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Dairy farmers utilization and preference of ICT tools in North Karnataka

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Abstract

Information and Communication Technologies (ICTs) has become increasingly prevalent across various sectors. Information and communication technologies have power to significantly improve the standard of living of dairy farmers. Despite the ample opportunities for ICT in the dairy sector, there is still considerable ambiguity regarding its utilization and preference over the traditional methods. Keeping this in view, the present investigation was taken up to know the utilization and preference of ICT tools by dairy farmers. The study was conducted in Dharwad and Belgaum districts of North Karnataka, a sample of 120 farmers were purposively selected and interviewed with the help of structured pre-tested interview schedule. The data obtained was analyzed applying appropriate statistical procedure viz., frequency, percentage, mean and standard deviation. The results indicated that great majority of the dairy farmer's utilized mobile phone (89.16%) once a week. Further, majority of dairy farmers utilized dairy publications (87.50%), followed by television (65.00%) and Youtube (51.67%) once in a month. Whereas, use of internet (25.83%), newspaper (6.67%) and WhatsApp (4.16%) were least as compared to other ICT tools. The data also revealed that cent percent of the dairy farmers preferred television and mobile phone because it saves time, followed by more than 90.00% preferred it for its effectiveness and ease of operation. Whereas, WhatsApp, newspaper and dairy publications were least preferred ICT tools. The potential of ICT technologies should be used effectively by all the line departments of state like Veterinary and Animal Husbandry, Universities, KVKs, KMF and dairy cooperatives to deliver the expert knowledge to the dairy farmers.

Keywords: Dairy farmers, ICT tools, preference, utilization, technologies

Introduction

In today's digital era, Information and Communication Technologies (ICTs) has become increasingly prevalent across various sectors. Dairy sector heavily relies on efficient management practices since it involves numerous processes, such as milking, feeding, breeding, and monitoring of health. ICTs play a pivotal role by offering advanced solutions to help dairy farmer to streamline operations and increase profitability. These technologies encompass both hardware and software components, enabling farmers to digitize their operations and access real-time information crucial for decision-making (Anonymous, 2021)^[2]. Dairy farmers have gradually embraced and integrated ICTs into their daily operations due to the multiple of benefits it offers. ICTs enables farmers to gather detailed information regarding milk production, quality and animal health. Using data driven approach dairy farmers can predict milk yield, optimize feed rations and enhance breeding programs, ultimately leading to better business outcomes and identify recent trends in dairy. Moreover, ICTs facilitate accurate record-keeping, enabling compliance with regulatory requirements and ensuring traceability, aiding in the overall quality management of dairy products (Bharat, 2021)^[3].

Many dairy farmers opt for user-friendly ICT solutions that require minimal technical expertise for implementation. The utilization of ICTs has considerably transformed the dairy sector. Automation of key dairy activities such as feeding and milking, reduce operational costs, through labor use efficiency and improve work-life balance. Moreover, ICTs empower farmers respond promptly to health alerts, ensuring early disease detection, prevention and enhance their decision-making processes while employing precision-farming techniques to optimize resource utilization. As a result, the overall productivity and profitability of their dairy operations are significantly enhanced.

The effective utilization of ICT tools would bring revolution in the dairy sector, enabling farmers to improve various aspects of their operations and decision-making.

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ICTs offer real-time access to information, ensuring accurate analysis and facilitating proactive decision-making strategies. By considering the preferences of dairy farmers and future innovations in ICTs can further enhance the efficiency and sustainability of dairy farming practices. As the industry continues to evolve, the transformative potential of ICTs becomes increasingly crucial for the growth and success of dairy farmers. Keeping this in view, the present investigation was taken up to study the dairy farmer’s utilization and preference of ICT tools in North Karnataka.

Materials and Methods

The present study was conducted in Dharwad and Belgaum districts of North Karnataka. By following purposive random sampling technique, from each selected district, two taluks were selected. Further from each selected taluk, two hobli’s were selected, from each hobli 15 dairy farmers were selected, all together a total of 120 dairy farmers constituted the sample of the study. The research design adopted for the study was Ex-post facto research design. The data were collected personally with the help of pre-tested structured interview schedule and analyzed by applying appropriate statistical procedure viz., frequency, percentage, mean and standard deviation.

Utilization of ICT tools

Utilization is the degree of use of ICT tools for acquiring latest information on various aspects of the dairy farming. Looking to the availability exhaustive list of ICT tools was prepared, from the list fourteen accessible ICT tools to the dairy farmers were identified and the same was given to dairy farmers to indicate their utilization pattern on five-point continuum, viz., daily, weekly, fortnightly, monthly and never with the scores of 4, 3, 2, 1 and 0 respectively. The summation of the score of a particular respondent indicates their frequency of utilization of ICT tools.

