

# INFORMATION COMMUNICATION TECHNOLOGY AND AGRICULTURAL PRACTICES IN THANJAVUR DISTRICT

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## **Introduction**

Agriculture is the most important sector of Indian Economy. Indian agriculture sector accounts for 18 percent of India's Gross Domestic Product and provides employment to 50 percent of the countries workforce. The term Information communication technology was coined by Stevenson in 1997. ICT comprises a set of technological tools and resources to create, disseminate, store and manage data and information. Traditional ICT tools e.g T.V, Radio and Telephone have already established their credibility and effectiveness in transfer of information and new technology to the farmers.

## **Review of literature**

**Pasang Lama (2018)** development of ICT tools and techniques globally have intervened on various sectors that determined the growth of human life and its use has significant effect on national development by increasing the productivity in the agriculture sector as well. A study was conducted to find out access and usage of ICT tools among farmers of Dhading district which helped in facilitating smallholder farmers to get benefits by accessing agricultural information for improvement in agriculture sectors. Mobile phones were widely used for social communication and contacting experts for agricultural advisories. Information services on disease and pest management, good agriculture practices, weather information and financial management were also used through ICT tools.

**Fahad Aldosari (2017)** opinioned that that a majority of the farmers 37.2% agreed and some 33.9% of the respondents strongly agreed that mobile can be a useful source for agricultural information. Mobile phone technology has provided multi-dimensional benefits to the rural people and it helps in interaction, accessibility, and quick/timely information exchange.

## **Statement of the problem**

The rural Communities require information on supply of inputs, new farming technologies, early warning of natural disasters, credit, market price and their competition for which ICT is one of the effective tools of information dissemination. Lack of encouragement of the local communities and social institutions make the farmers to reject the new technologies because most of the farmers are illiterate and need to be guided and encouraged properly to the effectiveness of the ICT in technology delivery to be successful.

## **Significance of the study**

The situation of marginal farmers has become worse over the years in India. They are trapped in a web of miseries from which they are unable to break away. Their geographical isolation, social fragmentation and economic deprivation add to the complexity of the crisis. These studies showed as to how ICT can offer new solutions to long-standing rural development problems by enabling rural people to achieve a higher standard of life. The proposed research aims to study the past and present major ICT initiatives in agriculture in the study area, its utilization, the factors influencing the level of awareness and benefits availing ICT application in agriculture.

## **Scope of the study**

The application of ICT at the different levels of agricultural process result in improvement of agricultural competitiveness. The escalating information on the efforts of ICT at the different stages of agricultural development has increased their potentials ensuring agricultural efficiency in food security towards improvement of rural development and livelihood. ICT provides facilitating roles in agriculture development such as price and market information, weather forecasting, information on pesticide and

fertilizers, implementation of available irrigation facilities uses of modern equipments, communication with peers and business transaction etc. and this may be useful for the farmers in decision making related to agriculture.

### **Objectives of the study**

To correlate the socio demographic profile of the respondents with related variables of the respondents towards the use of information and communication technology.

1. To analyse the methods of Information and communication technology utilized by the respondents and the types of services provided by it towards improving agriculture.
2. To study the perception of the respondents towards Information and communication technology in Agriculture activities.
3. To find out the level of awareness of the respondents on Information and communication technology application in agriculture in the study area.
4. To understand the issues, and constraints of the respondents in using ICT in agricultural sector.

