

DOI No.: <http://doi.org/10.53550/EEC.2023.v29i06s.028>

Attitude of Extension Personnel towards Technology Dissemination System of State Departments of Agriculture in Southern India

M. Ravikishore^{1*}, K. Raghavendra Chowdary², N. Sri Vidya Rani³, B. Krathi Kumari⁴,
Ujwala Rani Seedari⁵, P. Sumathi⁶, P. Supriya⁷ and B. Seema⁸

¹*District Agricultural Advisory and Transfer of Technology Center (DAATTC), Acharya N.G. Ranga Agricultural University, Puttaparthi 515 134, A.P., India*

²*District agricultural Advisory and Transfer of Technology Center (DAATTC), Chithoor, Acharya N.G. Ranga Agricultural University, Anantapuram 517 001, A.P., India*

³*Krishi Vigyan Kendra, Dr. Y.S.R. Horticultural University, Vonipenta 516 173, India*

⁴*Department of Agricultural Extension, S.B.V.R. Agricultural College, Acharya N.G. Ranga Agricultural University, Badvel 516 227, India*

⁵*Department of Agricultural Economics, S.V. Agricultural College, Acharya N.G. Ranga Agricultural University, Tirupathi 517 502, India*

⁶*Department of Applied Sciences, College of Agricultural Engineering, Acharya N.G. Ranga Agricultural University, Madakasira 515 301, India*

⁷*Information and Communication Management (ICM) Division, ICAR-National Academy of Agricultural Research Management, Hyderabad 500 030, India*

⁸*Department of Agricultural Extension, College of Agriculture, Andhra Pradesh Agricultural University, Trivandrum 695 522, India*

(Received 4 June, 2023; Accepted 19 July, 2023)

ABSTRACT

The main purpose of the study was to ascertain the attitude of extension personnel towards technology dissemination system of State Departments of Agriculture (SDA) in Southern India. The study was conducted in two highly diversified south Indian states, namely Kerala and Andhra Pradesh with a total of 200 respondents, comprising 100 respondents from each of the states Kerala and Andhra Pradesh to rate the statements on attitude towards technology dissemination systems of SDA. The data collected through a pre- tested interview schedule wherein an attitude scale was developed and administered the scale to the respondents. The study also depicted the comparative analysis of attitude towards technology dissemination system of SDA among Kerala and Andhra Pradesh extension personnel using parametric standard normal deviate test. It was found that more than half of the respondents (55%) belonged to moderately favourable category followed by unfavourable category (25%) and highly favourable category (20%) respectively with respect to Kerala. With respect to 'Andhra Pradesh extension personnel' distribution, exactly half of the respondents (50%) belonged to moderately favourable category followed by highly favourable category (27%) and unfavourable category (23%) respectively and comparative analysis of attitude among the states showed that, there was significant difference between Kerala and Andhra Pradesh states with respect to

(^{1*}Scientist, ²Scientist, ³Scientist & Head, ⁴Assistant Prof., ⁵Assistant Prof., ⁶Associate Prof., ⁷Scientist, ⁸Professor and Head- Retd.)

their attitude towards technology dissemination systems of SDA. Therefore, understanding extension workers' attitudes towards the use of technology dissemination methods of SDA is important. The moderately favourable attitude would convert highly favourable attitude towards technology dissemination system of SDA in both the states with regular capacity building programmes to the extension personnel on technology dissemination methodologies.

Key words: Agriculture, Extension system, Extension functionaries, Public Extension System, Services

Introduction

Agricultural extension functionaries in India have an important role in dissemination of agricultural technologies to enhance the productivity of the farming community but to implement technology dissemination systems into effectual function, an extension personnel must be ready to adopt new initiatives for quicker dissemination (Lakshmi and Purnima, 2018). Perceiving the needs and demands of technologies, the extension network has been launched countrywide to disseminate the newer technologies. Yet, it was an imbroglio, that whether the available services could meet these needs with the existing scarce financial and human resources (Ravikishore *et al.*, 2016). The public sector extension represented mainly by the State Department of Agriculture (DoA) is the leading agency and continues to be the most important source of information and technology transfer for majority of the farmers. The extension machinery of the State Department of Agriculture (SDA) has the vast network from the national level to the block and village level (Sadamate *et al.*, 2008). The State Departments of Agriculture (SDAs) have been created mainly to provide agricultural extension services and latest technical knowledge to the farming community with the prime emphasis on introduction of high yielding varieties, laying demonstrations, imparting training to farmers to improve skills and knowledge to boost up the agricultural production and productivity (Ravikishore *et al.*, 2023).

