

## Media Tools and their Impact on State Department of Agriculture Personnel for Technology Transfer in Thanjavur District of Tamil Nadu– An Analysis

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### Abstract

Personnel in State Department of Agriculture requires several media tools for the technology transfer process. Thanjavur District was purposively selected for the study. A simple random sampling approach was used to determine the sample size of 30. For the investigation, an ex post facto research design was developed. A semi-structured interview schedule was used to interview the respondents in person. The information gathered were examined with the use of statistical software. The majority of respondents are Agricultural Officers who were falling under young to middle-aged category had medium to high levels of mass media exposure and job satisfaction. according to the profile of the state department of extension personnel. Almost all the extension personnel were found to be aware of ICT tools and services. Half of the extension personnel were the owner of modern electronic devices (53.33 percent). A higher percentage of respondents (56.67%) had a positive attitude toward e-media and used mobile phones to deliver services to clients.

**Keywords:** Media, technology, electronic gadgets, attitude.

### 1. Introduction

Agricultural extension has been recognized as a vital mechanism for imparting knowledge for contemporary farming in the current dynamic environment. Extension organizations are concerned about methods and approaches to be used providing the right agricultural information to farmers. The provision of agricultural information is critical for the general development of agriculture as well as the improvement of farmers' livelihoods (Li, 2009; Milovanovic, 2014). One of the most important

missions in the implementation of agricultural informatization is the agricultural information dissemination service (Chen, 2012). National and regional information services for farmers are promising new subject of research and application in the burgeoning field of e-agriculture (Gakuru et al., 2008). Investment and assistance from the government. Because of the scarcity of resources in the agriculture sector, this is especially important for developing nations (Bo and Sijing, 2007). Because each service model has its own set of benefits and drawbacks, as well as distinct application scenarios, an integrated service model has been investigated and created to help with information dissemination across many communication channels. A two-way flow of information is required for the success of the agriculture information distribution paradigm (Allen and Ochs, 2008). Extension employees use current devices with software/apps (MS word/excel/power point, WhatsApp, Facebook, Short Message Service, email, and so on) and network technologies (internet, dial-up connection, Wi-Fi, search engines, etc.) to provide farmers with real-time information (Raghava and Punna Rao, 2014). However, in recent years, there has been a revolution in the use of Information and Communication Technology (ICT) tools in agriculture, particularly in the delivery of Indian extension services (Gray et al., 2018). Agricultural technology was previously disseminated to farmers by the extension personnel in the department of agriculture around the country. This strategy has failed to reach the bulk of farmers, who are dispersed across the country. Today, using the ability of ICTs to satisfy the location-specific information demands of farmers, it is conceivable to create a way to broadcast agricultural information across the country. Smallholders can now be integrated into a digitally-driven agro-food system (Raghava and Punna Rao, 2014). The next wave of mobile connection development is likely to come primarily from rural areas. In developing countries, 70 percent of the poorest 20% already have access to mobile phones (USAID, 2018). Further, around 40 per cent of the world's population has access to the internet, and large projects are underway to connect individuals living in rural areas of developing countries (World Bank, 2016). Agricultural technology was previously disseminated to farmers by the department of agriculture extension personnel by traditional means. This strategy has failed to reach the bulk of farmers, who are dispersed across the country. Today, the location-specific information demand of farmers is satisfied using ICTs. The Department of Agriculture's principal focus for the past six decades has been crop-based. The focus was on developing new technologies and varieties, as well as disseminating information to farmers and ensuring that the technology was adopted by their community. This has resulted in a stable condition in both the food output and the farming community's revenue. The extension system is yet to fully realize the promise of ICT tools and other forms of communication (Hage Manty, 2011). As a result, the current research aims to investigate the various media tools required for State Department of Agriculture staff to transfer agricultural technology.

## **2. Methodology**

The district of Thanjavur in Tamil Nadu was chosen for the study, which includes eight blocks. Six blocks have been purposefully chosen from this group. Ex-post facto research is an empirical study in which the investigator makes conclusions about the relationship between variables based on independent variables that have already manifested themselves. Based on the research objectives, the respondents were divided into three groups: AAO, AO, and ADA, depending on their current district categorization. The study's sample size was set at 30 extension staff. A basic random sampling procedure was used to choose all of the respondents.

### 3. Selection of Districts

The primary goal of the study was to determine the media tools required for technology transfer by State Department of Agriculture Extension staff. To achieve the goal a district with well-functioning extension system was chosen with the help of authorities from the State Department of Agriculture. Thanjavur district which is famously known as the "Rice Bowl of Tamil Nadu" was selected as it is the most important crop growing district in Tamil Nadu's Cauvery delta zone.

