



Effectiveness of Extension Intervention Provided by State Department of Agriculture in Tamil Nadu during COVID-19 Pandemic

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aim: The main aim of this research is to study the extension officials' perception towards the effectiveness of online training programme conducted during COVID-19 pandemic.

Study Design: Cross section research design.

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Place and Duration of Study: Coimbatore and Tiruvallur districts of Tamil Nadu, India. Two years (2021-2022).

Methodology: From the selected two districts 70 extension officials were randomly selected for conducting the study. Data were collected from the extension officials who conducted online training during COVID-19 pandemic. Paper-Pencil survey method was used to collect data from the farmers. The survey approach is useful for evaluating opinions and trends by gathering quantitative data. A separate scale was developed for assessing the extension officials' perception towards the effectiveness of online training. Kirkpatrick's model was used for developing scale to measure the extension officials' perception towards the effectiveness of online training. The developed scale were validated by the experts. A scale was measured using 5-point Likert scale with 1 denoting "strongly disagree and 5 denoting "strongly disagree" were employed in this study.

Results: Majority of the extension officials admitted that training programme is adequate, objectives of the training programme successfully achieved, training programmed lead to better performance of farmers and training programme improved knowledge and skills of the farmers. The major findings of the study were that the majority of the extension officials admitted that they had medium to very high level of perception towards the effectiveness of online training.

Conclusion: online training programme would be best alternative for the normal mode of conducting training programme. In comparison with offline training time and cost will be saved in online training programme. It was recommended to policy makers and government that online training could also be included in transfer of technology process.

Keywords: COVID-19; online training; Kirkpatrick's training evaluation; extension official.

1. INTRODUCTION

The novel Corona virus (COVID-19) pandemic has rapidly spread across the world and adversely affects the livelihoods of millions of people across the globe. The Extension advisory services have been playing a crucial role at the frontline of the response to the COVID-19 pandemic in rural areas. COVID-19 pandemic is impacting agriculture and EAS in many ways. Farmers were inconvenienced with the halt of various agricultural operations due to unavailability of labourers and other resources, they also worried about procurement of their produce and farmers also struggled with transportation, warehousing and marketing of the produce [1]. EAS service provider unable to use traditional mode of delivering services. Thus pandemic demand shift in mode of delivering services. Digital communication tools (Whatsapp), Digital financial services (payments, credit, savings, insurance), e commerce, Interactive Voice Response, Producer group management solutions, Radio, SMS platform (bulk messaging for dissemination, two way messaging), social media (Facebook, Twitter), Video conferencing (Skype, Google meet, Zoom), Virtual call centre were the common digital tools and solutions used by extension service provider during COVID-19 lockdown [2]. Collaborative actions among extension and advisory service provider namely government, private, NGOs, producer

organizations etc is need of the hour during COVID-19 [3].

In Tamil Nadu for implementing agriculture related schemes, policy and to deliver extension advisory services to farming community there is separate wing called State Department of Agriculture. The activities of state department of agriculture is supplemented through other stakeholders such as Non-Governmental Organizations (NGOs), private sector, Farmer Producer Organizations (FPOs), farmer groups for delivering extension advisory services to farmers. The extension advisory service provider has proven very instrumental for national and local governments as well as for rural communities during the pandemic in bridging information gap [4]. State Department of Agriculture developed and used E-Thottam (e-farm) portal to supply fruits and vegetables to the consumers directly during the lockdown [5]. COVID-19 curfew affected normal mode of delivering extension and advisory services to farmers [6].

Extension and research are two crucial components for the development of agriculture. Right advisory services along with the right inputs will ultimately increase farm productivity. On the other hand, one of the biggest challenges for the stakeholders is providing extension and advisory services to the farming community at right time. Extension professionals of state

department of agriculture, NGOs, FPOs have also adopted methods like mobile SMS service, WhatsApp and Facebook platforms for circulating videos, zoom platform for video conferencing and participating in webinars, Facebook live posting or chatting, creating You Tube videos & sharing You Tube links, Telegram chat platform, Television program links, WebEx and Skype for video-conferencing, radio/FM programs and e-mail services for disseminating agricultural related information.

Though many interventions given by state department of agriculture helped farmers to combat this COVID-19 pandemic, it was not known that whether the interventions met its intended objective, whether these interventions were relevant, appropriate to the farmers. So far, there is no research regarding the worthiness of those interventions provided by state department of agriculture to help farmers to cope with COVID-19 pandemic. In this point it is need of the hour to study the effectiveness of extension intervention provided by state department of agriculture, by evaluating extension intervention given during pandemic will lead to rectify the errors and correct it in future. The important services provided by state department of agriculture were online training, help line services and mobile vehicle mode of marketing. State department of agriculture and ATMA jointly organized online training across the district during lockdown. As a result of the COVID-19 social distancing efforts, there has been a large-scale transition to online training [7-12]. The components of such a carefully designed online experience include learning methodologies, contexts, tools and simulators and support systems for digital learning (Sousa et al. 2019). These training were conducted through zoom meeting. Online training were given under different topics such as training on micro irrigation, seed production, soil sample collection, post harvest management etc. The main objective of this paper is to study the extension officials' perception towards the effectiveness of online training.