The overview of the last few decades proved that the concentrated efforts of the department has brought the revolutionary changes in the technology transformation process from the lab to the field and also had transformed the country from a situation of food deficiency to self-sufficiency. At present, various transfer of technology programmes are being implemented by State and Central Government

through State Department of Agriculture. SDA plays a prominent role in providing main stream public extension service in the field of agriculture and allied sectors in the state. They also provide all the way support, i.e., technical information required, updated innovations in the farming, many subsidies, schemes to promote new practices for the improvement of sustainable agricultural productivity and production along with the socio-economic development of farmers (Sachin *et al.*, 2018)

An attitude is a predisposition or tendency to respond positively or negatively towards a certain idea, object, person or situation. Attitude influences an individual's choice of action and responses to any services, incentives and challenges. The attitude of the extension personnel towards technology dissemination system of the department has direct bearing on their efficiency in job performance. As over the last decades the State Department of Agriculture is playing a vital role in dissemination of technologies among the farm families and its field functionaries are the key contributors in delivering the technologies upto grass root level (Manisha *et al.*, 2020). The failure of the various extension delivery approaches in India to effectively engineer significant and sustainable agricultural growth has become a major concern to all stakeholders, including the funding agencies and donor community. The midst of these challenges extensionists are grappling with the question of how best to harness technology dissemination system of State Department of Agriculture (SDA) to benefit the farming community. Understanding this, the present exploration is highly imperative to streamline the Technology Dissemination Systems of State Departments of Agriculture (SDA) based on the attitude of extension personnel towards technology dissemination system of SDA which needs to cope up with the changing needs of the farming community.

Materials and Methods

State Departments of Agriculture (SDA) were selected purposively as an organization for the present study due to the prime role, responsibility and immense importance given to them in providing agricultural extension services to the farmers at grassroots level. In light of this, a survey was conducted using pre tested and structured questionnaire among the targeted segments of Kerala and Andhra Pradesh extension personnel of Southern India with a total of 200 respondents to rate the statements about attitude of extension personnel towards technology dissemination system of SDA. Extension personnel were selected through stratified random sampling where in the Kerala state was classified into 5 zones, from each zone 20 extension personnel were selected randomly with the sample size of 100 respondents. In case of Andhra Pradesh, the state was classified into two regions, namely: Rayalaseema and Coastal Andhra regions, from each region 50 extension personnel were selected randomly with the sample size of 100 respondents. Thus, the total sample size comprises 200 respondents.

Attitude in this study was operationalised as the degree of positive or negative feeling of farmers towards technology dissemination system of State Department of Agriculture (SDA). The attitude scale was developed using the method of summated rating suggested by Likert (1932). Initially, 52 statements covering entire universe of content were collected. On the basis of 40 judges rating in summated ratings, the final scale was developed with 18 statements (Ravikishore and Seema, 2017). Among these nine statements were the indicators of favorable attitude and remaining nine statements were indicating unfavorable attitude. The developed scale was administered through pre tested and structured questionnaire comprising attitude statements about the technology dissemination systems of SDA. The

Table 1. Scoring Pattern for the Attitude statements

Category	For positive statements	For negative statements
Strongly disagree	1	5
Disagree	2	4
Undecided	3	3
Agree	4	2
Strongly agree	5	1

scoring pattern was followed in 5-point continuum as given below (Table 1).

Based on the total scores the respondents were classified into 3 categories using quartiles, as measure of check. The minimum (18) and maximum (90) possible scores range was considered to derive the quartiles for categorization.

Test for the significant difference between two sample proportions

The study also depicted the comparative analysis of attitude towards technology dissemination system of SDA among Kerala and Andhra Pradesh extension personnel using parametric standard normal deviate test. In this study, p_1 and p_2 are used to represent the Kerala and Andhra Pradesh sample proportions. To test whether the proportion of the sample from Kerala is in agreement with the proportion of the sample from Andhra Pradesh, parametric standard normal deviate test was used. The following test criterion/test statistic was used to test for the significant difference between two sample proportions.

$$H_0: p_1 = p_2 \quad \text{Vs} \quad H_1: p_1 \neq p_2$$

$$\text{Test criterion 'Z'} = \frac{|P_1 - P_2|}{\sqrt{pq (1/n_1 + 1/n_2)}}$$

Results and Discussion

The data collected from our sampled respondents tabulated and analysed using appropriate statistical tools.