### **Research Methodology**

The researcher adopted Descriptive research design for the present study. Multi level sampling was adopted to identify the samples for this study. Multi level sampling was adopted in selecting the respondents for this study. Thanjavur district in Tamil Nadu had been selected by purposive sampling being the district as 'Rice Bowl of Tamil Nadu'. At block level, again purposive sampling was adopted and selected 6 blocks viz Ammapettai, Pappansam, Kumbakonam, Thiruvaiyaru, Thiruvidaimaruthur, Thiruppanthal, on the basis of old delta region. Simple random sampling was adopted for selecting the respondents from the given the list of farmers who got registered with Agriculture Extension Office in each block. The number of respondents chosen from each block was 53 from Ammapettai, 78 from Pappanasam, 86 from Kumbakonam, 39 from Thiruvaiyaru, 69 from Thiruvidaimaruthur and 58 from Thiruppanthal and thus 383 completed interview schedules were selected out of 425 respondents who were interviewed. For collection of data an interview schedule was adopted due to non-educational universe also happened to be the respondents. The structured interview schedule was pretested among 30 sample respondents with a view to check the reliability and validity. The data was collected from August 2017 to January 2018. All 383 respondents responses were systematically entered into the data sheet and analysis was done with the help of SPSS package.

### **Universe / Sampling of the study**

Multi level sampling was adopted in selecting the respondents for this study. Thanjavur district in Tamil Nadu had been selected by purposive sampling being the district as Rice Bowl of Tamil Nadu. At Block level, again purposive sampling was adopted and selected 6 blocks viz, Ammapettai, Pappanasam, Kumbakonam, Thiruvaiyaru, Thiruvidaimaruthur, Thiruppanthal, on the basis of old delta region. Simple random sampling was adopted for selecting the respondents from Ammapettai, Pappanasam, Kumbakonam, Thiruvaiyaru, Thiruvidaimaruthur, Thiruppanthal, from the given the list of farmers who got registered with Agriculture Extension Officers in each block. The number of respondents chosen from each block was Ammapettai-53, Pappanasam-78, Kumbakonam-86, Thiruvaiyaru-39, Thiruvidaimaruthur-69, Thiruppanthal-58, Thus 383 completed interview schedules were selected out of 425 respondents.

### **Findings and suggestion**

#### **Socio demographic features of the respondents**

- One third (38.1 percent) of the respondents were in the age group between 41 to 50 years.
- More than two third (67.6 percent) of the respondents were male and remaining one third of the 32.4 percent of the respondents were female.
- Two third of the respondents (60.8 percent) were Hindus.
- One third (30.3 percent) of the respondents in the category of BC.
- Majority (76.80 percent) of the respondents had agriculture as their primary occupation.
- More than one third (39.70 percent) of the respondents were small farmers, followed by one fourth (27.40 percent) were medium farmers.
- Half (58 percent) of the respondents informed that agriculture was their hereditary occupation.
- More than half (53 percent) of the respondents had membership in one or the other agriculture

forum and most of the farmers have interest to be the members of one or the other forms of association in which they gain benefits.

### **ICT Through Radio**

- More than half (57.4 percent) of the respondents had the habit of listening radio the farmers have access to radio, as it is understandable, portable, affordable, and easy to maintain.
- 51.8 percent of the respondents kept their radio at home and listen, the agriculture related information is being broadcasted in the early morning and hence the farmers listened to the Radio at their home.
- Half (48.7 percent) of the respondents felt that agriculture related news were being broad casted in radio, which helped them in their agriculture the farmers also learn marketing of their agricultural produce and thus their economic development may be probably improved.
- One third (42.3 percent) of the respondents agreed that radio programmes were useful in getting day to day market prices of agricultural produces.
- More than half (58.6 percent) of the respondents agreed that the radio programme related to agriculture was able to attain their needs.

### **ICT Through Television**

- Vast majority (81.2 percent) of the respondents agreed that they had the habit of watching television 18.8 percent of the respondents did not have the habit of watching television.
- Vast majority (91.6 percent) of the respondents were able to understand the understand the television which has audio-visual effect and in turn easily understood by the farmers .
- One third of the respondents (33.3 percent) said that not gave the useful information.

