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Aditya Kumari
Department of Veterinary and Animal Husbandry Extension, Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar, Haryana, India

Gautam, Rachna
Department of Veterinary and Animal Husbandry Extension, Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar, Haryana, India

Mohit Sharma
Department of Veterinary and Animal Husbandry Extension, Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar, Haryana, India

Khushboo Panwar
Avian Immunology Laboratory, Immunology Section, ICAR-IVRI, Izatnagar, Bareilly, Uttar Pradesh, India

Corresponding Author:
Aditya Kumari
Department of Veterinary and Animal Husbandry Extension, Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar, Haryana, India

Constraints perceived by dairy farmers in utilization of ICT tools in Haryana

Aditya Kumari, Gautam, Rachna, Mohit Sharma and Khushboo Panwar

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Abstract
The present study was conducted in the Hisar and Karnal districts of Haryana with the objective to study "To document constraints perceived by dairy farmers in utilization of ICT tool in Haryana". A sample was selected from two blocks within each district. Furthermore, two villages were chosen from each block, resulting in a total of 20 respondents from each village, yielding a total sample size of 160 farmers. To measure constraints a schedule was developed. A list of various constraints was prepared in consultation with the experts, informal talks and available literature. The data were collected by using structured interview schedule. The data collected were coded, compiled and analysed using MPS and rank. Poor connection on internet in village, Lack of adequate skills to use ICT tools, difficulties with understanding the language of ICT gadgets are the major constraints faced by the dairy farmers in utilization of ICT tools.

Keywords: Constraints, dairy farmers, ICT

Introduction
Livestock plays a crucial role in India's agricultural system, significantly contributing to the economy. As of 2019-2020, India has 535.8 million livestock, with approximately 20.5 million people depending on livestock for their livelihoods. India is the world's largest milk producer, with 221.06 million tonnes produced in 2021-2022, marking a 51% increase over the past eight years (DHAD, 2022) [1].

However, the growth of the livestock sector is constrained by limited access to quality and up-to-date information, which is essential for effective livestock management (Panda *et al.*, 2022) [5]. The growing demand for milk and government efforts to promote dairy ventures emphasize the need for integrating Information and Communication Technology (ICT) tools to support decision-making and improve productivity (Sood *et al.*, 2020) [9].

By adopting ICT, farmers can predict milk yield, optimize feed rations, and enhance breeding programs. These advancements have had a significant impact on the economic outcomes for dairy farmers, helping them to move out of poverty (Reddy, 2016) [7]. Despite significant advancements in ICT tools and their applications in agricultural extension, a substantial proportion of Indian farmers still lack the necessary skills and knowledge to effectively utilize these technologies for enhancing their farming practices (Mishra *et al.*, 2020) [3].

The high cost of ICT tools is another significant factor hindering their adoption among the farming community (Naik *et al.*, 2022) [4]. Since the majority of Indian farmers are smallholder farmers, financial constraints serve as a major barrier preventing them from purchasing and accessing ICT tools. Providing subsidies for the acquisition of ICT tools can help farmers overcome these financial limitations and facilitate their access to online information (Rajoria *et al.*, 2022) [6]. Hence, this study was conducted to identify the challenges faced by dairy farmers in utilizing digital tools.

Objective
To document constraints perceived by dairy farmers in utilization of ICT tools.

Methodology
The present study was conducted in Haryana. The Haryana state comprises of 22 districts. Out of which 2 districts namely Hisar and Karnal were selected purposively for the study.

Two blocks from each randomly selected district were selected randomly viz., Assandh and Nissing from Karnal district whereas Barwala and Agroha from Hisar district. Thus, a total of four blocks were studied. From each selected block, two villages were selected randomly. Mundh and Chagama from Assandh block, Agondh and Gonder from Nissing block, Durzanpur and Chikanwas from Agroha block, Kharakpunia and Panihari from Barwala block, constituted the study area. From each selected village, a sampling frame comprising the list of dairy farmers was prepared with the help of veterinary officer and from the listed farmers, 20 dairy farmers were selected randomly. Hence, 20 farmers from each village were selected randomly to arrive at a total sample size of 160 farmers.