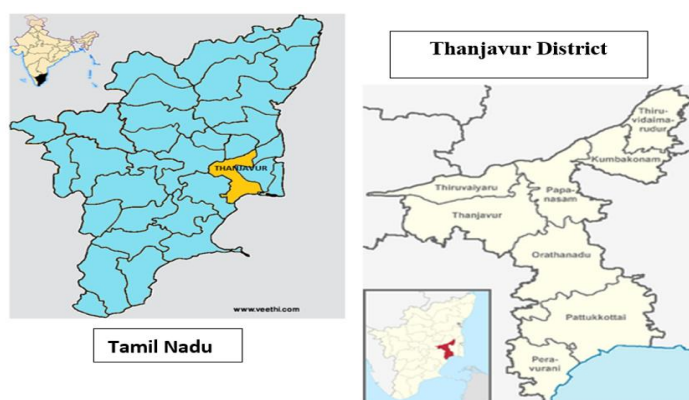
### 4. Selection of Blocks

The district of Thanjavur is divided into eight blocks. Six blocks were purposefully chosen and are given in Table 1 and Fig.1.

**Table.1.** Selected Blocks and respondents spread over in Thanjavur District of Tamil Nadu.

S. No.	Name of the Blocks	No. of Respondents from selected block
1.	Budhalur	5
2.	Thanjavur	5
3.	Pattukottai	5
4.	Madugur	5
5.	Thiruvaiyaru	5
6.	Papanasam	5
<b>TOTAL</b>		<b>30</b>

**Figure. 1.** Map Showing the Study Area.



The latitude of Thanjavur, Tamil Nadu, India is 10.786999, and the longitude is 79.137825

## 5. Findings and Discussion

### 5.1. Profile of the State Department of Agriculture Personnel

In social science study, analysing the respondent's characteristics is critical since it provides a basic and clear picture of the personnel's background. This would also aid in the efficient interpretation of the data collected.

### 5.1.1. Age

Age has been considered for the study since it can reflect an individual's mental maturity in making decisions to meet his demands. As a result, it has been included in this research. The data on the age of respondents were evaluated and shown in Fig. 2.

**Figure.2.** Division of respondents based on their age.

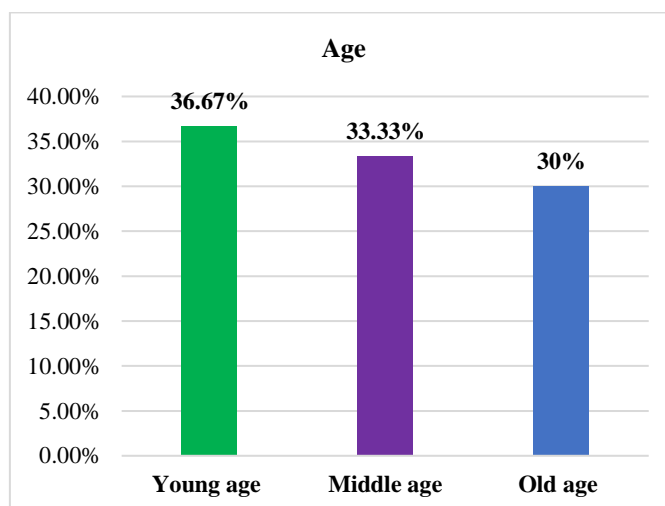


Fig. 2 shows that exactly half of the respondents (36.67 percent) were in the young age group, followed by the medium age group (33.33 percent) and the rest were in the senior age group (30.00 percent). The most likely reason is that the majority of the field level staff had prior experience because they were hired right after graduation.

### 5.1.2. Designation

The act of designating a location for a certain purpose or conferring a special status on it is known designation. A specific designation was obtained based on educational qualification and on clearing competitive exams. Different designations were attained through job experience and in most cases, promotions from the current position. In Table 2, the distribution of responses by designation was analysed and displayed.

**Table.2.** Division of respondents based on the job title.

(n=30)

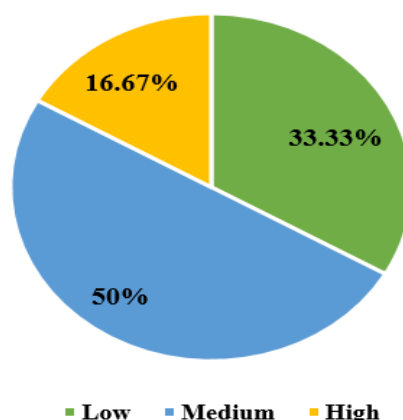
S. No.	Category	Number	Percent
1.	AAO (Assistant Agriculture Officer)	7	23.33
2.	AO (Agriculture Officer)	21	70.00
3.	ADA (Assistant Director of Agriculture)	2	6.67
	<b>Total</b>	<b>30</b>	<b>100.00</b>

Table 2 shows that Agriculture Officers made up the majority of the individuals interviewed (70.00%), with Assistant Agriculture Officers (23.33%) and Assistant Director of Agriculture (6.67%) following closely behind.

