

Original Research Article

Constraints and Suggestions Perceived by Farmers in Utilization of Digital and Communication Technologies (DCTs) for Agriculture

A.P. Kharge*, R.P. Kadam and A.G. More

Department of Extension Education, College of Agriculture, Vasantao Naik Marathwada Krishi Vidyapeeth, Parbhani - 431 402, India

*Corresponding author

ABSTRACT

The present study explored the constraints and suggestions perceived by farmers for utilization of Digital and Communication Technologies (DCTs) in agriculture. The study conducted in Parbhani district of Maharashtra state. The constituting total sample size is 135. The Ex-post-facto research design was used for the study. A well-structured questionnaire designed for study was used for collecting the data from respondents through personal interview method. Constraints faced by farmers in utilization of Digital and Communication Technologies (DCT) tools, farmers faced the infrastructural constraints i.e. lack of uninterrupted power supply, lack of awareness about Digital and Communication Technology (DCT) tools, inadequate internet facilities, *etc.* Farmers also faced socio-economic constraints i.e. high cost of Digital and communication technologies (DCT) gadgets like smart phone, computers, *etc.*, lack of subsidies on Digital and Communication Technologies (DCT) gadgets, high cost of servicing charges of Digital and Communication Technologies (DCT) gadgets, *etc.* Farmers also faced technical constraints i.e. lack of training of the farmers about use of Digital and Communication Technologies (DCT) tools, difficulty in the understanding the language of Digital and Communication Technologies (DCT) gadgets, faulty communication between sellers/operators and farmers about use of Digital and communication Technologies (DCT) tools, *etc.* All these constraints can be overcome by implementing suggestions by respondents like; to create awareness about Digital and Communication Technologies (DCT) tools, to provision of continuous and on time internet facilities, to provide uninterrupted power supply, easy language for understanding of Digital and communication Technologies (DCT) tools, to provide proper infrastructural facilities for maintenance of Digital and Communication Technologies (DCT) tools, maximum utilization of Digital and Communication Technologies (DCT) tools, proper connectivity of internet and better mobile network connectivity in village, arranging of proper training to the farmers, *etc.*

Keywords

Digital and Communication Technology (DCT) tools, Farmers, Constraints, Infrastructural, Socio-economic constraints, Technical constraints

Introduction

The term Digital and Communication Technologies (DCT) can be referred as electronic and digital technologies for storing, processing, transferring of information and communication. Therefore,

Digital and Communication Technologies (DCT) work in conjunction with each other, as the construction of the communication is transmitted in a digital form (Anonymous, 2016). Digital Communication Technology is refers to tools that transmit digital data to enable interaction and communication. The

DCT's range from simple person to person tools like email and social media messaging to complex tools such as machine to machine remote sensing tools used in primary industries (Anonymous, 2014). Agricultural extension is an educational service or system in which the new technologies are transferred from research stations to extension functionaries and finally to the farmers. Agricultural extension that assists farmers through educational procedures in improving farming methods and techniques, increasing production efficiency and income, bettering their levels of living and lifting the social and economic standards of people.

India holds second position among the countries about high population in the world with approximate 1.25 billion people. Around 60 per cent of populations are lives in rural areas and main their occupation is agriculture. The main base is agriculture which continued to be occupation and way of life for more than half of Indian population, even today this making single largest contribution to the GDP of our nation. Sustainable prosperity of the farmers and the agricultural labour holds the key for improving the overall human resource development scenario in the country. There is important need to increase production and productivity in the agriculture. Hence the Indian farmers need to be updated with latest knowledge about the new techniques of farming, new cultivars, farm machinery, market and trade situation, *etc.* the extension personnel of the department of agriculture disseminating the technology and message to the farming community through various extension methods. But these approaches have not been able to reach majority of the farmers, spread across the country as the ratio between farmers and extension worker is 1000:1. These gap remains challenge for extension system even today (Jain, 2011).