2. METHODOLOGY

2.1 Locale of Research

The current study was carried out at Coimbatore and Tiruvallur district of Tamil Nadu. Study area was selected purposively based on the following criteria:

- Severity of COVID-19 pandemic i.e., incidence of maximum no. of cases

- Domination of agricultural activity

The top five districts affected by COVID 19 are Chennai, Coimbatore, Chengalpattu, Tiruvallur and Erode. To cover different zone and also to satisfy above criteria among these districts, Coimbatore and Tiruvallur districts were purposively selected for conducting the study.

2.2 Selection of Respondents

From the two districts 70 extension officials were randomly selected for conducting the study.

2.3 Research Design

A cross-sectional research design was employed for the study. Data were collected from the extension officials who conducted online training during COVID-19 pandemic. Paper-Pencil survey method was used to collect data from the farmers. The survey approach is useful for evaluating opinions and trends by gathering quantitative data [13].

2.4 Questionnaire

A survey questionnaire method was used to collect the data from the respondents. Questionnaire was pre tested to ensure objectivity and unambiguity. A separate scale was developed for assessing the extension officials' perception towards the effectiveness of online training. Kirkpatrick's model was used for developing scale to measure the extension officials' perception towards the effectiveness of online training. Kirkpatrick [14] theory is used to evaluate the training effectiveness. Around the world in all various sector including private and government sector widely utilized Kirkpatrick model of training evaluation model [15]. The chosen paradigm by evaluator for evaluating training effectiveness was Kirkpatrick's [15] four levels of training evaluation. The Kirkpatrick [15] model will determined the overall efficacy of training. The four levels of evaluation namely.

The developed scale were validated by the experts. A scale was measured using 5-point Likert scale with 1 denoting "strongly disagree" and 5 denoting "strongly disagree" were employed in this study.

3. RESULTS AND DISCUSSION

An attempt has been made in this study to analyse the extension officials' perception towards the effectiveness of online training

provided during COVID-19 pandemic. Extension officials' perception towards the effectiveness of online training was studied through Kirkpatrick's training evaluation model.

Extension official's perception towards the effectiveness of online training referred to the extent to which online training met its intended objective. It also refers to the extent to which extension officials perceive that online training achieve its intended objective. The data relevant to statement wise extension officials perception towards the effectiveness of online training are presented in Table 1 and overall extension officials perception towards the effectiveness of online training was reported in Table 1.

a. Reaction

Table 1 revealed that most of the extension officials perceived that training content is adequate which was ranked as I with the

weighted average 22.71 followed by training programme is comprehensive (20.91), content is relevant to field situation (20.33), Training programme is organized in structured manner (19.92), Language was easy (18.91), value of the training programme is conveyed to farms (18.35), training style is appropriate (18.27), Farmers' queries were addressed promptly (18.13), Training programme address the real need of the farmers (18.08), Training programme is effective use of time (17.53) in that order.

Majority of the extension officials perceived that training content is adequate because all the essential content pertaining to training programme was circulated among training participants through whatsapp group and also video presentation was done wherever necessary. All the necessary arrangements were done in order to ensure that the online training programme is not inferior to offline training programme.

Table 1. Statement wise extension official's perception towards the effectiveness of online training

S. No.	Statement	Weighted average	Rank
a. Reaction			
1.	Training content is adequate	22.71	I
2.	Training programme is organized in structured manner	19.92	IV
3.	Training content is relevant to field situation	20.33	III
4.	Training programme is comprehensive	20.91	II
5.	Value of training is conveyed to farmers	18.35	VI
6.	Farmer's queries were addressed promptly	18.13	VIII
7.	Training programme address the real need of the farmers.	18.08	IX
8.	Training programme effectively use of time	17.53	X
9.	Training style is appropriate	18.27	VII
10.	Language used was easy	18.91	V
b. Learning			
1.	Objectives clearly articulated	20.17	III
2.	Objectives were achieved successfully	20.19	II
3.	Objectives aligned with current pandemic situation	21.05	I
4.	Training programme increased knowledge of farming	19.62	IV
5.	Audio visual aids are used promptly	19.19	V
6.	Able to use technologies taught	19.17	VI
7.	Farmers Gained skills	19.04	VII
c. Behavior			
1.	Farmers were able to solve farming problems	20.31	I
2.	The training has help farmers to utilize their potential	18.92	IV
3.	Farming practices were improved	19.92	III
4.	Farming skills improved	19.94	II
5.	Famer's applied the things learned in training programme in daily activities	18.18	V

