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 C A R A S

Perception Towards Information Technology Enabled Systems in Agriculture Among the Farmers in Krishnagiri District

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ABSTRACT

The Information Technology (IT) enabled extension systems are acting as a key agent for changing agrarian situation and farmers' lives by improving access to information and sharing knowledge. In today's world of competition, information is the key word to success. Use of internet has given the globe a shrinking effect. Hence, the present investigation was designed to study the socio – personal and psychological characteristics of farmers, to assess perception of Information Technology Enabled Systems. The present study was conducted in Krishnagiri district of Tamil Nadu state. A sample size of 120 farmers were selected for this study using digital literacy test. A well-structured and pre-tested interview schedule was used for data collection. Appropriate statistical tools were used to analyse the data. Most of the Information Technology Enabled Systems were perceived as good by the respondents especially Uzhavan App, TNAU AGRITECH portal, AGRISNET, Mobile Advisory services of state department of Agriculture etc. It may be due to the fact that the above mentioned ITES are easily accessible and user friendly and also to meet out the information needs and rendering effective advisory services.

Key words: Information technology, Enabled systems, Perception, Agriculture

Agriculture contributes to 19.9 per cent of our GDP, and approximately 60 per cent Indians depends on agricultural sector for their livelihood. The performance of agriculture basically means the performance of small holder farming. It is only by empowering small and marginal farmers to overcome their handicaps that, they can become instruments of evergreen revolution and growth in agriculture sector. The limiting factors of farmers in maximizing their farm income are access to technology, government endeavor, resources, markets, institutions and services [1]. Farming community is facing lot of problems in maximizing the crop productivity. In spite of successful research on new agricultural practices, majority of the farmers are not getting upper bound yield due to several reasons. One of the reasons is that expert scientific advice on crop production and marketing is not reaching the farming community in a timely manner. There is a concern that the gap between the information rich and information poor is getting wider [2]. The farmer proceeds for farming on the basis of his own experience. Generally, farmers follow the advice of local shopkeepers/agents who sells him seeds, fertilizers, insecticides, pesticides, etc. The

information need of Indian farmers across the country is varied. Information Technology Enabled Systems (ITES) has been widely amalgamated as a powerful tool for improving the delivery service and enhancing local development opportunities [3]. ITES facilitates the dissemination of requisite information at the right time. This revolution in information technology has made access to the information easy and cost-effective.

In the last few decades, Information Technology Enabled Systems (ITES) have provided immense opportunities for the social and economic development of rural people, and some technologies have surpassed others. Mobile telephony is one such technology that has developed significantly in the past few years, and the subscription rate in developing countries has gone up from 22 per 100 inhabitants in 2005 to 91.8 per 100 inhabitants in 2015 [4]. Mobile technology goes beyond geographic, socioeconomic, and cultural barriers and this large increase in mobile subscriptions, along with the recent roll out of 3G and 4G technology, can play a big role in the development of rural people. Hence an attempt has been made in this study to analyze the perception towards various ITES in agriculture among the farmers. Objectives of the study are as under:

1. To find out the overall perception towards ITES
2. To assess the general perception based on the statements
3. To analyze category wise perception towards ITES in agriculture