Materials and Methods

The present study was carried out in Marathwada region of Maharashtra State during the year 2019-20. The present investigation was carried out in Marathwada region for the study one district is selected randomly, i.e. Parbhani. In Parbhani district of three talukas selected randomly i.e. Parbhani, Gangakhed, and Purna. In selected talukas three villages were randomly selected, thus total nine villages were selected for the present investigation. From each selected village, fifteen (15) farmers were selected randomly. That farmer who are using smart phone with internet facilities is available and engaged in agricultural operations was selected as a respondent. Thus, 135 (Total $9 \times 15 = 135$) total respondents for the present study. Perceived constraints faced by farmers and suggestions for effective utilization of Digital and Communication Technologies (DCTs) in agriculture were studied. The constraint in the present study was operationalized as any condition or factor, which might hinder or restrict the use of it. The three categories of constraints were included in the present study, which were infrastructural, socio-economic and technical. The data were collected by using a well structured interview schedule technique. The data collected were coded, compiled and analyzed using frequencies, percentages and rank.

Results and Discussions

Infrastructural constraints

The data presented in the table 1 shows that, Constraints faced by farmers in utilization of Digital and Communication Technologies (DCT) tools, farmers faced infrastructural constraints i.e. 100 per cent farmers faced lack of uninterrupted power supply, 98.51 per cent farmers faced lack of awareness about

Digital and Communication Technology (DCT) tools, 94.81 per cent farmers faced inadequate internet facilities, 94.07 per cent farmers faced inadequate infrastructural facilities for maintenance of Digital and Communication Technologies (DCT) tools. While 89.62 per cent farmers faced Poor Mobile/internet network connectivity in rural areas, only 45.92 per cent farmers faced insufficient servicing centers of Digital and Communication Technologies (DCT's) in village. Slightly similar finding is reported by Kale *et al.*, (2017).

Socio-economic constraints

The data presented in the table 2 shows that, Constraints faced by farmers in utilization of Digital and Communication Technologies (DCT) tools, farmers faced socio-economic

constraints, i.e. 81.48 per cent farmers faced high cost of Digital and communication technologies (DCT) gadgets like smart phone, computers, *etc.*, 77.77 per cent farmers faced Lack of subsidies on Digital and Communication Technologies (DCT) gadgets, 74.07 per cent farmers faced high cost of servicing charges of Digital and Communication Technologies (DCT) gadgets, 71.85 per cent farmers faced lack of Digital and Communication Technologies (DCT) tools exposure. While 57.77 per cent farmers faced poor economic condition of the rural people, only 42.22 per cent farmers faced lack of sufficient skills in usage of Digital and Communication Technologies (DCT) tools by rural communities. Similar finding is reported by Kumar *et al.*, (2017) and Naveenkumar and Philip (2019).

Table.1 Infrastructural constraints faced by farmers in utilization of Digital and Communication Technologies (DCTs). (n=135)

Sr. No.	Infrastructural Constraints	Frequency	Percentage	Rank
1	Lack of awareness about Digital and Communication Technology (DCT) tools.	133	98.51	II
2	Inadequate infrastructural facilities for maintenance of Digital and Communication Technologies (DCT) tools.	127	94.07	IV
3	Lack of uninterrupted power supply	135	100.00	I
4	Inadequate internet facilities.	128	94.81	III
5	Insufficient servicing centers of Digital and Communication Technologies (DCT's) in village.	62	45.92	VI
6	Poor Mobile/internet network connectivity in rural areas.	121	89.62	V

Table.2 Socio-economic constraints faced by farmers in utilization of Digital and Communication Technologies (DCTs). (n=135)

Sr. No.	Socio-economic Constraints	Frequency	Percentage	Rank
1	High cost of Digital and communication technologies (DCT) gadgets like smart phone, computers, <i>etc.</i>	110	81.48	I
2	Lack of sufficient skills in usage of Digital and Communication Technologies (DCT) tools by rural communities.	57	42.22	VI
3	High cost of servicing charges of Digital and Communication Technologies (DCT) gadgets.	100	74.07	III
4	Lack of subsidies on Digital and Communication Technologies (DCT) gadgets.	105	77.77	II
5	Poor economic condition of the rural people.	78	57.77	V
6	Lack of Digital and Communication Technologies (DCT) tools exposure.	97	71.85	IV