Preference to use ICT tools

Preference of ICT tools is a degree to which a greater liking

for one alternative over other ICT tools among the list of tools available for use by dairy farmers. The list of ICT tools used by dairy farmers were given to the respondents to indicate their preference for use on five-point continuum viz., save time, easy to operate/use, effectiveness, need oriented and convenient with the scores 1, 2, 3, 4 and 5 respectively. This variable was quantified by using the procedure followed by Kakar (2022) [6] with slight modifications. The dairy farmers were asked to select preference for use of ICT tools. The preference for use of ICT tools was categorized under following types.

Based on the total scores of utilizations and preference of dairy farmers for ICT tools the respondents were grouped into three categories separately as low, medium and high using mean and standard deviation as measures of check and the results are as indicated below.

Results and Discussion

Dairy farmer’s utilization of ICT tools

The table 1 and fig. 1 indicated the overall distribution of dairy farmers according to their utilization of ICT tools and indicated that all most half (50.84%) of the dairy farmers had medium utilization of ICT tools, followed by 25.00% and 24.16% had low and high utilization of ICT tools, respectively.

The probable reason for medium utilization of ICTs, might be due to high extension contacts and medium economic and less scientific orientation. Dairy farmers were using only some of the ICT tools with which they were familiar and from which they can get information easily. They were using ICTs for finding dairy information not regularly but as and when it was needed.

Similar results reported by Sinha *et al.* (2018) [9] in their study on profile characteristics and analysis of the constraints faced by the dairy farmers of urban and peri-urban areas of Indian national capital region vis-a-vis using mobile android application "eco-dairy". They discovered that 82.00% of respondents owned a smart phone and 40.00% of them had internet access through their mobile phones/tablets/computers.

Table 1: Overall distribution of dairy farmers according to their utilization of ICT tools (n =120)

Sl. No.	Category	Frequency (f)	Percentage (%)
1	Low (<4.75)	30	25.00
2	Medium (4.75 to 7.00)	61	50.84
3	High (>7.00)	29	24.16
Mean = 5.78		SD =2.43	

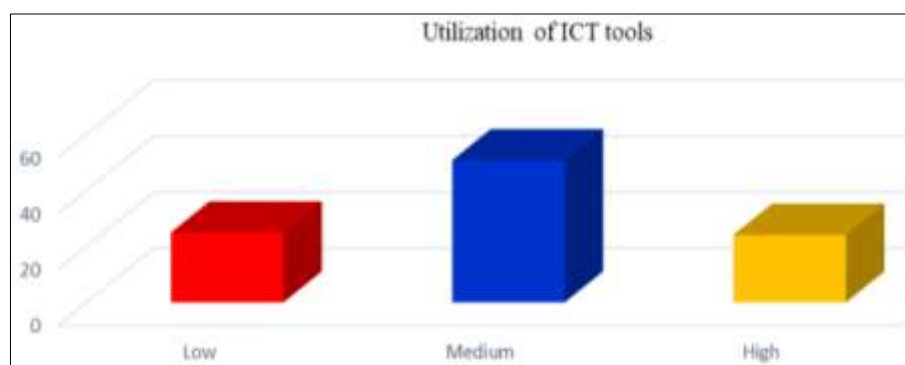


Fig 1: Overall distribution of dairy farmers according to their utilization of ICT tools

Dairy farmer’s frequency of utilization of ICT tools

Distribution of dairy farmers according to their frequency of utilization of ICT tools is presented in table 2, as gadgets,

applications, print media and networking technologies was listed as under.

Gadgets

With respect to TV, majority (65.00%) of dairy farmers used to watch TV once in a month. Whereas, 30.84% and 4.16% of dairy farmers watched TV once in fortnight and once in a week, respectively. In case of mobile phone, high majority (89.16%) of dairy farmers used mobile phone once a week followed by once in a month (10.84%). Whereas, none of the dairy farmers had utilized radio and computer/ laptop for getting dairy related information.

