***Original Research Article***

**A STUDY ON EXTENT OF UTILIZATION ON INFORMATION TECHNOLOGY ENABLED SYSTEMS IN AGRICULTURE AMONG THE FARMERS IN KRISHNAGIRI DISTRICT**

**ABSTRACT**

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 analyse utilization behaviour of respondents on 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. The most of the Information Technology Enabled Systems were perceived as good by the respondents especially Extension agency contact, information seeking behaviour, information needs in farming practices, dwelling ownership of ICT gadgets, training undergone in ICT, extent of utilization of ICTs in adoption of practices. 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.The adoption and efficacy of digital technologies in agriculture are significantly influenced by the use of information technology enabled systems, or ITES. Farmers' use of ITES may have a big influence on productivity and decision-making since they rely less on these systems to obtain critical information. This insight may be used to create tailored treatments that increase relinquishment, improve the efficacy of technology and ultimately improve producers' lives.

 **Keywords**: Information Technology Enabled Systems, Utilization pattern.

**1.INTRODUCTION**

India is currently the world’s second-largest telecommunications market with a subscriber base of 1.19 billion (of which mobile telephone connections are1169.50 million and landline telephone connections are 22.11 million). Based on the reports of International Telecommunication Union (ITU, 2018), The overall teledensity in the country is 91.22%. While the rural Tele-density is currently 58.89%, the urban teledensity stands at 160.57% at the end of September, 2018.ITES essentially facilitate the creation, management, storage, retrieval and dissemination of any relevant data, knowledge and information that may have been already been processed and adapted . 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. 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. USSD (Unstructured Supplementary Service Data), IV RS (Interactive Voice Response System) and Pull SMS are value added services which have enabled farmers and other stakeholders not only to receive broadcast messages but also to get web based services on their mobile without having internet. Semi-literate and illiterate farmers are also targeted to be reached by voice messages.

The adoption and efficacy of digital technologies in agriculture are significantly influenced by the use of information technology enabled systems, or ITES. Growers' use of ITES may have a big influence on productivity and decision-making since they rely less on these systems to obtain critical information. Examples of these services include request pricing, rainfall updates, agricultural advice, and online trading platforms. However, a variety of factors, such as farmers' digital literacy, internet accessibility, perceived system benefits, and training status, influence how and to what degree they employ these technologies. In order to improve system design, relate barriers and make sure that these tools successfully satisfy the needs of the agricultural community, it is crucial to comprehend how growers engage with and utilize these ITES. This insight may be used to create tailored treatments that increase relinquishment, improve the efficacy of technology and ultimately improve producers' lives. The objectives of the study was to study the utilization behaviour of farmers on selected Information Technology Enabled Systems.

**2.METHODOLOGY**

The study was conducted in Krishnagiri District was purposively selected. 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.

**3.RESULTS AND DISCUSSION**

**3.1.Utilization behaviour of farmers on selected Information Technology Enabled Systems**

To study the utilization behaviour of farmers on selected ITES data were collected and discussed under following headings

**3.2.1.Overall utilization behaviour of ITES**

## Table 1: Distribution of respondents according to their Overall utilization behaviour of ITES (n=120)

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl. No.** | **Category** | **Frequency** | **Per cent** |
| 1. | Low | 39 | 32.50 |
| 2. |  Medium | 57 | 47.50 |
| 3. | High | 24 | 20.00 |
|  | Total | 120 | 100.00 |

To know about the overall utilization of ITES data were collected and presented in Table.1. It could be seen from the table that nearly half of the respondents (47.50 per cent) had medium level of utilization behaviour followed by low (32.50 per cent) and high (20.00 per cent) levels of utilization behaviour. Hence, it could be concluded that the respondents were found to be with medium level of ITES utilization behaviour (47.50 per cent). It may be due to the good perception, accessibility and user ability of the respondents on various ITES.

