Constraints faced by dairy farmers of Andhra Pradesh in using ICT tools

ABSTRACT:

The application of ICTs has become a vital component in extension, striving to improve agriculture and related fields by providingtimely and accurate information. ICT tools have revolutionized information sharing with farmers, yet dairy farmers face challenges in accessing information through these tools. Understanding and addressing these challenges is vital to develop inclusive environment for dairy farmers to boost their farm productivity and sustainability.Thus, research was conducted in Chittoor district of Andhra Pradesh to determine various constraints the dairy farmers experience when utilizing ICT tools. The study employed an ex-post facto type research design and data was collected from 120 dairy farmers in 6 villages of Chittoor district, Andhra Pradesh. Garrett ranking methodology was adopted to analyse the challenges faced by farmers in using ICT tools.The findingsshowed that primary constraint faced was lack of sufficient skills in using ICT tools, with a Garrett mean score of 62.21 thenpoor network connection, high cost and maintenance of ICT tools with58.98 and 58.59 respectively. The suggestions were also provided by respondents for effective ICT tool usage, which were analyzed and ranked based on frequency and percentage. The suggestionsincluded providing trainings on using ICT tools, enhanced network connection and ICT tools developed must be simple, easy to operate and user friendly with 79.17 %, 55.80% and 54.17% respectively.

Keywords: Chittoor, Constraints, Garrett ranking, ICT tools, Suggestions.

INTRODUCTION:

In today's knowledge and information-driven society, there is a pressing need for an effective extension delivery mechanism, which can provide momentum for developing a robust platform for knowledge and information sharing among the farmers, ultimately strengthening and boosting agriculture and dairy sector. Current development of agriculture and associated fields depends on bridging the awareness gap and knowledge gap among the end users i.e; farmers. In this regard, Information and Communication Technology (ICT) has become an indispensable tool for agricultural extension. It provides a vital channel for delivering timely, accurate, and user-friendly information to farmers. According to UNESCO, ICT encompasses technologies that enable communication, information processing, and transmission through electronic means. Information is crucial for human growth and survival, with progress relying on access to appropriate information at right time and in the right format (Lahiri *et al.,* 2017). Rural communities often struggle to access important information necessary for making timely

decisions (Mooventhan*et al.*, 2022). The rural population still continues to struggle with accessing basic and essential information needed for prompt decision-making (Meshram 2014). Providing farmers with updated agricultural and dairy information can help in bridging their knowledge gap, despite geographic challenges. Extension agentscannot reach every individual farmer and every farmer cannot contact extension agent regularly (Chaudhari *et al*., 2020). By integrating ICTs in information dissemination among the farming community, there will be better communication between the extension functionaries and the farmers. Currently, the ICT revolution in agriculture and extensionhas enabled direct and easyway to essential information for farmers and rural households through change agents and other intermediaries in the country.

The field of agriculture is working fully to leverage modern ICTs, that are necessary for the long run development of farming systems (Jha *et al*., 2021). Though other sectors are progressing well in using ICTs but its impact on farmers still remains uncertain. ICTs help rural communities prosper by providing fast, reliable, and cost-effective information in a simple and user-friendly way (Anand *et al*., 2020).Despite advancements in ICT tools and their applications in agricultural extension, still many Indian farmers lack the skills and knowledge needed to effectively utilize these tools to enhance their farming practices (Mishra *et al.*, 2020). High cost of ICT tools is another factor that is hindering the adoption of these tools among the farming community(Naik *et al.*, 2022).Since, majority of the Indian farmers are small holder farmers, money is the major obstacle that stops them from purchasing and accessing ICT tools. Providing subsidies for buying ICT tools can help farmers in overcoming their financial barriers to access information present online (Rajoria*et al.*, 2022).Hence, this study was carried to know theproblemsexperienced by dairy farmers for using digital tools and suggestions for improving the usage efficiency.

OBJECTIVE:

To identify the constraints experienced by farmers during ICT tools usage and suggestions for enhancing their effective utilisation

METHODOLOGY:

The current study was purposively conductedatChittoor district in Andhra Pradesh (Latitude: 15.9129° N and Longitude: 79.7400° E)during the year 2021-22, as the districtwas leading in dairy animals'populationand also milk production in state.Research methodology used was ex-post facto. Three mandals namely Bangarupalem, Chandragiri and Tirupati (Rural) were selected purposively from Chittoor district. Additionally, from each selected mandal two villages, from each selected village 20 dairy farmers, who were using at least one ICT

toolwerechosen randomly. Therefore, 120 dairy farmers in total from 6 villages were the sample for study. An interview schedule was employed to determine the different constraints that farmers experienced while using ICT tools. The collected data was arranged using Garrett's ranking method. After interacting with the dairy farmers during pretesting, and data collection, a list of eight significant constraints were identified. In final data collection, dairy farmers were asked to prioritize these identified constraints as per their preference.Respondents provided suggestions for effective ICT tool usage.Frequency and percentage were utilized for analyzing the suggestions. These were then ranked depending on their frequency in descending order.