The probable reason for majority of the respondents possessing TV and mobile phone might be due to the effectiveness of TV and mobile phone in disseminating dairy related information to the farming community. TV was well-liked since it has greater appeal to eyes as the extension of seeing is believing. Additionally, a variety of programme on dairy farming news on dairy farming, interviews with expert and successful farmers and success stories of dairy farmers were shown on TV and it also, deliver a wide range of dairy information. Mobile phones' portability and versatility might enable people to take it everywhere. They also believed that the information coming from these sources is accurate and reliable. The use of radio was unseen because of its less accessibility in recent time and the raising popularity of other ICT tools. None of the dairy farmers possessed computer/ laptop because of its high cost and lack of knowledge in using it. As a result, the majority of respondents used TV and mobile phones to learn about various facets of dairy production.

This finding is in conformity with finding of Sinha *et al.* (2018) [9] in his study, found that 82.00% of dairy farmers owned smart phone. Similar results were found by Naik *et al.* (2019) [7] in their research on the potential and use of mobile phones by farmers in the Nellore district of Andhra Pradesh and found that the majority of respondents (96.66%) use mobile phones to stay in touch with family members.

Applications

With respect to YouTube, 51.67% of dairy farmers were using YouTube once in month. While, 48.33% of dairy farmers had never used YouTube for getting dairy related information. With respect to WhatsApp, a very few (4.16%) of dairy farmers used WhatsApp once in a month and majority (95.84%) of them never utilized WhatsApp for dairy purpose. Further, none of the dairy farmers had used Facebook, SMS and dairy apps.

The possible reasons might be dairy farmers were using YouTube to see dairy farming activities because it is easy to operate. YouTube videos can be viewed frequently and information is easily accessible with a single click, it offers up-to-date and need-based dairy information. The use of WhatsApp was restricted to the mere exchange of dairy information through messages and sharing pictures related to dairy farming queries. Most of the dairy farmers were unaware of the dairy WhatsApp groups and Facebook for sharing information on dairy farming practices. Dairy apps were also not used as they are less interactive and more text based and are not updated regularly. Limited availability of dairy apps in regional language also hinders them to make use to it.

Similar results reported by Rathod *et al.* (2016) [8] in their investigation on the use of mobile phones in dairying in four northern Indian states, namely Haryana, Punjab, Uttar Pradesh and Uttarakhand, discovered that majority of respondents (83.30%) used mobile phones in dairying only partially.

Similar outcomes were reported by Kailash *et al.* (2017) [5] in their research on the use of mobile phone technology among farmers in Rajasthan's Nagaur district and discovered that internet users (29.09%) outnumbered WhatsApp (27.27%) and Facebook (19.09%).

Print media

About 6.67% of dairy farmers once in a fortnight utilized newspaper and 93.33% of them never utilized newspaper for getting dairy related information. Majority (87.50%) of dairy farmers utilized dairy publications once in a month for dairy purpose. While, 12.50% had never utilized dairy publications. Whereas, none of the dairy farmers had used magazines for getting dairy related information.

The possible reasons might be most of dairy farmers did not subscribe for newspapers and so were not having access to dairy related information through newspapers. Those who owned newspaper were obtaining dairy related information as and when it is published in the newspapers. Dairy farmers were getting exposed to dairy farm publication when they were attending training related to dairy farming. Hence, its utilization is quite good as compared to other print media.

The similar findings are in line with the results of Kailash *et al.* (2017) [5] in their research on the use of mobile phone technology among farmers in Rajasthan's Nagaur district and discovered that internet users (29.09%) outnumbered WhatsApp (27.27%), Facebook (19.09%), newsletter (18.18%) and farm publication and online video (13.63%).

Networking technologies

Nearly 6.67% of dairy farmers were using internet once in a fortnight and 67.50% of them never used internet. Whereas, none of the dairy farmers had use information kiosks.

The possible reasons might be the high cost of internet packs and the respondents had medium to low herd size so they could not afford the high cost of internet services. Even though they were having mobile phone their access to internet was poor which restricted them to avail much of the online dairy related information. Non- availability of information kiosks near the premises of the respondents hinders them to make use of dairy information.

As not much studies were conducted on networking technologies. However, Syiem and Raj (2015) [10] in their study on tribal farmers' access and use of ICTs for agriculture and rural development in Meghalaya, India, discovered that internet and its applications are still used infrequently by a small percentage of young and educated respondents. Similar results were reported by Inigo *et al.* (2014) and Warthi and Bhanotra (2017) [4, 12].

Dairy farmer's preference to use ICT tools

The results in table 3 and fig. 2 showed the overall distribution of dairy farmers according to their preference to use ICT tools revealed that 45.00% of the dairy farmers had medium preference for ICT tools, followed by high and low (29.16%) and (25.84%) preference to use ICT tools, respectively.

The possible reasons might be ICTs save time and money spend in physical meeting of the veterinary professional for getting dairy information. The respondents also, felt that ICTs were effective and convenient in getting need-based timely information when compared to physical approach.

