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Research Article

ATTITUDE OF FARMERS TOWARDS INFORMATION AND COMMUNICATION TECHNOLOGY TOOLS

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Abstract: The present study was conducted during 2021-22 to analyse the attitude of farmers towards information and communication technology tools. One hundred and ninety-six farmers in Bangalore rural and Ramanagara districts were interviewed for the purpose using a pre-tested interview schedule. The findings revealed that a larger number of farmers (38.77%) had more favourable attitude towards ICT tools, whereas 33.16 of the farmers had favourable attitude towards ICT tools and the remaining 28.07 per cent of the farmers had less favourable towards ICT tools. Education, land holding, annual income, innovative proneness, mass media participation, extension participation and extension agency contact of farmers had significant to highly significant relationship with their attitude towards information and communication technology tools. The ranking of percentages of distance measured by the important independent variables revealed that the first seven ranks comprising, annual income (21.61%), education (20.16%), mass media participation (13.12%), innovative proneness (11.10%), extension participation (9.61%), extension agency contact (8.01%) and land holding (3.06%), had contributed in developing more favorable attitude among farmers towards information and communication technology tools.

Keywords: *Attitude, ICT tools, Farmers, Mass media participation, Extension agency contact*

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Introduction

As a result of the emerging new paradigm of agricultural development, old ways of delivering vital services to citizens are being challenged, traditional societies are additionally being modified into knowledge societies all over the world [1]. Information and communication technology (ICT) can be broadly understood as the technologies that facilitate communication, processing and transmission of information by electronic means [2]. Information and communication technology can be utilized for providing accurate, timely, relevant information and services to the farmers, thereby facilitating an environment for more remunerative agriculture. The technology revolution encompasses new ways of capturing, processing, storing and displaying information and is capable of increasing productivity and competitiveness through information provision [4]. The application of ICT offers wider possibilities, there by strengthening transfer of technology between research and extension system and further onward transmission to the end users.

The unprecedented development of ICT, its application, and the emergence of a global information society are changing the way people live, learn, work and interact. Favourable attitude towards ICT tools is a crucial requirement for the sustainable development of the farming systems. Farmers having favourable attitude towards information and communication technology tools will tend to use them more frequently for obtaining timely information in getting sustained yields. Keeping the above facts in mind, the present study was carried out with the following specific objectives:

1) To analyze the attitude of farmers towards information and communication technology tools.
2) To find out the relationship between profile characteristics of farmers with their attitude towards information and communication technology tools
3) To discriminate the profile characteristics of farmers responsible for developing more favourable and less favourable attitude towards information and communication technology tools

Material and Methods

The present study was carried out in Bangalore Rural (Dodaballapur and Devanahalli taluks) and Ramanagara (Ramanagara and Kanakapura taluks) districts of Karnataka state during 2021-22. A total of 196 farmers were interviewed from four taluks of two districts in Karnataka using a pre-tested interview schedule.

Attitude of farmers towards information and communication technology tools in the present study is operationally defined as the 'positive or negative feelings of the farmers towards ICT tools'. It was analysed using the scale developed by Dishant (2017) [4]. Attitude scale consisted of 16 statements and each statement was measured on a five-point continuum namely, strongly agree, agree, undecided, disagree and strongly disagree by assigning a score of 5,4,3,2 and 1, respectively. The summated score for all the 16 attitude statements was considered as attitude score. The minimum and maximum score one could get was 16 and 80, respectively. Higher the score indicates that the farmers possess favorable attitude towards ICT tools and lesser the attitude score indicates that the farmers possess unfavourable attitude towards ICT tools. Based on mean (51.40) and standard deviation (6.45), the farmers were categorized into less favourable, favourable and more favourable attitude categories.

Attitude category	Criteria	Score
Less favorable	<(Mean – ½ SD)	<48.00
Favorable	(Mean ± ½SD)	48.00-54.80
More favorable	> (Mean + ½ SD)	>54.80
Mean = 51.40 ; Standard deviation =6.45		

Information regarding 12 profile characteristics *viz*., age(X_1), education (X_2), family size (X_3), farming experience (X_4), land holding (X_5), employment (X_6), annual income (X_7), social participation (X_8), innovativeness (X_9), mass media participation (X_{10}), extension participation (X_{11}) and extension agency contact (X_{12}) were analysed using a structured schedule with suitable scales.

The collected data was scored, tabulated and analysed using frequency, percentage, mean, standard deviation, zero order correlation and Fischer's discriminant function analysis.