Statement wise Attitude of extension personnel towards technology dissemination system of State Departments of Agriculture (SDA) in Kerala and Andhra Pradesh

An effort was made to study the attitude of extension personnel towards the technology dissemination system of State Departments of Agriculture (SDA) in Kerala and Andhra Pradesh. Attitude of the functionaries was judged against 9 positive and 9 negative statements.

As evidenced by the table 2, observing the Andhra Pradesh 'extension personnel' response to attitude statements, majority of the extension personnel responded that, 'I am confident enough to deliver agricultural information through SDA' as a first ranked attitude statement, 'Information communication technologies are effectively utilized by

SDA in technology dissemination' was 2nd ranked attitude statement, 'Information from technology dissemination system of SDA to the farming community is timely' was 3rd ranked statement followed by 'Usage of technology delivery methods developed by SDA in advisory service increases my learning', 'I feel motivated in my work when using innovative technologies used by SDA for advisory services', 'Information from technology dissemination system of SDA is credible source to farmers', 'Technology delivery methods of SDA are easy to understand', 'Technology delivery methods developed by SDA are location specific', Technology dissemination system of SDA helps me to share resource spe-

cific information were the positive (favorable) attitude statements ranked from 4th to 9th respectively. Careful observation of all the negative statements revealed that, majority of the respondents ranked 'Forward and backward linkages are weak in technology dissemination system of SDA' was the last (18th) ranked statement, 'Organizational structure of SDA is not perfect for technology dissemination system' was the last (17th) ranked statement followed by all other negative statements in decreasing order of ranking. The probable reason behind the findings might be that the extension personnel have the passion and conviction in adopting the technology dissemination system of SDA as it is the only public

Table 2. Statement wise Response of extension personnel by their attitude towards the technology dissemination system of State Departments of Agriculture (SDA) in Kerala and Andhra Pradesh n=200

Sl. No	Statements	Andhra Pradesh Extension personnel (n ₁ = 100)		Kerala Extension personnel (n ₂ = 100)	
		Mean Score	Rank	Mean Score	Rank
1	I am confident enough to deliver agricultural information through SDA	4.27	1	3.99	1
2	I feel motivated in my work when using innovative technologies used by SDA for advisory services	4.18	5	3.90	4
3	Usage of technology delivery methods developed by SDA in advisory service increases my learning.	4.21	4	3.76	6
4	Information from technology dissemination system of SDA to the farming community is timely.	4.23	3	3.69	7
5	Technology delivery methods developed by SDA are location specific.	3.95	8	3.64	8
6	Technology dissemination system of SDA helps me to share resource specific information	3.89	9	3.60	9
7	Information communication technologies are effectively utilized by SDA in technology dissemination	4.26	2	3.98	2
8	Information from technology dissemination system of SDA is credible source to farmers.	4.17	6	3.92	3
9	Technology delivery methods of SDA are easy to understand.	3.98	7	3.78	5
10*	Forward and backward linkages are weak in technology dissemination system of SDA	3.57	18	2.60	16
11*	Technology delivery methods of SDA needs improvement	3.7	16	2.24	18
12*	There is un flexibility in the present technology delivery methods of SDA	3.78	13	2.52	17
13*	Organisational structure of SDA is not perfect for technology dissemination system	3.62	17	2.76	15
14*	I do not want to use latest technology delivery methods developed by SDA in my advisory services.	3.81	12	3.58	10
15*	Technology dissemination system of SDA is not up to date	3.76	14	3.20	13
16*	Technology dissemination system of SDA has not lessened the problems of farmers.	3.74	15	3.12	14
17*	Technology dissemination system of SDA is not essential for technology transfer	3.85	10	3.56	11
18*	Farmers' achievement has not increased on using technology delivery . methods of SDA	3.83	11	3.34	12

* Negative attitude statements (Unfavorableattitude statements)

n=200

extension system catering the majority of the farmers in the state of Andhra Pradesh and also the respondents feel responsibility to make use of the dissemination platforms for serving the farming community in a more comprehensive way with key solutions to locally identified problems.