This finding is in conformity with finding of Syiem and Raj (2015) [12] who conducted study in Meghalaya on tribal

farmers' access and use of ICTs for agriculture and rural development, revealed that mobile phones were the most commonly used ICT tool among farmers followed by television. Angello (2015) [1] also explored the use of ICTs in

learning and disseminating livestock husbandry knowledge to urban and peri-urban communities in Tanzania revealed the similar results.

Table 2: Distribution of dairy farmers according to their frequency of utilization of ICT tools (n =120)

Sl. No.	Particulars	Frequency of utilization									
		Once a day		Once a week		Once in fortnight		Once in a month		Never	
		f	%	f	%	f	%	f	%	f	%
A	Gadgets										
1	Radio	0	0.00	0	0.00	0	0.00	0	0.00	120	100.00
2	Television	0	0.00	05	4.16	37	30.84	78	65.00	0	0.00
3	Mobile Phone	0	0.00	107	89.16	0	0.00	13	10.84	0	0.00
4	Computer/Laptop	0	0.00	0	0.00	0	0.00	0	0.00	120	100.00
B	Applications										
1	YouTube	0	0.00	0	0.00	0	0.00	62	51.67	58	48.33
2	WhatsApp	0	0.00	0	0.00	0	0.00	05	4.16	115	95.84
3	Facebook	0	0.00	0	0.00	0	0.00	0	0.00	120	100.00
4	SMS	0	0.00	0	0.00	0	0.00	0	0.00	120	100.00
5	Dairy apps (Dairy Kannada/Fodder Kannada/Others)	0	0.00	0	0.00	0	0.00	0	0.00	120	100.00
C	Print media										
1	Newspaper	0	0.00	0	0.00	08	6.67	0	0.00	112	93.33
2	Magazine	0	0.00	0	0.00	0	0.00	0	0.00	120	100.00
3	Dairy publication (Leaflet/Folder)	0	0.00	0	0.00	0	0.00	105	87.50	15	12.50
D	Networking technologies										
1	Internet	0	0.00	0	0.00	08	6.67	31	25.83	81	67.50
2	Information kiosks	0	0.00	0	0.00	0	0.00	0	0.00	120	100.00

f – Frequency
% - Percent

Table 3: Overall distribution of dairy farmers according to their preference to use ICT tools (n =120)

Sl. No.	Category	Frequency (f)	Percentage (%)
1	Low (< 27.00)	31	25.84
2	Medium (27.00 to 41.00)	54	45.00
3	High (> 41.00)	35	29.16
Mean= 34.16		SD= 17.54	

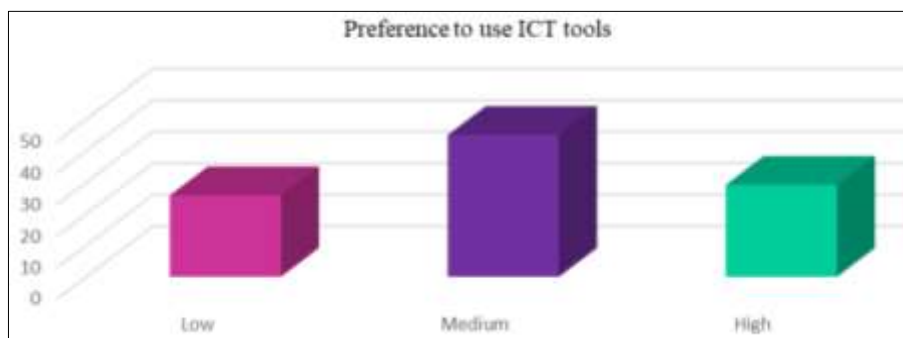


Fig 2: Overall distribution of dairy farmers according to their preference to use ICT tools

Dairy farmer’s preference to use specific ICT tools

Data in table 4 and fig. 3 depicted the distribution of dairy farmers according to their preference to use specific ICT tools. Cent percent of dairy farmers preferred to use TV and mobile phone to save time followed by YouTube (35.00%) and internet (32.50%). A great majority (97.50%) of dairy farmers preferred to use mobile phone because of ease in operation followed by TV (95.83%), YouTube (30.83%) and internet (25.83%). Whereas, majority (90.83%) of dairy farmers preferred TV because of its effectiveness followed by mobile phone (89.16%), dairy farm publication (32.50%), internet (29.16%), YouTube (19.16%) and newspaper (6.67%). Majority (81.66%) of dairy farmers preferred to use ICT tools due to their urgent need of mobile phone followed by TV (77.50%), YouTube (38.33%) and internet (24.16%).