Garrett ranking technique:

To prioritize the constraints dairy farmers experience whileusing these tools, Garret Ranking methodology was employed. (Garret and Woodworth 1969). The Garrett ranking technique provides a systematic framework for prioritizing the constraints. Based on their own experiences, the dairy farmers ranked the different constraints they have faced while utilizing the ICT tools. Based on their response, constraints were given ranks using the formula below. This technique offers a significant advantage over basic frequency distribution by ranking items based on dairy farmers response, with the resulting rankings then changed into the score values using the formula below:

Percent position = 100*(Rij – 0.5) / Nj

Where, Rij= Rank provided for ith item by the jth sample respondents

Nj= Number of items ranked bythe jth respondents

Rank percentages were converted into scores using Garrett's Table (Garrett and Woodworth, 1969). The scores for each of the constraints were summed and averaged across all respondents. The constraint with the highest average score was identified as the main challenge experienced by the respondent.

RESULTS AND DISCUSSION:

Constraints experienced by dairy farmers in usage of ICT tools:

Constraints refer tothe factors or activities that hinders dairy farmers ICT tools usage to access and obtain dairy information. The data analysed in Table 1 depicts that, the primary constraint was lack ofskills in using ICT tools with a Garrett’s score of 62.21, because farmers need necessary skills to use ICT tools effectively, otherwise their adoption and usage will continue to remain as a challenge.Poor network connection was second most important constraint with Garrett’s score 58.98. Similar type of resultwasrevealed by Balu *et al.* (2018) where they mentioned that connectivity issues limited the respondents access to information. Following this, high cost and maintaining of these ICT tools was given third rank with

Garrett's score 58.59. As majority of them are smallholding farmers, they often face financial problems, limiting their ability to purchase and utilize digital tools.

Table 1: Constraints experienced by dairy farmers in usage of ICT tools

S.No	Constraints	Total Score	Garrett Mean score	Rank
1	High cost and maintenance of ICT tools	7031	58.59	3
2	Complexity while using ICT tools	6525	54.38	5
3	Lack of skills in ICT tools usage	7465	62.21	1
4	Poor network connection	7077	58.98	2
5	Unfavourable attitude towards ICTs	6436	53.63	6
6	Lack of information in local language	5768	48.07	8
7	Limited awareness regarding different information sources	5829	48.58	7
8	Lack of education and e-literacy while using ICT tools	6655	55.46	4

Lack of education and e-literacy while using ICT tools was fourth most major constraint with Garrett's score 55.46. Limited exposure and access to digital technologies leads to e-illiteracy among the dairy farmers, which restricts their ability to understand and use these ICT tools. Complexity of tools was listed fifth with Garrett's score of 54.38 followed by unfavourable attitude towards ICTs ranked sixth with Garrett's score of 53.63. The seventh most limitation faced by dairy farmers was limited awareness regarding different information sources with Garrett's score of 48.58. Less info in local language was listed eight among the constraints with Garrett's score of 48.07.

Suggestions expressed by dairy farmers for effective utilization of ICT tools:

It is clear from data in table 2 that 79.17 per cent of farmers suggested that trainings should be conducted onhowtousedifferent ICTtools,forimprovingtheirskillsinusingICTsandgetrequiredinformationfrom the internet. Enhanced network connection was ranked second by the majority (55.83 %) of farmers. Because good network connectivity can enable them to get information without any problem.

Approximately 54.17 per cent of themsuggestedthatICTtoolsshouldbesimple,easytooperateanduserfriendlybecause

ifthetoolsarecomplextouse,despitehavingrelativeadvantagesandotherbenefitsinusing ICTs it will not be accepted by the dairyfarmers.Around 52.50 per cent suggestedconducting campaigns regardingawarenessondifferentICTtools anditsbenefits.

Table 2. Suggestions expressed by the dairy farmers for effective utilization of ICT tools

S.No	Suggestions	Frequency (f)	Percentage (%)	Rank
1	Trainings should be provided on how to use various ICT tools	95	79.17	1
2	Enhanced network connection	67	55.83	2
3	ICT tools need to be simple, easy to operate and user friendly.	65	54.17	3
4	Conduct awareness campaigns on different ICT tools and itsbenefits	63	52.50	4
5	Reduce cost of ICT tools and data plans	61	50.83	5
6	Providing information in local language	48	40.00	6

Farmers are often unaware about the various ICT tools available for them and theirfeaturesthatcan be used to get information, so by awareness campaigns the experts can teach the dairy farmers about different ICT tools and services that they provide. Nearly half (50.83%) of them suggested that reducing the cost of digital tools and data charges will result in more usage of the tools by dairy farmers. The sixth most important suggestion expressed by dairy farmers was provision and regular updating of information in their regional language, that enables them to use ICTtools much more effectively.

CONCLUSION

Pros and Cons are inherent in any technology. Digitalisation is a recent advancement in science, that offers farmers with several benefits. Yet there are still some challenges thatfarmers face while using these digital advancements. Results of the investigation indicated thatlack of skills in using these tools, poor network connection, high cost and maintenance these tools andlack of education and e-literacywere the major constraints expressed by thefarmers in their accessibility and usage of these digital tools. Significant proportion of them perceived that by provision of trainings on using ICT tools, Enhanced network connection and developing simple and user-friendly tools their usage of ICT tools can be improved. A significant portion of the farmers have recognised that ICT tools have a

better potential for supporting them in the advancement of their dairy farming. Thus, to boost the efficiency with which ICTs can used by the farming community in India, ICT training must be implemented. By understanding these constraints, researchers and policymakers can develop interventions and policies that address the problems, that ultimately boosts ICT adoption and usage by the farming community.

DATA AVAILABILITY:

Data supporting this research would be made available upon request.

DISCLAIMER (ARTIFICIAL INTELLIGENCE):

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

COMPETING INTERESTS:

Authors have declared that no competing interests exist.

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