Witnessing the Kerala 'extension personnel' response to attitude statements, majority of the extension personnel responded that, 'I am confident enough to deliver agricultural information through SDA' as a first ranked attitude statement, 'Information communication technologies are effectively utilized by SDA in technology dissemination' was 2nd ranked attitude statement, 'Information from technology dissemination system of SDA is credible source to farmers' was 3rd ranked statement followed by 'I feel motivated in my work when using innovative technologies used by SDA for advisory services', 'Technology delivery methods of SDA are easy to understand', 'Usage of technology delivery methods developed by SDA in advisory service increases my learning', 'Information from technology dissemination system of SDA to the farming community is timely', 'Technology delivery methods developed by SDA are location specific', 'Technology dissemination system of SDA helps me to share resource specific information' were the positive (favorable) attitude statements ranked from 4th to 9th respectively. Careful observation of all the negative statements revealed that, majority of the respondents ranked 'Technology delivery methods of SDA needs improvement' was the last (18th) ranked statement, 'There is un flexibility in the present technol-

ogy delivery methods of SDA' was the last (17th) ranked statement followed by all other negative statements in decreasing order of ranking. This might be due to the extension personnel are the technically qualified staff those who is capable of solving field problems. The functionaries also reported that the SDA, each month organizes trainings or refresher courses on latest issues in agriculture and allied areas for them either within the district or in the different training institutes of the state that has collaboration with the department for improving the skills of extension personnel in utilizing technology dissemination platforms. The findings further highlight in both Kerala and Andhra Pradesh states, that there were some aspects towards which the field functionaries exerted negative attitude towards agriculture extension system of SDA. This could be due to the operational area of extension personnel is too large and there is limited scope and flexibility for implementing similar technology dissemination methods for all the locations which may not be compatible to the farmers who grows different crops.

Overall Attitude of the extension personnel towards technology dissemination system of State Departments of Agriculture (SDA) in Kerala and Andhra Pradesh

A perusal of the Table 3 reveals the distribution of the respondents based on their attitude towards technology dissemination system of State Department of Agriculture in the States of Kerala and Andhra Pradesh. Examining the 'Kerala extension personnel' distribution, it could be evident from the

Table 3. Overall Distribution of respondents based on their attitude towards technology dissemination system of State Department of Agriculture

Category	Kerala extension personnel (n ₁ =100)		Andhra Pradesh extension personnel (n ₂ =100)	
	No.	%	No.	%
Unfavourable (<Q ₁)	25	25	23	23
Moderately favourable (Q ₁ -Q ₃)	55	55	50	50
Highly favourable (>Q ₃)	20	20	27	27

Data range – 37 to 74 (KL) Data range – 55 to 84 (AP) Quartile₁-56.75 Quartile₃ -65 Quartile₁ - 66 Quartile₃ - 77 n=200

Table 4. Comparative analysis of attitude among Kerala and Andhra Pradesh states extension personnel.

Category	Kerala (n ₁ =100)	Andhra Pradesh (n ₂ =100)	'z' value
Low (<15)	28	15	2.2375*
High (15 and above)	72	85	

* - Significant at 5% level

table that more than half of the respondents (55%) belonged to moderately favorable category followed by unfavorable category (25%) and highly favorable category (20%) respectively. This might be because, the extension personnel perceived that, the technology dissemination methods, schemes and programmes were not fair enough to address the farmers' needs and problems in their own locality. The finding of this study was supported by the results of study conducted by Walke and Bhange (2017). The findings further revealed that, majority of the extension personnel were under moderately favourable category (55%) which might be due to that more focus has been given on regular orientation of the extension functionaries and organization of frequent extension- scientist meets apart from their regular works improves their knowledge and skills to cope up with emerging challenges in agriculture and allied sectors. Hence, moderately favourable attitude was observed among majority of the extension personnel. The findings are supported by the study of Ravikishore *et al.* (2017) who found that majority of the Kerala extension personnel (60%) from SDA had shown moderately favourable attitude towards agri-expert systems.

With respect to 'Andhra Pradesh extension personnel' distribution, exactly half of the respondents (50%) belonged to moderately favorable category followed by highly favorable, category (27%) and unfavorable category (23%) respectively. This might be because, the extension personnel perceived that, the reliability and compatibility of the departmental programmes were fair enough to implement for the benefit of farming community. However, perceived workload by the extension personnel to handle different technology dissemination methods, schemes and programmes was high. The finding of this study was supported by the results of study conducted by Arifullah *et al.* (2014). The findings are also in line with the study of Patel *et al.* (2012) who found that majority of the extension personnel (71.67%) perceived the transfer of technology system of SDA was useful.

Comparative analysis of attitude towards technology dissemination system of SDA among Kerala and Andhra Pradesh extension personnel

The parametric standard normal deviate tests were used to test the significant difference of two sample proportion which means whether the proportion of the Kerala sample is in agreement with Andhra

Pradesh sample proportion or not with respect to attitude. The results in this regard were presented in Table 4.