### **ICT Through Mobile**

- Vast majority (85.1 percent) of the respondents agreed that they were using mobile phones.
- More than one third (38.3 percent) of the respondents were using smart phone. Most of them are using mobile phones just for collecting agricultural information.
- One third (36.5 percent) of the respondents agreed that they receive caution weather report through SMS.
- One third (30.4 percent) of the respondents agreed that they were getting information about availability of seeds through mobile phone.
- More than half (53.4 percent) of the respondents strongly agreed that marketing information like price and demand were received through mobiles.
- More than one third (44.4 percent) of the respondents strongly agreed that social media provides awareness about the evil. The mobiles are being used for receiving significant messages related to weather, seeds availability, availability of loans, information on price and demand and lastly information on highly profitable product.

### **ICT Through Computer / Internet**

- Vast majority (83.6 percent) of the respondents did not use internet and remaining 16.4 percent of the respondents used to access internet. Most of these farmers who use internet have laptops in their home.
- The purposes of using internet by the farmers included variety of seeds (1.6 percent), market information (47.6 percent), One third of the respondents (38.1 percent) use the internet to know weather forecast .
- More than one third (42.9 percent) of the respondents strongly agreed that they get all the data related to agriculture from the internet.
- More than half (57.1 percent) of the respondents strongly agreed that internet was helpful to get updated weather report for every hour.
- More than one third (36.5 percent) of the respondents agreed that internet helps to know the information on demand and price for agricultural products of other districts. The farmers are becoming high in technology usage nowadays. Some of the reasons mentioned by the farmers for not using internet were ageing to learn new technology tools, internet was more complicated and sophisticated and also inadequate training.

- The farmers do not use internet due to poor network coverage and lack of technically know how of internet usage.

### **ICT Through Government Initiatives**

- Majority of the (68.4 percent) respondents said that the extension agricultural officers visited their land once in a month.
- Majority (63.2 percent) of the respondents agreed that there are some agriculture research centres near by their village.
- Vast majority (93.7 percent) of the respondents agreed that the Extension officers had visited their agriculture lands and the respondents felt that Extension officers regularly make village visits in order to support these farmers in agricultural practices.

### **Awareness on ICT**

- Majority (80.4 percent) of the respondents knew about ICT tools and a sizable proportion 19.6 percent of the respondents did not know.
- Vast majority (84.6 percent) of the respondents knew the necessity of ICT.
- Majority (72.3 percent) of the respondents knew the information related to ICT usage.
- Majority (64.50 percent) of the farmers responded that the various ICT resources are fairly accessible, that efforts need to be undertaken to increase the availability of resources to these farmers. Further adequate measures need to be initiated to improve the availability and accessibility of resources since majority of the respondents had informed that the ICT resources are fairly available.

### **Utility of ICT**

- Majority (64.8 percent) of the respondents agreed that they had agriculture loan.
- More than half (55.6 percent) of the respondents received agricultural loan from cooperative banks. This concludes that the farmers who received loans from co-operative and nationalized banks may repay the debt due to low rate of interest.
- Majority (64.7 percent) of the respondents bought tools and machines through Government subsidy and hence the farmers have knowledge and awareness on Government support / subsidies for available agricultural practices. Most of the respondents purchased agricultural equipments through Government subsidy and hence have knowledge and awareness on Government support / subsidies for available agricultural practices.
- Vast majority (71.5 percent) of the respondents agreed that they got latest news related to agricultural development. The farmers are affordable to the use of mobile phones and radio sets for updating themselves on agriculture related information.

### **Perception on ICT**

- Nearly half (46.5 percent) of the respondents strongly agreed that the information centers provided all the information on government policies.
- Majority (63.7 percent) of the respondents strongly agreed that ICT explained the various cultivation methods.
- More than one third (37.3 percent) of the respondents strongly agreed that ICT centres explained the major risk involved in transportation to the market. The ICT guided the farmers on major risks involved transportation and also on factors influencing the market and information about fixed prices of agricultural produces.
- More than half (57.4 percent) of the respondents strongly agreed that they had attended awareness programs conducted by information centers.
- Majority (60.8 percent) of the respondents strongly agreed that ICT centres provided give knowledge in the transportation to high demand market.
- More than one third (37.3 percent) of the respondents strongly agreed that ICT centers explained the major risk involved in transportation to the market.
- Nearly half (49.1 percent) of the respondents strongly agreed that ICT centre gives weather conditions of the village.