## 3.2.2.Frequency of Utilization of ITES

## Table 2: Distribution of respondents according to their frequency of utilization of ITES

## (n=120)

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl.****No.** | **Category** | **Utilization** | **Frequency of Utilization** |
| **Yes** | **No** | **Frequently** | **Often** | **Sometimes** | **Never** |
| **No.** | **Percent** | **No.** | **Percent** | **No.** | **Percent** | **No.** | **Percent** |
| **I** | **Webportals/Web sites** |
| 1. | TNAU AGRITEHPortal | 96 | 24 | 65 | 54.17 | 22 | 18.33 | 09 | 07.50 | 24 | 20.00 |
| 2. | AGRISNET | 63 | 57 | 47 | 39.17 | 14 | 11.67 | 02 | 01.66 | 57 | 47.50 |
| 3. | DACNET | 12 | 108 | 09 | 07.50 | 02 | 01.67 | 01 | 00.83 | 108 | 90.00 |
| 4. | Agropedia | 21 | 99 | 16 | 13.33 | 04 | 03.33 | 01 | 00.83 | 99 | 82.50 |
| 5. | e-Krishi | 00 | 120 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 120 | 100.00 |
| 6. | AGMARKNET | 68 | 52 | 36 | 30.00 | 25 | 20.83 | 07 | 05.83 | 52 | 43.34 |
| 7. | e-Choupal | 00 | 120 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 120 | 100.00 |
| 8. | IFFCO AgriPortal | 25 | 95 | 14 | 11.67 | 07 | 05.83 | 04 | 03.33 | 95 | 79.17 |
| 9. | i kisan | 77 | 43 | 51 | 42.50 | 22 | 18.33 | 04 | 03.33 | 43 | 35.84 |
| 10. | Agriwatch Portal | 00 | 120 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| **II** | **VKCs and Telephony** |
| 1. | Village Knowledge Centre(VKC)– MSSRF | 00 | 120 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 |
| 2. | Village Resource Centres(VRCs)– ISRO | 00 | 120 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 120 | 00.00 |
| 3. | CommunityInformation Centres (CICs) | 00 | 120 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 120 | 00.00 |
| 4. | Common Service Centres (CSCs) | 08 | 112 | 00 | 00.00 | 06 | 05.00 | 02 | 01.67 | 112 | 93.33 |
| 5. | Farmers CallCentre (Kisan Call Centre) | 98 | 22 | 79 | 65.84 | 13 | 10.83 | 06 | 05.00 | 22 | 18.33 |
| 6. | IFFCO KisanSanchar Limited (IKSL) | 04 | 116 | 00 | 00.00 | 00 | 00.00 | 04 | 03.33 | 116 | 96.67 |
| 7. | Mobile AdvisoryServices by KVKs of ICAR | 60 | 60 | 33 | 27.50 | 22 | 18.33 | 05 | 04.17 | 60 | 50.00 |
| 8. | Mobile advisory services of state department ofagriculture | 65 | 55 | 41 | 34.17 | 21 | 17.50 | 03 | 02.50 | 55 | 45.83 |
| **III** | **Mobile Apps** |  |  |  |  |  |  |  |  |  |  |
| 1. | NithraAgriculture | 52 | 68 | 34 | 28.33 | 11 | 09.17 | 07 | 05.83 | 68 | 56.67 |
| 2. | Cattle ExpertSystem Tamil (TNAU) | 36 | 84 | 25 | 20.83 | 05 | 04.17 | 06 | 05.00 | 84 | 70.00 |
| 3. | Paddy ExpertSystem (TNAU) | 25 | 95 | 11 | 09.17 | 13 | 10.83 | 01 | 00.83 | 95 | 79.17 |
| 4. | Sugarcane Expert System Tamil (TNAU)  | 11 | 109 | 01 | 00.83 | 03 | 02.50 | 07 | 05.83 | 109 | 90.83 |
| 5. | Banana ExpertSystem Tamil (TNAU) | 21 | 99 | 05 | 04.17 | 06 | 05.00 | 10 | 08.33 | 99 | 80.25 |
| 6. | m-ICE | 00 | 120 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 120 | 100.00 |
| 7. | IFFCO Kisan | 00 | 120 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 120 | 100.00 |
| 8. | Kisan Suvidha | 00 | 120 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 120 | 100.00 |
| 9. | TNAU app | 00 | 120 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 120 | 100.00 |
| 10. | M-Kisan | 00 | 120 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 120 | 100.00 |
| 11. | Farm-o-pedia | 00 | 120 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 120 | 100.00 |
| 12. | Crop Insuranceapp | 00 | 120 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 120 | 100.00 |
| 13. | AgriMarket | 00 | 120 | 00 | 00.00 | 00 | 00.00 | 00 | 00.00 | 120 | 100.00 |
| 14. | Uzhavan app | 95 | 25 | 74 | 61.67 | 18 | 15.00 | 03 | 02.50 | 25 | 20.83 |
| 15. | e NAM | 36 | 84 | 25 | 20.83 | 05 | 04.17 | 06 | 05.00 | 84 | 70.00 |