d. Results			
1.	Increase in income	19.74	V
2.	Increase in knowledge	20.91	II
3.	Gain in skills	20.22	IV
4.	Enhancement in entrepreneurial activity	20.35	III
5.	Crop diversification	19.73	V
6.	Better performance	21.05	I
7.	I was satisfied with the training programme	19.61	VII

b. Learning

It could also be inferred from the Table 1 that majority of the extension officials perceived that objectives aligned with pandemic situation which was ranked as I with the weighted average of 21.05 followed by objectives were achieved successfully and objectives clearly articulated which were ranked as II and III with weighted average of 20.19 and 20.17 respectively. Subsequently extension official perceived that training programme increased knowledge of farming (19.62), Audio visual aids were used promptly (19.19), farmers were able to use technologies taught (19.17) and farmers gained skills (19.04) in that rank order.

Majority of the extension officials admitted that objectives of the training programme were in line with the pandemic situation. The probable reason might be that farmers faced difficulties in marketing of their perishables. Therefore, value addition of farm produce training was organized. Next to that extension official admitted that objectives were successfully achieved. In spite of pandemic extension officials successfully organized training programme with cent per cent participation and also extension officials made farmers to adopt the things learnt during training programme.

c. Behaviour

From the Table 1 it was seen that majority of the extension officials perceived that farmers were able to solve the farming problems followed by farming skills improved, farming practices improved which were ranked as I and II with the weighted average of 20.31 and 19.94 respectively followed by farming practices were improved which is ranked as III with the weighted average of 19.92. Next to that extension officials perceived that the training helps farmers to utilize their potential and Farmer's applied the things learned in training programme in daily activities

which were ranked as IV and V with the weighted average of 18.92 and 18.18.

COVID-19 pandemic restricted normal mode of conducting training and meeting which inhibited the transfer of technology process. Hence online training technology transfer process easier for extension officials in spite of pandemic and also online training helped farmers to know about recent technologies. Value addition training improved farmer's skills related to value addition during COVID-19 pandemic. Training programme on micro irrigation, soil testing improve farm practices during COVID-19 pandemic.

3.1 Results

It was corrugated from the Table 1 that extension officials mostly perceived better performance (21.05), increase in knowledge (20.91), enhancement in entrepreneurial activity (20.35), gain in skills (20.22), increase in income (19.74) and crop diversification (19.73) in that order.

The probable reason for the results might be that online training on micro irrigation, soil testing, seed production, post harvest practices would lead to better way of doing farming, enhance knowledge, skills and entrepreneurial activity such as pickle making, juice making among farmers which ultimately lead to increase in income of the farmers.

It could be inferred from the Table 2 that above one-fourth of the extension officials (28.58%) reported that they had medium level of perception towards the training effectiveness followed by exactly one-fifth of the respondents (20.00%) had high as well as very low level of perception towards the training effectiveness and also little amount of them (15.71%) had very high as well as low level of perception towards the training effectiveness. The findings were in line with the findings of Williams [16] and Singh, [17]. The findings also contradictory with the findings of Mishuk et al. [18].

Table 2. Overall extension official’s perception towards the effectiveness of online training

		(n=70)	
S.No.	Category	Number	Per cent
1.	Very Low (<112)	14	20.00
2.	Low (112-121)	11	15.71
3.	Medium (121-128)	20	28.58
4.	High (128-132)	14	20.00
5.	Very high (>132)	11	15.71
Total		70	100

Majority of the extension officials (64.00%) had medium to very high level of effectiveness towards the effectiveness of online training. The probable reason might be that in spite of pandemic extension official’s successfully organized training programme with cent per cent participation, prior to the training they have circulated training materials through whatsapp, adequate training content was prepared, designed objectives were successfully achieved, solved farmer’s problem through online training programme and also training programme lead to better performance of farmers.