- Majority (65.3 per cent) of the respondent strongly agreed that ICT provided knowledge about disaster management. The ICT helped the farmers by providing information about weather conditions and rain forecast, at the same time ICT gives prior warnings to the farmers in precaution of crops from national hazards and more importantly on disaster management.
- More than one third (39.9 percent) of the respondents strongly agreed that ICT provided idea for how to preserve the products.
- Nearly half (47 percent) of the respondents strongly agreed that rural villages supported 2G speed only.
- Nearly half (46.7 per cent) of the respondents strongly agreed that the information spread by the development centre was not same everywhere.
- The majority (68.4 percent) of the respondents strongly agreed that new technologies were not adopted by village farmers.

### Testing of hypothesis

1. There is no significant relationship between the attitude of respondents with their usage of ICT tools viz. Radio, Television, Mobile and Computer.

Chi-square was used to test the above hypothesis. As the calculated value for variables (radio = 0.019, television = 0.017, mobile = 0.023) is less than the table value 0.05, null hypothesis is rejected. There is a significant relationship between the attitude of respondents with their ICT tools viz. Radio, Television, mobile.

2. There is no significant difference between the educational qualification of the respondents with their and their perception and attitude towards ICT.

It had been proved by f-test ( $f = .1.562$  for perception attitude = 0.344). The table value of f at 5 percent level for 4 degree of freedom is 0.184 and 0.848 for perception and attitude respectively. The calculated value of f is greater than the table value thus rejecting alternate hypothesis and hence null hypothesis is accepted indicating that there is no significant difference between the educational qualification of the respondents with their perception and attitude towards ICT.

3. There is no significant difference between the gender of the respondents and their perception and attitude towards ICT.

It had been proved by T-test ( $T = .390$  for perception and attitude  $T= 1.118$ ) The table value of T at 5 percent level for 381 degree of freedom is 0.697 and 0.264. The calculated value of T is greater than the table value thus rejecting alternate hypothesis and hence the null hypothesis is accepted. There is no significant difference between the gender of the respondents and their perception and attitude towards ICT.

### Recommendations

- It is necessary to create awareness about the importance of ICT tools and types of services providing by these tools to the farming community.
- Multipurpose ICT centres may be established at block level for accessibility of farmers in the village.
- Agricultural Developmental departments need to organize of capacity building programmes at village level.
- The government may create Community Radio whose purpose should be to propagate information on agricultural policies.
- Agricultural experts may encourage the farmers by meeting them often and educating them.
- Use of mobile phones through which SMS could be sent regarding cropping pattern according to the season in advance may be encouraged by the Department of Agriculture.
- NGOs may take the responsibility of educating especially the young farmers of the present generation to form a group and conduct fortnightly or monthly workshops in a common place to experience new learning.
- NGOs may create a VKC or VRC covering all the villages and may adopt the particular area in order to educate the farmers through mobile phones on seasonal variations, about monsoon, variations new equipments used in agriculture.

### Conclusion

The study concludes that ICT is the core inevitable solution for salvaging Indian agriculture from its problems. According to the findings the farmers find solution for their basic needs through their traditional

ICTs. Hence most of the respondents are yet to go towards modern ICT usage. Due to lack of modern ICT infrastructures in villages, the farmers are still bound to their conventional farming method despite its setbacks. It is encouraging to see the government taking few concrete steps to educate the farmers on modern ICTs. The concrete steps would definitely yield positive results towards adoption of various modern ICT tools by the farmers for better yield in agriculture. The agriculture will get further improved if necessary infrastructures are created by the government and adequate training given by the NGOs for better adoption and usage of modern ICT tools by the farmers.

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