### 5.1.3. Experience in Job

Experience gathered over time could aid in making sensible decisions regarding technology transfer. Over a period of time experience in the department may open the way for increased knowledge. Personnel with experience in departmental activities will be able to make the best decisions. Fig. 3 depicts the results of the allocation of staff into different categories based on their work experience. It is very clear that half of the respondents (50.00%) had a medium level of experience, with the remaining respondents having a low degree of expertise (33.33 percent). Only 16.67 per cent of state department of agriculture employees have more than ten years of experience (High level).

**Figure. 3.** Respondents based on different work experience.



### 5.1.4. Educational Status

Education improves one's ability to deal with a variety of situations and aids in making sound decisions. Table 3 shows the distribution of respondents based on their educational status.

It is clear that 36.67 percent of the respondents had received collegiate or post-graduate education, with 23.33 percent holding a diploma. A meagre 3.33 per cent holds Ph.D. in Agriculture.

**Table. 3.** Respondents were divided into groups based on their educational status.

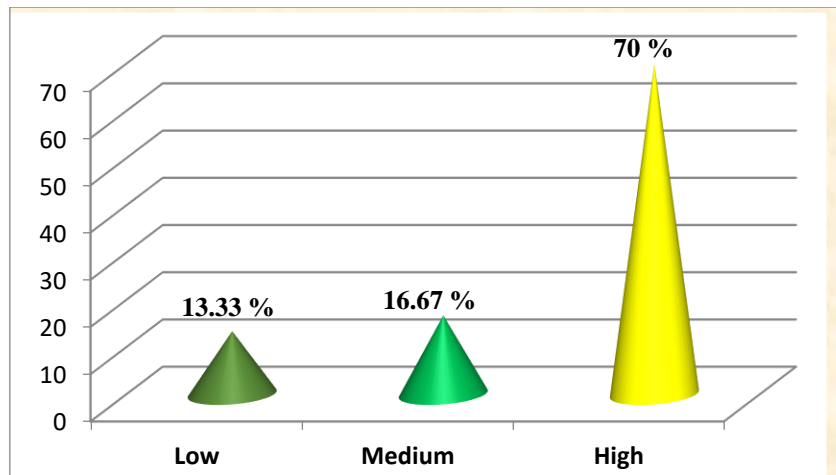
(n = 30)

S.No.	Category	Number	Per cent
1.	Higher secondary education / Dip	7	23.33
2.	Collegiate education	11	36.67
3.	Post-graduation	11	36.67
4.	Doctorate	1	3.33
	<b>Total</b>	<b>30</b>	<b>100.00</b>

### 5.1.5. Mass Media Exposure

Nowadays, the media is crucial in disseminating agricultural technologies. Magazines, newspapers, radio, and television were used to disseminate agricultural information. Figure 4 shows the categorization and distribution of respondents in terms of mass media exposure.

**Figure. 4.** Division of respondents based on Mass Media Exposure.

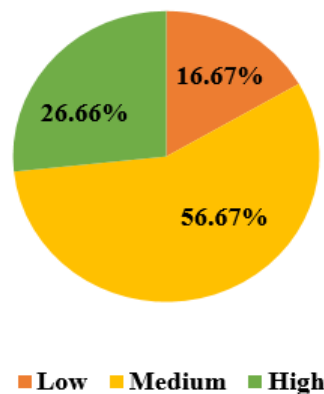


According to Fig.4, the majority of respondents (70.00 percent) had high level of mass media exposure, followed by medium (16.67 percent) and low (13.33 percent) levels. Personnel from the state department of agriculture were trained to be regular readers of farm journals such as TNAU's Uzavarin Valarum Velanmai, as well as TV shows and radio discussions. They were also inspired to undertake scientific farming after watching agriculture programmes on Doordharshan and other commercial television networks. Furthermore, newspapers featured farming pieces in regional languages emphasizing the necessity of cultivation, marketing and success stories. This could be due to the fact that the majority of them were exposed to the media at a high to medium level.

