

## **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 providing accurate information **in time**. 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 findings showed that primary constraint faced was lack of sufficient skills in using ICT tools, with a Garrett mean score of 62.21 then poor network connection, high cost and maintenance of ICT tools with 58.98 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 suggestions included 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. Although, mobile applications have achieved widespread adoption across various sectors worldwide, but their use in agriculture and allied sector is comparatively limited

(Manimekalai, 2013). 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 necessary and updated agricultural and dairy information can help close the knowledge gap among farmers in India's dispersed villages, although the diverse geographic locations present significant challenges (Chauhan, 2010). By integrating ICTs in information dissemination among the farming community, there will be better communication between the extension functionaries and the farmers. Among ICTs, mobile technologies provide effective solutions for farmers, resulting in significant positive impacts on agriculture and allied sectors (Ndzi *et al.*, 2014). This enhanced and smooth communication results in the overall development of dairy sector (Saravanan, 2010). Currently, the ICT revolution in agriculture and extension has enabled direct and easy way 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 longrun 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. Despite advancements in ICT tools and their applications in agricultural extension, many Indian farmers lack the skills and knowledge needed to effectively utilize these tools to enhance their farming practices (Mishra *et al.*, 2020). ICT access and use in dairy farming provides several advantages, such as lowering the costs associated with searching for information, reducing knowledge and information asymmetries particularly with respect to market pricing information (De Silva and Ratnadiwakara, 2008). In Indian context, smallholder farmers constitute the majority of farmers and their usage of ICTs is hindered by their financial condition and lack of public access services. (Girard, 2003). Hence, this study was carried to know the problems experienced 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 conducted at Chittoor district in Andhra Pradesh (Latitude: 15.9129° N and Longitude: 79.7400° E) during the year 2021-22, as the district was leading in dairy animals' population and 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 tool were chosen 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 while using these tools, Garrett 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:

$$\text{Percent position} = 100 * (R_{ij} - 0.5) / N_j$$

Where,  $R_{ij}$  = Rank provided for  $i$ th item by the  $j$ th sample respondents

$N_j$  = Number of items ranked by the  $j$ th 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 to the factors or activities that hinder dairy farmers' ICT tools usage to access and obtain dairy information. The data analysed in Table 1 depicts that, the primary

constraint was lack of skills in using ICT tools with a Garrett's score of 62.21, because farmers need the necessary skills to effectively use ICT tools without which, farmers usage of ICT will continue to remain as a challenge. Poor network connection was second most important constraint with Garrett's score 58.98. Similar type of result was revealed 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. The same was expressed by Jayathilake *et al.* (2008), where farmers expressed that high cost of technological tools has hindered their affordability and accessibility for using ICT tools to boost their knowledge and productivity. 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 on how to use different ICT tools, for improving their skills in using ICTs and get required information from 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 them suggested that ICT tools should be simple, easy to operate and user friendly because if the tools are complex to use, despite having relative advantages and other benefits in using ICTs it will not be accepted by the dairy farmers. Around 52.50 per cent suggested conducting campaigns regarding awareness on different ICT tools and its benefits.

**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 its benefits	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 variety of ICT tools available for them and their features that can 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 ICT tools 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 that farmers face while using these digital advancements. Results of the investigation indicated that lack of skills in using these tools, poor network connection, high cost and maintenance these tools and lack of education and e-literacy were the major constraints expressed by the farmers 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 be 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 is available upon request.

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