Frequency of usage was classified into four categories viz., frequently, sometimes and often and never. To find out the frequency of usage of ITES by the respondents data were collected and presented in Table.2. It could be revealed that frequently utilized some of the ITES namely, Farmers call centre (65.84 per cent), Uzhavan app (61.67 per cent), TNAU AGRITECH portal (54.17 per cent), I Kisan (42.50 per cent), AGRISNET (39.17 per cent), Mobile Advisory Services of state department of Agriculture (34.17 per cent), Nithra Agriculture (28.33 per cent), Mobile Advisory Services by KVKs of ICAR (27.50 per cent), Cattle Expert System Tamil(20.83 per cent), e NAM (20.83 per cent), Drones (16.66 per cent), Agropedia (13.33 per cent), Irrigate via smartphone (12.05 per cent), IFFCO Agri portal (11.67 per cent), Paddy Expert System (09.17 per cent), DACNET (07.50 per cent), Banana Expert System (04.17 per cent), Sugarcane Expert System (TNAU) (00.83 per cent).

 Some of the respondents often utilized the ITES namely, AGMARKNET (20.83 per cent), TNAU AGRITECH PORTAL (18.33 per cent), i Kisan (18.33 per cent), Mobile Advisory Services by KVKs of ICAR (18.33 per cent), Mobile Advisory Services of state department of Agriculture (17.50 per cent), Uzhavan App (15.00 per cent), AGRISNET (11.67 per cent), Farmers call centre (10.83 per cent), Paddy expert system (10.83 per cent), Nithra Agriculture (09.17 per cent), IFFCO Agri portal (05.83 per cent), Irrigate via smartphone (05.83 per cent), Drones (05.00 per cent), Common Service Centres( 5.00 per cent), Banana Expert System Tamil (TNAU) (05.00 per cent), Cattle Expert System Tamil (TNAU) (04.17 per cent), e NAM (04.17 per cent), Agropedia (0.33 per cent), Sugarcane Expert System Tamil (TNAU) (02.50 per cent), DACNET (01.67 per cent).

Another group of respondents occasionally utilized the ITES namely, Irrigate via smartphone (11.11 per cent), Banana Expert System Tamil ( TNAU) (08.33 per cent), YNAU AGRITECH portal (07.50 per cent), AGMARKNET (05.83 per cent), IFFCO Framers call centre (05.00 per cent), Cattle Expert System (5.00 per cent), e NAM (05.00 per cent), Mobile Advisory Services by KVKs of ICAR (04.17 per cent), IFFCO Agri portal (03.33 per cent), Drones (03.33 per cent), IFFCO Kisan Sanchar Limited (IKSL) (03.33 per cent), i Kisan (03.33 per cent), Uzhavan App (02.50 per cent), Common Service Centre (01.67 per cent), AGRISNET (01.66 per cent), DACNET (00.83 per cent), Agropedia (00.83 per cent), Paddy Expert System (TNAU) (00.83 per cent).Hence, it could be concluded that most of the Information Technology Enabled Systems utilized by the respondents mainly Mobile Advisory Services provided by the State Department of Agriculture and Uzhavan App. It may be due to the fact that majority of the respondents had an awareness and positive perception towards the SMS services of State Department of Agriculture and Uzhavan App.