#### 5.1.6. Job Satisfaction

Job satisfaction explains how happy extension personnel is with various aspects of their jobs, such as the job itself, salary, fringe perks, opportunities for self-development and job interest. It determines how effective extension workers are at promoting and speeding up the spread of new agricultural practices. According to Fig.4, the majority of the respondents (56.67 percent) had a medium degree of job satisfaction, while 26.66 percent and 16.67 percent had high and low levels of job satisfaction, respectively. It is quite obvious for government personnel to take satisfaction in having a long-term career. They felt safe in their jobs and were happy with their pay and other benefits.

**Figure. 4.** Respondents were divided into groups based on their job satisfaction.



## 5.2. Awareness of ICT Tools and Services

The usage of ICT tools was required to provide support to extension personnel who would normally be more comfortable with it. Extension personals have to be up to date on new information and communication technology to perform their jobs more successfully. Table 4 further shows that 100 per cent of the respondents were aware of mobile-based information delivery (100.00%) and 91.66 percent of the respondents used the service daily. Only 6.66 percent of respondents use mobile communication weekly, while the rest 1.68 percent use it occasionally. More than three-fifths of the respondents were aware of e-mail (66.66 percent), websites (63.34 percent), and portals (63.34 percent). This could be due to the fact that every department office has started giving desktop and internet access and reports have been generated and submitted to superiors through mail. In contrast, 40 percent of other field staff never used the e-mail function. Nearly one-fifth of the respondents (36.66 percent) were ignorant of the portal and other agricultural websites.

**Table 4.** Distribution of the respondents according to the awareness on ICT tools and services. (n=30)

S. No.	Particulars	Awareness	Frequency of use			
		Aware	Daily	Once in a week	Monthly	Never
		Per cent	Per cent	Per cent	Per cent	Per cent
1.	Mobile telephony	100.00	91.66	6.66	1.68	0
2.	Websites and portal	63.34	10.00	33.34	18.34	38.32
3.	e-mail	66.66	28.34	16.66	15.00	40.00
4.	e- courses	36.66	0	25.00	10.00	65.00
5.	e-books	53.34	31.66	13.34	5.00	50.00
6.	Video conferencing	40.00	11.68	16.66	6.66	65.00
7.	Touch screen kiosks	10.00	0	8.34	1.66	90.00
8.	Social networking tools	70.00	48.32	15.00	3.34	33.34

### \*Multiple responses

The percentage of people who knew about e-books and video conferencing were 53.34 percent and 40.00 percent, respectively. Respondents who were aware of e-books had signed up for online library websites. Half of the respondents have never used an e-book reader. Officials were well-informed about video conferencing, with 60.00 percent of respondents falling into this category. More than three-fifths of the respondents (65.00 percent) were unable to use the video conferencing facility due to a lack of access. The respondents primarily utilize video conferencing for personal reasons and to communicate with distant relatives.

The vast majority of people had never heard of touch screen kiosks before (90.00 percent). Lack of accessibility and exposure to touch screen kiosks may be contributing to the lack of awareness. Officials who were aware of social networking accounted for 70.00 percent of the total. The use of social networking sites such as Facebook and Twitter were higher when compared to other social networking sites. On the other hand, 33.4 percent of respondents never use social networking sites, which could be attributed to a lack of internet access at work and at home.

### 5.3. Possession of Modern Electronic Gadgets

Table 5 shows that 45 per cent of the respondents had a medium degree of possession of modern technological gadgets. Roughly a similar proportion of the respondents (28.34 percent and 26.66 percent, respectively) had low and high levels of possession of modern technological gadgets at home. The results showed that more than half of the respondents (53.33 percent) had a low level of possession of contemporary electronic devices in the office, with 41.67 percent having a medium level of possession. Only a small percentage of respondents (5.00%) responded that they have a lot of modern electronic gears.

**Table. 5.** Distribution of the respondents according to the possession of modern electronic gadgets. (n=30)

S. No.	Category	Possession in personal	Possession in office
		Percent	Percent
1	Low	23.34	58.34
2	Medium	46.66	36.66
3	High	30.00	5.00
	<b>Total</b>	<b>100.00</b>	<b>100.00</b>