Problems that farmers encounter when utilizing information and communication technologies for dairy farmers on utilization of ICT tools purposes are referred to as constraints. One definition of constraints is the situation of being limited to a specific course of action. To measure constraints a schedule was developed. A list of various constraints was prepared in consultation with the experts, informal talks and available literature. The four categories of constraints were included in the present study, which were sociopsychological, economical, technical and infrastructural constraints regarding ICT utilization. The responses of the individual respondent on each item of these four categories were taken. The data were collected by using structured interview schedule. The data collected were coded, compiled and analysed using MPS and rank. The score for each constraint was summed up. Higher the score, the more severe was the constraint, as perceived by the respondents.

Mean Percent Score (MPS) = Observed score ÷ Total

Results and Discussion

According to Table 1 statistics, the majority of respondents (82.96%) identified "Poor connection on internet in village" as the main obstacle to using ICT tools. It was the most highly ranked constraint that dairy farmers had to deal with. In the research area, "Lack of adequate skills to use ICT tools" was indicated by the majority of respondents (79.12%). It was the second more significant obstacle that farmers presented. About 78.54% of the respondents cited "difficulties with understanding the language of ICT gadgets" as their biggest limitation, followed by "high cost of ICT tools" (77.34%) and "lack of training about how to use ICT tools" (77.50%). The respondents (76.79%) identified "unavailability of electricity" as their perceived constraint. "Lack of credibility of subject matter" (35.83) was the least significant constraint, followed by "Lack of motivation to use ICT tools" (35.76), "Incomplete coverage of information" (27.37), "Inaccurate delivery of information" (26.12), and "Lack of maintenance" (24.45). These findings are consistent with the studies of Maurya *et al.* (2024) [2], Sigdel *et al.* (2022) [8].

Table 1: Constraints in utilization of ICT tools by respondents

S. No.	Constraints	Frequency	Percentage	Rank
1	Lack of information about new technology	101	63.54	11
2	Lack of awareness of benefits of ICT	89	55.97	15
3	Difficulties of understanding the language of ICT gadgets	125	78.54	3
4	Illiteracy among farmers	121	76.11	7
5	Traditional belief	96	60.2	13
6	Lack of faith in ICT tools	79	49.65	20
7	Lack of confidence, interest to use ICT tools	71	44.58	22
8	Lack of motivation to use ICT tools	57	35.76	28
9	Lack of credibility of subject matter	57	35.83	27
10	High cost of ICT tools	123	77.34	5
11	High cost of network services	100	63.12	12
12	Low income of rural farmers	117	73.59	10
13	High initial cost of investment	57	35.93	26
14	Lack of training about how to use ICT tools	124	77.5	4
15	Notable to understand technical information	119	74.43	9
16	Not complete coverage of information	44	27.37	29
17	Inability to operate ICT tools	71	44.43	24
18	Inability to use ICT	91	57.31	14
19	Lack of adequate skills to use ICT tools	126	79.12	2
20	Limited knowledge	86	54	19
21	Lack of local assistant to clarify doubts	88	55.31	17
22	Untimely delivery of information	42	26.12	30
23	Complexity of ICT tools	87	54.37	18
24	Lack of access to internet	89	55.72	16
25	Unavailability of electricity	122	76.79	6
26	Poor connection on internet in village	132	82.96	I
27	Look of upgraded ICT equipment and tools	64	40.31	25
28	Inadequate number of ICT tools	71	44.53	23
29	Lack of maintenance	39	24.45	31
30	Low internet speed	120	75.46	8
31	Non availability of regular ICT services on animal husbandry	79	49.53	21

Conclusion

Pros and cons are inherent in any technology. Digitalization is a recent advancement in science that offers several benefits to farmers. However, there are still challenges that farmers encounter while utilizing these digital advancements. Results of the investigation indicated that

Poor internet connectivity and lack of digital literacy ranked as the top barriers, followed by language issues and high costs. Less critical constraints included information credibility and low motivation, indicating infrastructure and training as priority areas.

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