	14	4.70
		Two	24	8.00
		Three	46	15.30
		Four	122	40.70
5.	Landholding	Above Four	108	36.00
		Upto 1 hectare	28	9.40
		1 to 5 hectare	74	24.70
		5 to 10 hectare	119	39.80
6.	Farming Experience	Above 10 hectare	79	26.10
		0 to 5 years	47	15.70
		5 to 10 years	68	22.70
		10 to 15 years	101	33.70
7.	Source of income	Above 15 years	84	28.00
		Agriculture	46	15.00
		Service and Agriculture	84	28.10
		Service and Animal Husbandry	49	16.40
8.	Annual income	Agriculture and Animal Husbandry	121	40.50
		1 to 2 lakhs	26	8.70
		2 to 3 lakhs	33	11.00
		3 to 5 lakhs	108	36.00
9.	Training received	Above 5 lakhs	133	44.30
		Yes	193	64.30
		No	107	35.70
10.	Experience in the usage of ICT tools	Last 3 years	133	44.30
		Last 3 to 5 years	88	29.30
		Above 5 years	79	26.40

11.	Social Participation	Farmers Association	94	31.30
		SHGs	30	10.00
		NGOs	16	5.30
		APMC	85	28.30
		Cooperatives	26	8.70
		FPOs	8	2.70
	None	41	13.70	

From the table 1, it was found that majority of the farmers were found to be male (80.30%) followed by female (19.70%). In this regard it could be clearly revealed that men were well aware of ICT tools where as women were lacking in the awareness of ICT as compared to men. Majority of the farmers were in 25 to 45 years of age group (37.3%) followed by above 45 years of age (30.00%), followed by 25 to 35 years of age group (25.30%) and 15 to 25 years of age group (7.30%) in the study area. So, it could be concluded that maximum farmers were in 25 to 45 years of age group in the study area. The probable reason might be due to the fact that migration of young age group to the nearby towns and cities for education and employment leaving behind the old age and middle age people in the villages as they were dependent on agriculture. Majority of the (30.70%) farmers were graduate followed by (24.30%) farmers were with primary education, (20.00%) farmers with HSC education, (10.00%) farmers were not literate and (4.70%) farmers were post graduate in the study area. So, it could be concluded that maximum farmers were graduate in the study area. About (55.00%) of the farmers were having education up to high school indicating that the farmers can take care in solving the routine problems of the farm.

Majority of the farmers were having four member in their family (40.70%) followed by (36.00%) farmers with more than four member in their family, (15.30%) farmers with three member in their family and (8.00%) farmers were with two member in their family. So, it could be concluded that maximum farmers were having four members in their family in the study area. Majority of the farmers had 5 to 10 hectare (39.80%) land followed by famers with above 10 hectare (26.10) land, farmers having 1 to 5 hectare (24.70%) land and (9.40%) farmers were having land upto1 hectare in the study area. So, it could be concluded that maximum farmers were having 5 to 10 hectare land in the study area. The reason might be due to converting of agricultural lands into industries, real estates and ever increasing of population and also due to fragmentation of land holdings from one generation to other. Majority (33.70%) of the farmers were having experience of 10 to 15 years followed by (28.00%) farmers with experience of above 15 years, (22.70%) farmers with 5 to 10 years of experience and (15.70%) farmers had experience upto 5 years. So, it could be concluded that maximum farmers were having experience of 10 to 15 years in the study area. This reason might be due to the fact that majority of the farmers were in middle age group in the study area.

It was also found that most (40.50%) farmers were having agriculture and animal husbandry as source of income followed by (28.10%) farmers' had service and agriculture as their source of income, (16.40%) farmers were having service and animal husbandry as their source of income, (15.00%) farmers were having agriculture as sources of income in the study area. So, it could be concluded that maximum farmers were having agriculture and animal husbandry as source of income in the study area. (44.30%) of the farmers had income of above 5 lakhs annually followed by (36.00%) farmers with

3 to 5 lakhs annual income followed by (11.00%) farmers having income of 2 to 3 lakhs and (8.70%) farmers had income of 1 to 2 lakhs annually in the study area. The reasons might be due to the fact that majority of farmers attributed to non-farm occupation like dairy to support their income. And also existence of families size where numbers of earning member were found in different occupation other than agriculture.

It was also found that most (64.30%) of the farmers had taken training on ICT while (35.70%) farmers had not taken any training on ICT in the study area. This might be due to awareness among the farmers regarding the usefulness of the training programmes and farmers spend their time to participate in the training programmes organized by various institutions. Majority (44.30%) of the farmers had experience of last 3 years while (29.30%) farmers had experience of last 3 to 5 years followed by (26.40%) farmers had experience of above 5 years in the usage of ICT tools in the study area. This reason might be due to the fact that majority of the farmers know how to use the new ICT tools because of majority of the respondents were literates in the study area. Majority (31.30%) of the farmers were engaged with farmers associations followed by (28.30%) farmers with APMC, (8.70%) farmers were engaged with cooperatives, (5.30%) farmers with NGOs, (2.70%) farmers with FPOs and (13.70%) farmers were not engaged in any social participation. This trend may be because the respondents remained busy in their farming activities and less involved in social organisations. They were sparing much time for farming activities rather than social activities. Some of the farmers have high social participation with the village level institutions. Hence, it is desirable to encourage farmers to become members in various social organisations and large scale participations of farmers in social activities through the development of voluntary organisations.