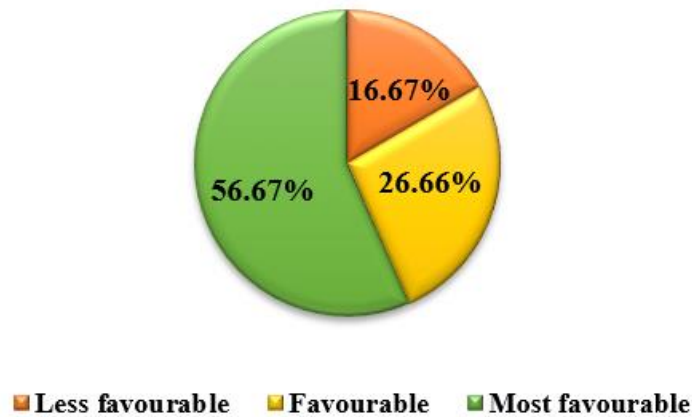
Mobile phones, desktops, laptops, and accessories such as printers, scanners, and webcams, as well as pen drives, projectors, voice recorders, digital cameras and video cameras are all examples of modern electronic gadgets. All the respondents who took part in the survey had phone. Calls and message services were used to communicate workplace information to the respondents. Either a laptop or a desktop computer was used by the respondents at home for themselves and children. A printer and internet connection were installed in the department's extension wing. Pen drives and CDs were also used for both official and personal purposes.

### 5.4. Attitude towards e-Media

A proverb says, "Attitude is a small thing that makes a tremendous impact." The acceptance of technology is determined by one's attitude. Data on attitude towards e-media were gathered, analysed and presented in Fig. 5. A significant number of respondents (56.67 percent) had a positive attitude toward e-media, followed by 26.66 percent who had a positive attitude toward e-media. The remaining respondents (16.67 percent) expressed a negative view on e-media. The respondents thought that e-media reaches a large number of people in a short time. The availability of e-media was limited and the majority of respondents did not use it regularly. The lack of full internet access in department offices was also a major factor in the lower number of officials who used e-media for training reasons. E-media training, particularly e-books, teleconferencing, and online journals were not delivered regularly. Respondents also expressed that e-media, particularly social networking sites, made it easier to transfer training content and current challenges than traditional training techniques.



**Figure. 5.** Distribution of respondents based on their attitude towards e-media.



## 6. Conclusion

Agriculture is dynamic and with changes in government policies and programmes, individuals working in the agriculture department must keep up with the changes experienced in various media tools for the Transfer of Technology (ToT) process. Given the recent developments, officers' capacity building should be done on a regular basis to ensure that their knowledge and abilities are kept up to date. It is also important to check their training needs regularly. As a result, the State Department of Agriculture should plan to provide periodic training to the state agricultural extension workers to improve their knowledge and skills in the effective use and maintenance of ICT instruments. Extension employees must keep their knowledge and skills in information and communication technology up to date. This will increase their use of information and the dissemination of agricultural data. It would be useful to suggest policymakers that a suitable policy could be implemented to pursue technology transfer and its benefits to farmers through ICT and mass media.

## References

1. Allen, D. W., & Ochs, M. A. (2019). Building pathways out of rural poverty through investments in agricultural information systems. *Gates Open Res*, 3(91), 91.
2. Bo, Z., & Sijing, L. (2007). Agricultural Information Service Models Innovation in the Construction of Socialist New Village [J]. *Chinese Agricultural Science Bulletin*, 4.
3. Chen, X. (2012). Introduction to agricultural informatization. China Agriculture Press.
4. Gakuru, M., Winters, K., & Stepman, F. (2009). Innovative farmer advisory services using ICT. In *W3C Workshop "Africa perspective on the role of mobile technologies in fostering social development"*, Maputo, Mozambique (pp. 1-2).
5. Gray, B., Babcock, L., Tobias, L., McCord, M., Herrera, A., & Cadavid, R. (2018). Digital farmer profiles: Reimagining smallholder agriculture. *Grameen Foundation: Washington, DC, USA*.
6. Hage, M. (2011). Access and use of ICT tools by extension personnel for transfer of technology in North Karnataka. M.Sc. (Agri.) Thesis, University of Agricultural Sciences, Dharwad.
7. James, D. J., Lakshminarayan, M. T., & Suresh, D. K. (2018). Information and communication technology tools used by agricultural extension functionaries. *Indian Journal of Economics and Development*, 6(3), 1-7.
8. Kiplang'at, J., & Ocholla, D. N. (2005). Diffusion of information and communication technologies in communication of agricultural information among agricultural researchers and extension workers in Kenya. *South African Journal of Libraries and Information Science*, 71(3), 234-246.

9. Li, D. (2009). China rural informatization development 2009 report. *Publishing House of Electronics Industry: Beijing, China*.
10. Milovanović, S. (2014). The role and potential of information technology in agricultural improvement. *Economic Agriculture, 61*(2).
11. Raghava, N. V., & Rao, P. P. (2014). ICT use behavior of scientists of Krishi Vigyan Kendras. *Interaction, 32*(3), 3-10.
12. USAID. (2018). Digital farmer profile: Reimagining Smallholder Agriculture. Washington
13. World Bank Group. (2016). *World development report 2016: digital dividends*. World Bank Publications.