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MATERIALS AND METHODS

The study was conducted in Krishnagiri District was purposively selected for the study. The taluk was considered as the second stage in selecting the study area. Maximum area criterion was considered in the selection of the taluk. Krishnagiri district has seven taluks namely Krishnagiri, Hosur, Pochampalli, Uthangarai, Shoolagiri, Bargur and Denkanikottai. Uthangarai taluk and Pochampalli taluk are randomly selected. The selection of blocks from Uthangarai and Pochampalli taluks are, Uthangarai and Mathur blocks were selected using a random sampling technique. A list of villages for the selected Uthangarai block and Mathur block was collected from the office of the Joint Director of Agriculture; there are 35 revenue villages in Uthangarai block. Out of total villages, 5 villages were selected. The selected villages are Singarapettai, Athipadi, Uthangarai, Pavakkal, Periyathallapadi. The selected villages from Mathur blocks were Samalpatti, Kunnuthur, Anandur, Mathur and Gerigapalli. These villages are selected based on the registered farmer's list obtained from the state department of agriculture for getting SMS services. The research design adopted for the present study was ex-post facto since the phenomenon had already taken place. Ex-post facto research is a systematic empirical enquiry in which the researcher does not have direct control over dependent variables because either their manifestation has already occurred or they are not inherently manipulated. While selecting the farmers for this study, scores of digital literacy test and ownership of android smart mobile phones and registration for receiving mobile based SMS services through State Department of Agriculture and KVK at regional level were considered as a criteria for identifying the appropriate sample. A well-structured and pre tested interview schedule was used for data collection.

RESULTS AND DISCUSSION

Based on the objectives of the study various information technology enabled systems in agriculture were identified and categorized statements were framed to measure perception and the results are discussed here.

Overall perception about ITES

The distribution of respondents according to their perception about ITES were analyzed and furnished in the

(Table 1). It could be seen from the table that nearly half of the respondents (47.50 per cent) were having medium level of perception about ITES followed by high (29.17 per cent) and low (23.33 per cent) levels of perception on ITES. Hence, it could be concluded that the respondents had medium level of perception. It may be due to the fact that the new ITES have reached the respondents and popular among the farmers and most of the farmers were digitally literate and resourceful. It may be interpreted that the various ITES fulfill the information requirements of the respondents on various farming practices might be the reason for medium level of perception on various ITES [5].

Table 1 Distribution of respondents according to their overall perception about ITES (n=120)

| Category | Number | Per cent |
|----------|--------|----------|
| Low | 28 | 23.33 |
| Medium | 57 | 47.50 |
| High | 35 | 29.17 |
| Total | 120 | 100.00 |

Statement wise perception towards ITES

To know about the statement wise perception among the respondents, data were collected and presented in the following (Table 2). From the table it could be inferred that among the 12 perception statements, the highest mean score obtained for the statements Internet can be a useful source of agricultural information (4.13), ITES are more effective for technology dissemination (4.08), Social media play a crucial role in technology transfer (3.80), Problems are solved quickly and effectively (3.50), Agricultural helpline are useful source of agricultural information (3.35), ITES provide complete information and saves time and cost (3.26), ICT use influence rate of adoption of technology (3.22 MS), Mobile phones are useful source of agricultural information (3.15 MS), ITES provides reliable and accurate information (3.04), Overcome physical barriers (2.96), You tube videos have positive effect on agricultural production (2.58). Hence, it could be concluded that the respondents had positive perception towards the ITES. It could be interpreted that it may be due to their interest towards the ITES and support their farming needs and facilitate effective management of their farming activities in a smart way compared to others [6-7].

Table 2 Distribution of respondents according to their statement wise perception of ITES (n=120)

| Statements | Mean score |
|---|------------|
| Internet can be a useful source of agricultural information | 4.13 |
| ITES provides reliable and accurate information | 3.04 |
| ITES provide complete information | 3.26 |
| Problems are solved quickly and effectively | 3.50 |
| Saves time and cost | 3.26 |
| Overcome physical barriers | 2.96 |
| Agricultural helpline are useful source of agricultural information | 3.35 |
| Mobile phones are useful source of agricultural information | 3.15 |
| You tube videos have positive effect on agricultural production | 2.58 |
| Social media play a crucial role in Information technology transfer | 3.80 |
| ITES tools is more effective for technology dissemination | 4.08 |
| ITES use influence rate of adoption of technology | 3.22 |