Table.3 Technical constraints faced by farmers in utilization of Digital and Communication Technologies (DCTs). (n=135)

Sr. No.	Technical Constraints	Frequency	Percentage	Rank
1	Difficulty in the understanding the language of Digital and Communication Technologies (DCT) gadgets.	119	88.14	II
2	Non availability of Digital and Communication Technologies (DCT) gadgets spares parts in local markets.	80	59.25	VI
3	Untrained operators.	102	75.55	V
4	Lack of training of the farmers about use of Digital and Communication Technologies (DCT) tools.	130	96.29	I
5	Faulty communication between sellers/operators and farmers about use of Digital and communication Technologies (DCT) tools.	114	84.44	III
6	Lack of local language in handling and understanding of software.	109	80.74	IV

Table.4 Suggestions to overcome the constraints in utilization of Digital and Communication Technologies (DCTs)

Sr. No.	Suggestion	Frequency	Percentage	Rank
1	To create awareness about Digital and Communication Technologies (DCT) tools.	132	97.77	I
2	To provide proper infrastructural facilities for maintenance of Digital and Communication Technologies (DCT) tools.	126	93.33	V
3	To provide uninterrupted power supply.	129	95.55	III
4	To provision of continuous and on time internet facilities.	130	96.29	II
5	An optimum servicing centre's of Digital and Communication Technologies (DCT) tools in village.	79	58.51	XIII
6	Proper connectivity of internet and better mobile network connectivity in village.	120	88.88	VII
7	Affordable cost of Digital and Communication Technologies (DCT) gadgets like smart phone, computers, <i>etc.</i>	68	50.37	XIV
8	Affordable servicing charges of Digital and communication Technologies (DCT) gadgets.	87	64.44	XII
9	To provide offers and subsidies for purchasing of Digital and Communication Technologies (DCT) gadgets.	105	77.77	IX
10	Maximum utilization of Digital and Communication Technologies (DCT) tools.	124	91.85	VI
11	Easy language for understanding of Digital and communication Technologies (DCT) tools.	128	94.81	IV
12	Availability of Digital and Communication Technologies (DCT) gadgets spare parts in local markets.	89	65.92	XI
13	Trained operators.	99	73.33	X
14	Arranging of proper training to the farmers.	117	86.66	VIII

Technical constraints

The data presented in the table 3 shows that, Constraints faced by farmers in utilization of Digital and Communication Technologies (DCT) tools, farmers faced technical constraints, i.e. 96.29 per cent farmers faced lack of training of the farmers about use of Digital and Communication Technologies (DCT) tools, 88.14 per cent farmers faced

difficulty in the understanding the language of Digital and Communication Technologies (DCT) gadgets, 84.44 per cent farmers faced faulty communication between sellers/operators and farmers about use of Digital and communication Technologies (DCT) tools, 80.74 per cent farmers faced lack of local language in handling and understanding of software. While 75.55 per cent farmers faced untrained operators, only

59.25 per cent farmers faced non availability of Digital and Communication Technologies (DCT) gadgets spares parts in local markets. Similar finding is reported by Kale *et al.*, (2017) and Kumar *et al.*, (2017).

Suggestions to overcome the constraints in utilization of Digital and Technologies (DCTs)

The data presented in the table 4 shows that, 97.77 per cent of farmers suggested that to create awareness about Digital and Communication Technologies (DCT) tools, 96.29 per cent of farmers suggested that to provision of continuous and on time internet facilities, 95.55 per cent of farmers suggested that to provide uninterrupted power supply, 94.81 per cent farmer suggested that easy language for understanding of Digital and communication Technologies (DCT) tools, 93.33 per cent of farmers suggested that to provide proper infrastructural facilities for maintenance of Digital and Communication Technologies (DCT) tools, 91.85 per cent of farmers suggested that maximum utilization of Digital and Communication Technologies (DCT) tools, 88.88 per cent of farmers suggested that proper connectivity of internet and better mobile network connectivity in village, 86.66 per cent of farmers suggested that arranging of proper training to the farmers, 77.77 per cent of farmers suggested that to provide offers and subsidies for purchasing of Digital and Communication Technologies (DCT) gadgets, 73.33 per cent of farmers suggested that trained operators, 65.92 per cent of farmers suggested that availability of Digital and Communication Technologies (DCT) gadgets spare parts in local markets, 64.44 per cent of farmers suggested that affordable servicing charges of Digital and communication Technologies (DCT) gadgets. While 58.51 per cent of farmers