Fischer discriminant function analysis was used to discriminate the profile characteristics of farmers responsible for developing more favorable and less favorable attitude towards information and communication technology tools and to find out the percentage contribution of individual independent variables (profile characteristics of farmers) in developing more favorable attitude towards ICT tools.

Results and Discussion

Attitude of farmers towards information and communication technology tools

Statement-wise attitude of farmers towards information and communication technology tools

The results in [Table-1] presents the data on the statement-wise attitude of farmers towards ICT tools, the statement 'ICT provides wider information regarding agriculture at real time' obtained an attitude score of 734 and was accorded the first rank by the farmers. The statement 'ICT tools helps in information sharing' received an attitude score of 731 and was ranked second. The statement 'ICT tools helps in information sharing' obtained an attitude score of 719 and was ranked third by the farmers. 'ICT tools provide need based timely information' was ranked fourth with an attitude score of 707. The statement 'ICT usage is socially, economically and culturally feasible' received an attitude score of 701 and was ranked fifth. The statements 'It is very easy to get information from ICT tools' and 'Interactive discussion is possible through ICT tools' obtained attitude scores of 698 and 693 and were ranked sixth and seventh, respectively. The statements 'Sometime subject matter is not relevant in ICT tools' and 'Use of ICT tools will build social capital among farmers' received attitude scores of 683 and 670 and were accorded eighth and ninth ranks, respectively.

Attitude statements	Farmers	
	Score	Rank
ICT provides wider information regarding agriculture at real time	734	I
Use of ICT tools leads to modernization	731	II
ICT tools helps in information sharing	719	III
ICT tools provide need based timely information	707	IV
ICT usage is socially, economically and culturally feasible	701	V
It is very easy to get information from ICT tools	698	VI
Interactive discussion is possible through ICT tools	693	VII
Sometime subject matter is not relevant in ICT tools	683	VIII
Use of ICT tools will build social capital among farmers	670	IX
Without any assistance I can get information from ICT tools	663	X
Socio-cultural barriers could overcome through ICT	656	XI
ICT tools are only suitable to literate people	531	XII
ICT tools are costly and are more accessible to rich and upperclass people	521	XIII
Information provided through ICT is not in local language	512	XIV
It is difficult to use ICT tools by rural women	500	XV
Farmers have more access to ICT tools	453	XVI

The remaining seven attitude statements, namely, 'Without any assistance I can get information from ICT tools', 'Socio-cultural barriers could overcome through ICT', 'ICT tools are only suitable to literate people', 'ICT tools are costly and are more accessible to rich and upper class people', 'Information provided through ICT is not in local language', 'It is difficult to use ICT tools by rural women' and 'Farmers have more access to ICT tools' received scores of 663, 656, 531, 521, 512, 500 and 453 and was ranked tenth, eleventh, twelfth, thirteenth, fourteenth, fifteenth and sixteenth, respectively. Similar findings were observed by Naik and Rao [5].

The findings indicated that the farmers have favourable attitude towards various aspects of ICT tools. It evidently proves that the ICTs are very beneficial to the farmers in obtaining agricultural information easily, timely and at real time.

Overall attitude of farmers towards information and communication technology tools

the findings on the overall attitude of farmers towards information and communication technology tools [Table-2]. A larger number of farmers (38.77%) had more favourable attitude towards ICT tools, whereas 33.16 of the farmers had favourable attitude towards ICT tools and the remaining 28.07 per cent of the farmers had less favourable towards ICT tools. Similar findings were observed by Kabir [6]. It can be inferred that a majority of 71.93 per cent of the farmers possessed favorable to more favorable attitude towards information and communication technology tools. Information and communication technology tools helps the farmers to gather need-based timely agricultural information, besides these tools helps the farmers to have interactions with fellow farmers and extension functionaries, hence many farmers possessed more favourable to favourable attitude towards ICT tools.

Table-2 *Attitude of farmers towards information and communication technology tools, (N=196)*

SN	Attitude category	Score	Farmers	
			No.	%
1	Less favourable	<48.00	55	28.07
2	Favourable	48.00-54.80	65	33.16
3	More favourable	>54.80	76	38.77
Total			196	100.00
Mean			51.40	
Standard deviation			6.45	

Relationship between profile characteristics of farmers with their attitude towards information and communication technology tools

Zero order correlation test was applied to know the relationship between profile characteristics of farmers with their attitude towards information and communication technology tools. The results revealed that age, family size, farming experience, employment and social participation had positive and non-significant relationship with the attitude of farmers towards ICT tools, whereas variables such as land holding, innovative proneness and mass media participation of farmers were having positive and significant relationship at five per cent level with their attitude towards ICT tools [Table-3]. Education, annual income, extension participation and extension agency contact of farmers had positive and highly significant relationship at one per cent level with their attitude towards ICT tools. It is evident from the results of the study that education, land holding, annual income, innovative proneness, mass media participation, extension participation and extension agency contact of farmers had significantly contributing in development favorable attitude towards ICT tools.