**4. CONCLUSION:**

The study on the utilization behaviour of farmers concerning Information Technology Enabled Systems (ITES) reveals that the majority of respondents (47.50%) exhibit a medium level of ITES utilization. A smaller proportion of respondents show low (32.50%) and high (20.00%) utilization behaviours. This suggests that while many farmers are engaging with ITES to some extent, there is room for further engagement and improvement in utilization. In terms of frequency, several ITES platforms, particularly mobile-based services, are utilized frequently by respondents. Notably, the Farmers Call Centre (65.84%), Uzhavan App (61.67%) and TNAU AGRITECH Portal (54.17%) were the most frequently used platforms. Other services such as Mobile Advisory Services from the State Department of Agriculture (34.17%) and Nithra Agriculture (28.33%) also saw frequent use. On the other hand, systems like the Sugarcane Expert System (TNAU) (0.83%) and Banana Expert System (4.17%) had minimal usage, indicating less engagement or awareness in these particular areas.

The findings suggest that a significant proportion of farmers exhibit a medium level of ITES utilization, with a preference for systems that are easily accessible and offer practical benefits, such as the Uzhavan App and Mobile Advisory Services from the State Department of Agriculture. This reflects a strong awareness and positive perception towards these systems, which are user-friendly and provide valuable, localized information. The varied frequency of usage across different ITES indicates that farmers are selective in their use of technology, prioritizing those that align closely with their agricultural practices and needs. These results highlight the importance of ensuring that ITES are tailored to meet the specific requirements of farmers, while also ensuring accessibility and ease of use.

**REFERENCES**

1. Chhachar, A. R., Querestic, B., Khushk, G. M. and S. Ahmed. 2014. Impact of ICTs in Agriculture Development, Journal of Basic Applied Scientific Research, 4 (1): 281-288.
2. Meshram, Y, Sathwane R.A. and S. Singh. 2014. A Study on Utilization of Need Based Agriculture and Allied Technologies through Kisan Mobile Advisory Services among the Farmers in UmarIa District of Madhya Pradesh. Unpublished M.Sc. (Ag.) Thesis, JNKVV, Jabalpur.
3. Pant , K. 2011. Impact of Agricultural Information Based SMSs on Farmers. Presented in the 6th National Extension Education Congress during December 17-19, at ICAR Research Complex for Goa.
4. Prodhan, F.A. and M.S.I. Afrad. 2014. Knowledge and Perception of Extension Workers Towards ICT Utilization in Agricultural Extension Services Delivery in Gazipur District of Bangladesh, International Journal of Agricultural Research Innovation and Technology, 4 (2): 46-52.
5. Qiang, C.Z., Kuck, S.C., Dymond, A. and S. Esselaar, 2011. Mobile Application for Agricultural and Rural Development , ICT ( Information and Communication Technology) Sector Unit, The World Bank,Washington,
6. D.C. Rebekka Syiem and Saravanan Raj. 2015. Access and Usage of ICTs for Agricultural and Rural Development by the Tribal Farmers in Meghalaya State of North East India, Journal of Agricultural Informatics, Vol.6: 24-41.
7. Shakir, S. A., Kalantri, L. B. and K. S. D. Anita. 2013. Identification and Utilization Websites related to Agriculture and Allied Subjects, Compendium of National Seminar on Futuristic Agricultural Extension for Livelihood Improvement Sustainable Development: 177-186.
8. Singh, G., Mishra, B., Singh, A. and Issac, R. K. 2011. ICT and Development of Social Capital for Sustainable Rural Development, Journal of Communication. Studies, 29 (1): 84 - 89.