Table 2: Distribution of farmers according to their extension contact

(N=300)

Characteristics	Categories	Number of Farmers	Percentage
Extension Contact	Low extension contact	34	11.40
	Medium extension contact	115	38.30
	High extension contact	151	50.30
Mean = 6.05, SD = 0.99			

All the data in this regard were grouped into three categories viz., as; (i) Low (up to 5 score), (ii) Medium (5 to 7 score) and (iii) High (above 8 score). From the table 2, It was found that most (50.30%) of the farmers had high level of extension contact followed by (38.30%) farmers had medium level of extension contact while (11.40%) farmers had low level of extension contact in the study area. This might be due to the fact that most of the farmers contact with extension workers for solving their problems and also having interest in participating the extension activities to gather latest information and to learn about ICT tools from extension workers.

Table 3: Distribution of farmers according to their innovative proneness

(N=300)

Characteristics	Categories	Number of Farmers	Percentage
Innovative Proneness	Lower innovative proneness	24	8.00
	Medium innovative proneness	63	21.00
	Higher innovative proneness	213	71.00
Mean= 1.06, SD = 0.40			

The data in this regards were grouped into three categories viz.; (i) Lower innovative proneness (up to 1 score) (ii) Moderate innovative proneness (1 to 2 score) and (iii) Higher innovative proneness (above 3 score). From the table 3, it was found that most (71.00%) of the farmers had higher level of innovative proneness followed by (21.00%) of the farmers had medium level of innovative proneness while (8.00%) farmers had lower level of innovative proneness in the study area. This trend might be due to the fact that majority of the farmers had high extension contact with scientists and other extension workers for getting the information about new technology. By this majority of the farmers are quite earlier in adopting the innovations than the other farmers in a social system.

Table 4: Distribution of farmers according to their economic orientation

(N=300)

Characteristics	Categories	Number of Farmers	Percentage
Economic Orientation	Low economic orientation	40	13.30
	Medium economic orientation	122	40.60
	High economic orientation	138	46.10
Mean= 7.1, SD = 1.18			

The data in this regards were grouped into three categories viz.; (i) Low (up to 6 score) (ii) Medium (6 to 8 score) and (iii) High (above 8 score). From the table 4, it was found that most (46.10%) of the farmers had higher level of economic orientation followed by (40.60%) of the farmers had medium level of economic orientation while (13.30%) farmers had low level of economic orientation in the study area. The reason for the above finding might be due to the fact that majority of the farmers had small land holdings with high school education and are mostly engaged in agriculture for their livelihood. Farmers having high economic orientation were willing to take anticipated risk for their field operations. The poor economic condition may be due to poor economic orientation of farmers and less exposure to modern agricultural technologies and less extension contact.

Table 5: Distribution of farmers according to their risk orientation,

(N=300)

Characteristics	Categories	Number of Farmers	Percentage
Risk Orientation	Low risk orientation	90	30.00
	Medium risk orientation	134	44.60
	High risk orientation	76	25.40
Mean= 1.79, SD = 0.47			

The data in this regards were grouped into three categories viz.; (i) Low (up to 6 score) (ii) Medium (6 to 8 score) and (iii) High (above 8 score). From the table 5, it was found that

most (44.60%) of the farmers had medium level of risk orientation followed by (30.00%) of the farmers had low level of risk orientation while (25.40%) farmers had high level of risk orientation in the study area. This might be due to the reason that majority of the farmers had small holdings and their conditions were mediocre. Medium level of extension contact and involvement in subsidiary occupation by majority of the farmers also might have prohibited the farmers from taking much risk in farming.

Table 6: Distribution of farmers according to their scientific orientation

(N=300)

Characteristics	Categories	Number of Farmers	Percentage
Scientific Orientation	Low scientific orientation	53	17.60
	Medium scientific orientation	113	37.60
	High scientific orientation	134	44.80
Mean= 2.42, SD = 0.49			

The data in this regard were collected from the respondents and grouped into three categories viz., (i) low (up to 14 score), (ii) medium (15 to 17 score) and (iii) high level of scientific orientation (above 17 score). From the table 6, it was found that most (44.80%) of the farmers had high level of scientific orientation followed by (37.60%) of the farmers had medium level of scientific orientation while (17.60%) farmers had low level of scientific orientation in the study area. This might be due to their application of new farm ideas in a systematic manner with high extension contact and farmers interest in using new farm technologies for increasing the land productivity.

4. Conclusion

From the present study, it can be concluded that the majority of respondent farmers were male, belonging to the medium age group, possessing graduate degrees, and having four members in their family. They mostly held land sizes ranging from 5 to 10 hectares and had farming experience of 10 to 15 years. Agriculture and animal husbandry were the primary sources of income for most farmers, with an annual income of over five lakhs. The study also revealed that a significant number of farmers had received training on ICT and had been using ICT tools for the last three years. About one-third of the farmers were associated with farmers' associations. Regarding their orientation and engagement, most farmers exhibited a high level of extension contact, innovative proneness, economic orientation, and scientific orientation, along with a medium level of risk orientation. Additionally, the majority of the farmers were middle-aged and had moderate experience in using ICT tools.

To increase the utilization of ICT tools among farmers, it is essential to conduct training and awareness programs, introducing them to the various modern ICT tools available and their benefits. Widening the extension network by recruiting technical personnel can ensure timely and appropriate advice for solving farmers' immediate problems. Skill-based training and awareness programs should also be conducted periodically to enrich farmers' knowledge of ICT-based programs initiated by different organizations and to empower them in using ICT tools for decision-making. Given that more than half of the respondent farmers had received training on ICT, efforts should be made to further promote the

utilization of ICT tools among them to access and effectively use agricultural information for decision-making. The high level of social participation among farmers presents an opportunity for the government to mobilize them to be part of formal and informal organizations, thus facilitating access to essential agricultural information for better decision-making processes.

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