suggested that an optimum servicing centre's of Digital and Communication Technologies (DCT) tools in village, only 50.37 per cent of farmers suggested that affordable cost of Digital and Communication Technologies (DCT) gadgets like smart phone, computers, *etc.* Similar finding reported by Kale *et al.*, (2017) and Mishra *et al.*, (2020).

In conclusion, every technology in the world is like two sides of the coin, each and everything has benefits as well as constraints. It is beyond any doubt that Digital and Communication Technology (DCT) is the gift of science. Along with all the benefits, there are certain problems i.e. constraints which the user faces in his or her day to day life. Results of the study indicated that farmers perceived constraints of different types in varying degrees. Majority of them face infrastructural constraints like lack of uninterrupted power supply; lack of awareness about Digital and Communication Technology (DCT) tools, inadequate internet facilities, *etc.* Majority of them face socio-economic constraints like high cost of Digital and communication technologies (DCT) gadgets like smart phone, computers, *etc.*; lack of subsidies on Digital and Communication Technologies (DCT) gadgets, high cost of servicing charges of Digital and Communication Technologies (DCT) gadgets, *etc.* Majority of them face technical constraints like lack of training of the farmers about use of Digital and Communication Technologies (DCT) tools; Difficulty in the understanding the language of Digital and Communication Technologies (DCT) gadgets, faulty communication between sellers/operators and farmers about use of Digital and communication Technologies (DCT) tools, *etc.* all of these constraints should be overcome through implementing suggestions by respondents like to create

awareness about Digital and Communication Technologies (DCT) tools; to provision of continuous and on time internet facilities, to provide uninterrupted power supply, easy language for understanding of Digital and communication Technologies (DCT) tools, to provide proper infrastructural facilities for maintenance of Digital and Communication Technologies (DCT) tools, maximum utilization of Digital and Communication Technologies (DCT) tools, proper connectivity of internet and better mobile network connectivity in village, arranging of proper training to the farmers, to provide offers and subsidies for purchasing of Digital and Communication Technologies (DCT) gadgets, etc.

References

- Anonymous, 2014. SMEs and digital communication techniques: a qualitative market research report prepared for the ACMA by Gfk Australia. Australian Communications and Media Authority Australian Communication and Media Authority.
- Anonymous, 2016. Onlinedictionary, retrieved from, <http://www.thefreedictionary.com/digital+communication+technology>.
- Jain N. 2011. Pratiyogita Darpan. Published by Upkar Prakashan, Agra. (U.P.)
- Kale, R. B., Meena, M. S. and Singh, S. K. 2017. Constraints and suggestions perceived by Krishi Vigyan Kendra (KVK) scientists in utilization of ICT for agricultural extension, *Journal of Community Mobilization and Sustainable Development*, 12(1): 21-24.
- Kumar, S., Sangeetha, V., Premlata Singh, R. Roy Burman, Arpan Bhowmik. 2017. Constraints experienced by agricultural scientists and extension personnel in rice knowledge management and delivery: a case of Rice Knowledge Management Portal (RKMP). *Indian Journal of Economics and Development*, 5(11): 1-8.
- Mishra, Abhishek, O. P. Yadav, Vishkha, Yadav and Swatantra Pratap Singh. 2020. Constraints faced by the farmers and suggestion for effective utilization of ICT services in Agriculture in Central U. P. *The Pharma Innovation Journal*, 9(2): 121-124.
- Naveenkumar, M. R. and H. Philip. 2019. Constraints faced in the Usage of Contemporary ICT Tools. *Journal of Extension Education*, 31(3): 6320-6326.