Table-3 *Relationship between profile characteristics of farmers with their attitude towards information and communication technology tools*

SN	Characteristics	Correlation co-efficient ('r' value)
1	Age	0.0991^{NS}
2	Education	0.3331**
3	Family size	0.1234^{NS}
4	Farming experience	0.0777^{NS}
5	Land holding	0.2227*
6	Employment	0.0098^{NS}
7	Annual income	0.4321**
8	Social participation	0.1119^{NS}
9	Innovative proneness	0.2444*
10	Mass media participation	0.2340*
11	Extension participation	0.3111**
12	Extension agency contact	0.3876**

*NS=Non significant; * Significant at 5 %; ** Significant at 1 %*

Discriminating the profile characteristics of farmers responsible for developing more favourable and less favourable attitude towards information and communication technology tools

The results in [Table-4] reveals that the statistic value Mahalnobis 'D^2'and 'F' ratio calculated were 31.23 and 19.13, respectively. The 'F' ratio was found to be significant at one per cent level. Hence, the distance between less favorable and more favorable attitude of farmers towards ICT tools is significant. This implied that the 12 independent variables (profile characteristics of farmers) together were useful in discriminating the farmers with less favorable and more favorable attitude towards ICT tools. The mean difference (di) coefficients of discriminant functions (li), product (di x li) and percentage derived from the analysis are presented in the [Table-4]. It can be also observed from the [Table-4] that ranking of percentages of distance measured by important independent variables revealed that the first seven ranks comprising were annual income (21.61%), education (20.16%), mass media participation (13.12%), innovative proneness (11.10%), extension participation (9.61%), extension agency contact (8.01%) and land holding (3.06%).

Table-4 Discriminating the profile characteristics of farmers responsible for developing more favourable and less favourable attitude towards information and communication technology tools

SN	Profile characteristics	Mean difference (di)	Discrimination function co-efficient (Li)	Di x Li	Percentage to the total	Rank
1	Annual income (X_7)	7.51	2.63	19.75	21.61	I
2	Education (X_2)	2.56	1.72	4.39	20.16	II
3	Mass media participation (X_{10})	18.31	0.21	3.92	13.12	III
4	Innovative proneness (X_4)	4.17	0.80	3.33	11.10	IV
5	Extension participation (X_{11})	3.19	0.74	2.35	9.61	V
6	Extension agency contact (X_{12})	20.80	0.09	1.96	8.01	VI
7	Land holding (X_5)	1.80	1.01	1.90	3.06	VII
8	Social participation (X_8)	8.84	0.20	1.80	3.01	VIII
9	Family size (X_3)	8.04	0.18	1.47	2.91	IX
10	Farming experience (X_4)	1.01	1.20	1.22	2.71	X
11	Employment (X_6)	5.86	0.17	1.02	2.56	XI
12	Age (X_1)	0.81	1.04	0.84	2.14	XII

*NS=Non significant; *Significant at 5%; ** Significant at 1 %; D2=31.23;F=19.13** (12,42)*

The calculated discriminant scores 'Z_1' and 'Z_2' for the less favourable and more favourable attitude towards ICT tools was 41.40 and 61.40, respectively. The critical value of discriminant scores (Z) for these two groups was 51.40.

Conclusion

The study results revealed that that a majority of 71.93 per cent of the farmers had possessed favorable to more favorable attitude towards Information and Communication Technology (ICT) tools. It evidently proves that the ICTs are very beneficial to the farmers for seeking/ updating the agricultural information at easily at real time. Annual income, education, mass media participation, innovative proneness, extension participation, extension agency contact, and land holding have significantly contributed in developing more favourable attitude towards information and communication technology tools. The mass media (radio, television, newspaper, magazine, internet *etc*.,) should also carry messages on using new ICT tools available in the market, besides a greater number of farm programmes broadcasted/ telecasted /exhibited in radio/ television /internet in vernacular and local language for developing favourable attitude among farmers leading to more usage of the ICT tools effectively.

Application of research: The extension personnel should motivate the farmers to frequently use information and communication technology tools for obtaining the real time information on agricultural technologies.

Research Category: Agricultural Extension

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