4. CONCLUSION

The result of evaluation of the effectiveness of online training programme showed that online training programme was effective. Extension officials had medium to very high level of perception towards the effectiveness of online training. Extension officials perceived that training content is adequate, objectives were successfully achieved, farming related problems raised during COVID-19 pandemic resolved as a result of online training, training programme lead to better performance of farmers, increased knowledge and skills of farmers and also online training programme resulted in increased income of farmers. Therefore online training programme would be best alternative for the normal mode of conducting training programme. In comparison with offline training time and cost will be saved in online training programme. The major problem in proper conduct of online training was availability of internet and smartphone/laptop/computer. In this post pandemic era also extension officials were willing to conduct online training to overcome budget and time constraints by ensuring availability of smartphone/laptop/computer and internet connectivity. Therefore it was recommended to policy makers and government that online training could also be added for transfer of technology.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Digvijay S Pawar, Ankit Kumar Yadav, Ninad Akolekar, Nagendra R Velaga. Impact of physical distancing due to novel corona virus (SARS-CoV-2) on daily travel for work during transition to lockdown. *Transportation Research Interdisciplinary Perspectives*. 2020;7: 100203
2. Shaik N Meera Blog 125- Is COVID crisis a tipping point for transformational changes in digital extension? Available:<https://www.aesanetwork.org/blog-125-is-covid-crisis-a-tipping-point-for-transformational-changes-in-digital-extension/>
3. FAO. In: Meera, S.N Is COVID crisis a tipping point for transformational changes in digital extension? *Agriculture Extension in South Asia*. 2020 .Blog no-125, June, 2020. Available:<https://www.aesanetwork.org/blog-125-is-covidcrisis-a-tipping-point-for-transformational-changes-in-digitalextension/>
4. Davis Kristin E, Chen, Kevin Z, Leclair Mark, Karamidehkordi Esmail, Larsen Carl, Babu Suresh Chandra. Extension and advisory services role in the COVID-19 crisis. *Agrilinks*. 2020; First published online on May 07, 2020.

- Available:<https://www.agrilinks.org/post/extension-and-advisory-services-role-covid-19-crisis>
5. Economic Times. Tamil Nadu's farm-to-table scheme takes off; 2020. Available:[https://economictimes.indiatimes.com/news/economy/agriculture/tamil-nadus-farm-to-table-scheme-takes off/articleshow/ 75548140.cms?](https://economictimes.indiatimes.com/news/economy/agriculture/tamil-nadus-farm-to-table-scheme-takes-off/articleshow/75548140.cms?)
 6. Chander M. COVID-19 Crisis in India: How Extension and Advisory Services Can Help. Online blog; 2020. Available:<https://www.agrilinks.org/post/covid-19-crisis-india-howextension-advisory-services-can-help>
 7. Atilgan D, Tukel Y. Social capital and satisfaction with life during the COVID-19 pandemic: A case study on coaches. International Journal on Social and Education Sciences (IJonSES). 2021;3(2):342-359. Available:<https://doi.org/10.46328/ijonSES.185>
 8. EISaheli-Elhage, R. Access to Students and Parents and Levels of Preparedness of Educators during the COVID-19 Emergency Transition to e-Learning. International Journal on Studies in Education (IJonSE). 2021;3(2): 61-69.
 9. Govindarajan V, Srivastava A. What the shift to virtual learning could mean for the future of higher ed. Harvard Business Review; 2020.
 10. Kara S. An Investigation of Visual Arts Teachers' Attitudes towards Distance Education in the Time of COVID-19. International Journal on Social and Education Sciences (IJonSES). 2021;3(3):576-588. Available:<https://doi.org/10.46328/ijonSES.246>
 11. Kibici V B. Analysis of Music Teachers' Job Satisfaction and COVID-19 Anxiety Levels. International Journal on Social and Education Sciences (IJonSES). 2021;3(4): 752-767. Available:<https://doi.org/10.46328/ijonSES.275>
 12. Restuati M, Nasution MY, Pulungan ASS, Pratiwi N, Safirah B. Improvement Efforts for Student Learning Outcomes and Motivation using Edmodo during the COVID19 Pandemic. International Journal of Education in Mathematics, Science, and Technology (IJEMST). 2021;9(4): 614-624. Available:<https://doi.org/10.46328/ijemst.1974>
 13. Newsted PR, Huff SL, Munro MC. Survey instruments in information systems. MIS Quarterly. 1998;22:55. DOI: 10.2307/249555
 14. Kirkpatrick D.L. Techniques for evaluating training programs: Pt.1. Reactions. Journal of the American Society for Training and Development. 1959;13(11):3-9.
 15. Yaqoot ESI, Noor WSWM, Isa MFM. The predicted trainer and training environment influence toward vocational training effectiveness in Bahrain. Journal of Technical Education and Training. 2021;13(1):1-14.
 16. Williams, Bridgette B. Ms, An evaluation of the farmer-training programme in Jamaica: Opportunities for use of ICTs in training delivery and in farming activities. AMCIS, Proceedings. 3; 2013. Available:[https://aisel.aisnet.org/amcis2013/ICTCaribbean/RoundTablePresentations /3](https://aisel.aisnet.org/amcis2013/ICTCaribbean/RoundTablePresentations/3)
 17. Singh DK, Premlata Singh. Effectiveness of training programmes under agricultural technology management agency in Bihar. Indian Research Journal of Extension Education. 2014;14(1): 93-95.
 18. Mishuk PS, Kabir MH, Alam MM. Assessing the effectiveness of department of agricultural extension (DAE) services to increase farmers' skill. Asian Journal of Agricultural Extension, Economics & Sociology. 2022;39(6): 68-75. Available:<https://doi.org/10.9734/ajaees/2021/v39i630595>

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