Table 3 Distribution of respondents according to their category wise perception on ITES (*n =120)

| Category | Very good | | Good | | Fair | | Poor | |
|---|-----------|----------|------|----------|------|----------|------|----------|
| | No. | Per cent | No. | Per cent | No. | Per cent | No. | Per cent |
| I. Web portals / Websites | | | | | | | | |
| TNAU AGRITECH Portal | 65 | 67.70 | 21 | 21.89 | 08 | 08.33 | 02 | 02.10 |
| AGRISNET | 44 | 69.84 | 17 | 26.99 | 02 | 03.17 | 00 | 00.00 |
| DACNET | 09 | 75.00 | 02 | 16.67 | 01 | 08.33 | 00 | 00.00 |
| Agropedia | 16 | 76.20 | 02 | 09.53 | 02 | 09.53 | 01 | 04.34 |
| e-Krishi | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| AGMARKNET | 33 | 48.52 | 28 | 41.18 | 05 | 07.35 | 02 | 02.95 |
| e-Choupal | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| IFFCO Agri Portal | 13 | 52.00 | 07 | 28.00 | 03 | 12.00 | 02 | 08.00 |
| IKisan | 47 | 61.03 | 24 | 31.17 | 04 | 05.20 | 02 | 02.60 |
| Agriwatch Portal | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| Others (specify) | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| II. VKCs and Telephony | | | | | | | | |
| Village Knowledge Centres (VKCs) – MSSRF | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| Village Resource Centres (VRCs) – ISRO | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| Community Information Centres (CICs) | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| Common Service Centres (CSCs) | 00 | 00.00 | 06 | 75.00 | 01 | 25.00 | 01 | 25.00 |
| Farmers Call Centre (Kisan Call Centre) | 75 | 76.53 | 16 | 16.33 | 05 | 05.10 | 02 | 02.04 |
| IFFCO Kisan Sanchar Limited (IKSL) | 00 | 00.00 | 01 | 25.00 | 02 | 50.00 | 01 | 25.00 |
| Mobile Advisory Services by KVKs of ICAR | 33 | 55.00 | 22 | 36.67 | 05 | 08.33 | 00 | 00.00 |
| Mobile advisory services of state department of Agriculture | 38 | 58.46 | 22 | 33.84 | 03 | 04.60 | 02 | 03.10 |
| III. Mobile Apps | | | | | | | | |
| Nithra Agriculture | 34 | 65.38 | 11 | 21.16 | 05 | 09.61 | 02 | 03.85 |
| Cattle Expert System Tamil (TNAU) | 24 | 66.67 | 06 | 16.67 | 03 | 08.33 | 03 | 08.33 |
| Paddy Expert System (TNAU) | 11 | 44.00 | 11 | 44.00 | 03 | 12.00 | 00 | 00.00 |
| Sugarcane Expert System Tamil (TNAU) | 01 | 09.10 | 03 | 27.26 | 04 | 36.66 | 03 | 27.27 |
| Banana Expert System Tamil (TNAU) | 05 | 23.80 | 06 | 28.57 | 07 | 33.34 | 03 | 14.29 |
| m-ICE | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| IFFCO Kisan | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| Kisan Suvidha | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| TNAU app | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| M-Kisan | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| Farm-o-pedia | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| Crop Insurance app | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| AgriMarket | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| Uzhavan app | 73 | 76.85 | 20 | 21.05 | 01 | 01.05 | 01 | 01.05 |
| e NAM | 05 | 23.80 | 06 | 28.57 | 07 | 33.34 | 04 | 36.66 |
| Others (specify) | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| Interactive Multimedia Compact Disc (IMCD) | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| Information Kiosks | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| IV. Mobile operated farm equipment's | | | | | | | | |
| Irrigate via smart phone | 10 | 50.00 | 07 | 35.00 | 3 | 15.00 | 00 | 00.00 |
| Tractors on autopilot | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| Drones | 20 | 50.00 | 10 | 25.00 | 10 | 25.00 | 00 | 00.00 |
| Agrobots | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |

*n = Multiple response

Category wise perception of ITES

It was considered necessary to analyze the perception of ITES category wise, in addition to statement wise perception. Hence, in this aspect data were collected and presented in (Table 3). An overview of the table revealed that majority of the respondents had very good perception towards the ITES namely Uzhavan app (76.85 per cent),