An appraisal of the Table 4 reveals that the comparative analysis of attitude among Kerala and Andhra Pradesh states extension personnel. It was analyzed with standard normal deviate test, which could be used to test for the significant difference of two sample proportions. We can see that, 'z' value was more than the table value at 0.05 per cent level of significance. Hence, it was inferred that there was significant difference among Kerala and Andhra Pradesh sample proportions with respect to attitude towards technology dissemination system. This was because the organisational structure of SDA is different in Kerala and Andhra Pradesh. The extension personnel working in these states are at different hierarchical levels. The schemes and programmes implemented by these states are also different. These factors might have influenced the attitude of respondents in the respective states which might be the reason for the result obtained.

The study revealed that the majority of the Kerala extension personnel had moderately favourable attitude (55%) towards technology dissemination system of SDA followed by unfavourable attitude (25%) and highly favourable attitude (20%) respectively towards technology dissemination system of SDA and almost the similar trend was observed in case of Andhra Pradesh extension personnel where half of the respondents (50%) had moderately favourable attitude, but 27 percent had highly favourable attitude and 23 percent had unfavourable attitude where these categories are in contrary with Kerala extension personnel. Based on the findings it can be concluded that though majority of the respondents displayed moderately favourable and favourable attitude towards the technology dissemination system of the department however, still there were somany loopholes in the existing transfer of technology system. There was inadequate number of staff, scarce infrastructural facilities, political intrusion, computer illiteracy and heavy workload on the field functionaries that had left them dissatisfied with their jobs. It is therefore recommended that adequate staff should be appointed at field level by the higher authorities in order to reduce the burden of extension functionaries and focus has been given to improve service condition especially with respect to infrastructure facilities. Technical skills should be imparted to the ex-

tension personnel on Information Communication Technologies (ICT) based technologies.

Acknowledgements

This study is a part of Ph.D. research programme in College of Agriculture, Trivandrum, Kerala Agricultural University, India. The authors wish to thank Kerala Agricultural University and University Grants Commission (UGC) for providing financial and technical support throughout the research programme and also immensely thankful to the SDA of Kerala and Andhra Pradesh states who responded promptly to complete the study within the time frame.

Conflict of interest

Authors do not have any conflict of interests that are directly or indirectly related to the work submitted for publication.

References

- Lakshmi, K.B. and Punima, K.S. 2018. Assessment of e-Readiness of Extension Functionaries of Southern States of India in Agricultural Technology Dissemination. *Journal of Krishi Vigyan*. 7(1): 20-24.
- Ravikishore, M., Reeba, J. and Allan, T. 2016. Attitude of Extension Professionals Towards Agri-Expert Systems. *International Journal of Bio-resource and Stress Management*. 7(2): 295-299.
- Sadamate, V.V., Venkatasubramanian, V. and Sulaiman, R. 2008. Technology Transfer and Extension: Towards a Second Green Revolution. An article presented at Second Green Revolution Summit, Kolkata. pp 495-511. 2008.
- Ravikishore, M., Seema, B. and Supriya, P. 2023. Performance Effectiveness Index of Technology Dissemination System of State Departments of Agriculture in Kerala and Andhra Pradesh. *Eco. Env. & Cons.* 29: S99-S108.
- Sachin, V.R., Bordoloi, R., Singh, R., Singh, R.J. and Hemochandr, L. 2018. A study on organizational climate as perceived by the employees of district agricultural offices in Meghalaya. *The Pharma Innovation Journal*. 7(12): 142-147.
- Manisha, P., Dhriti, S. and Shalini, P. 2020. Attitude of the Field Functionaries towards the Agricultural Extension System of State Department of Agriculture. *Journal of Community Mobilization and Sustainable Development*. 15(3): 730-734.
- Likert, R.A. 1932. A technique for the measurement of attitude scale. *Archives Psychology*. 22(55): 140.
- Ravikishore, M. and Seema, B. 2017. A Scale to Measure Attitude of Extension professionals towards technology dissemination system of State Department of Agriculture (SDA). *Indian Res. J. Ext. Edu.* 17(1):109-112.
- Patel, D.B., Thakkar, K.A. and Patel, K.S. 2012. Perception of the Extension Personnel about Transfer of Technology System in North Gujarat. *Gujarat Journal of Extension Education*. 23: 95-98.
- Arifullah, M., Zahan, A., Rana, M., Adil, M. and Shamsunnaher, 2014. Attitude of the Rural Elite Farmers towards Extension Activities Performed by Personnel of Department of Agricultural Extension. *The Agriculturists*. 12(1): 96-102.
- Walke, J.P. and Bhange, S.B. 2017. Attitude of Bank Agricultural Officers towards their Job. *J. Multidisciplinary Advance Res.* 6(1): 47-50.