Kisan call centre (76.53 per cent), Agropedia (76.20 per cent), DACNET (75.00 per cent), AGRISNET (69.84 per cent), TNAU AGRITECH portal (67.70 per cent), Cattle Expert System (66.67 per cent), i Kisan (61.03 per cent), Mobile Advisory Services of state department of Agriculture (58.46 per cent), Mobile Advisory Services by KVKs of ICAR (55.50 per cent), IFFCO Agri portal (52.00 per cent),

Irrigate via smart phone (50.00 per cent) and Drones (50.00 per cent), AGMARKNET (48.52 per cent), Paddy Expert System (44.00 per cent). A meager per cent of the respondents had very good perception about Banana Expert System (23.80 per cent), e NAM (23.80 per cent) and Sugarcane Expert System (09.10 per cent) [8-9].

The respondents also had good perception towards Common Service Centres (75.00 per cent), Paddy Expert System (44.00 per cent), AGMARKNET (41.18 per cent), Mobile Advisory Services by KVKs of ICAR (36.67 per cent), Irrigate via smart phone (35.00 per cent), Mobile Advisory Services of State Department of Agriculture (33.84 per cent), I Kisan (31.17 per cent), Banana Expert System Tamil (28.57 per cent), e NAM (28.57 per cent), IFFCO Agri portal (28.00 per cent), Sugarcane Expert System (27.26 per cent), AGRISNET (26.99 per cent), IFFCO Kisan Sanchar (25.00 per cent), Drones (25.00 per cent), TNAU AGRITECH portal (21.89 per cent), Nithra Agriculture (21.16 per cent), Uzhavan App (21.05 per cent), Cattle Expert System (16.67 per cent), DACNET (16.67 per cent), Kisan call centre (16.33 per cent) and Agropedia (09.53 per cent) [10-11].

Another group of respondents had perceived fairly about IFFCO Kisan Sanchar (50.00 per cent), Sugarcane Expert System (36.66 per cent), Banana Expert System Tamil (33.34 per cent), e NAM (33.34 per cent), Common Service Centres (25.00 per cent), Drones (25.00 per cent), Irrigate via smart phone (15.00 per cent), IFFCO Agri portal (12.00 per cent), Paddy Expert System (12.00 per cent), Nithra Agriculture (09.61 per cent), Agropedia (09.53 per cent), TNAU Agritech portal (08.33 per cent), DACNET

(08.33 per cent), Mobile Advisory Services by KVKs of ICAR (08.33 per cent), Cattle Expert Systems (08.33 per cent), AGMARKNET (7.35 per cent), i Kisan (05.20 per cent), Kisan call centres (05.10 per cent), Mobile Advisory Services of State Department of Agriculture (04.60 per cent), AGRISNET (03.17 per cent) and Uzhavan App (01.05 per cent) [12].

The respondents also had poor perception towards e NAM (36.66 per cent) Sugarcane Expert System (27.27 per cent), Common Service Centres (25.00 per cent), IFFCO Kisan Sanchar (25.00 per cent), Banana Expert Systems Tamil (14.29 per cent), Cattle Expert Systems (08.33 per cent), IFFCO Agri portal (08.00 per cent), Agropedia (04.34 per cent), Nithra Agriculture (03.85 per cent), Mobile Advisory Services of State Department of Agriculture (03.10 per cent), AGMARKNET (02.95 per cent), i Kisan (02.60 per cent), TNAU Agritech portal (02.10 per cent), Kisan call centres (02.04 per cent), Uzhavan App (01.05 per cent) [13-14].

CONCLUSION

It could be concluded that most of the Information Technology Enabled Systems were perceived as good by the respondents especially Uzhavan App, TNAU AGRITECH portal, AGRISNET, Mobile Advisory services of state department of Agriculture etc. It may be due to the fact that the above mentioned ITES are easily accessible and user friendly and also to meet out the information needs and rendering effective advisory services.

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