Furthermore, (87.50%) of dairy farmers said they preferred to use mobile phone due to convenience of its nature followed by TV (74.16%), internet (20.83%) and YouTube (15.83%). The probable reasons for more preference of dairy farmers to use mobile phone and TV than other ICT tools might be easy to operate as it is user-friendly nature, cost effectiveness, immediacy of information. This finding is in conformity with finding of Angello (2015) [1] in his study on the use of ICTs in learning and disseminating livestock husbandry knowledge and discovered that mobile phone usage is rapidly increasing. The mobile phone usage trend also suggests that it has a lot of potential in the future if used properly for livestock farming. Similar results were reported by Syiem and Raj (2015) and Verma *et al.* (2019) [10, 11].

Table 4: Distribution of dairy farmers according to their preference to use specific ICT tools (n =120)

Sl. No.	ICT tools	Preferences of dairy farmer*									
		Saves time		Easy to operate/use		Effective		Need oriented		Convenient	
		f	%	f	%	f	%	f	%	f	%
1	Radio	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
2	Television	120	100.00	115	95.83	109	90.83	93	77.50	89	74.16
3	Mobile phone	120	100.00	117	97.50	107	89.16	98	81.66	105	87.50
4	You tube	42	35.00	37	30.83	23	19.16	46	38.33	19	15.83
5	WhatsApp	0	0.00	0	0.00	03	2.50	0	0.00	0	0.00
6	Internet	39	32.50	31	25.83	35	29.16	29	24.16	25	20.83
7	Dairy publication	0	0.00	0	0.00	39	32.50	0	0.00	0	0.00
8	Newspaper	0	0.00	0	0.00	08	6.67	0	0.00	0	0.00

* Multiple responses possible

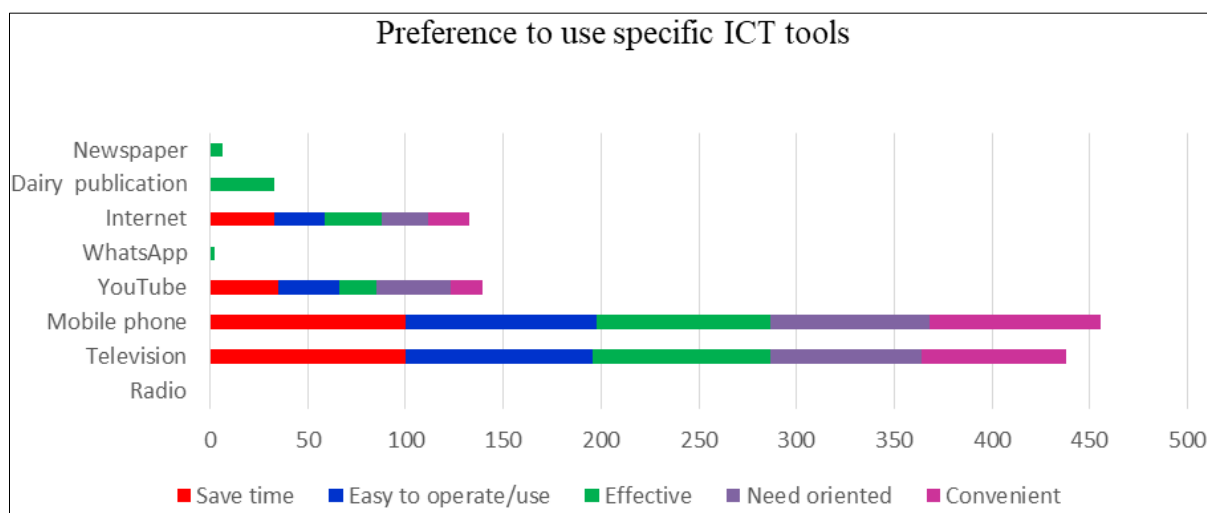


Fig 3: Distribution of dairy farmers according to their preference to use specific ICT tools

Conclusion

The dairy farmers had medium utilization of ICT tools. ICT tools should be made cost effective and more user- friendly. The useful latest dairy information needs to be published in regional languages which enables the dairy farmers to effectively use the same. There is a need to popularize the use of social media among dairy farmers for getting timely information. Dairy farmers were not familiar with the existing dairy apps as it lacks need- based and local language specific information. It calls for the development of need-based and regional language specific dairy apps for the dissemination of dairy information. Information kiosk were the effective tools, such user-friendly tools should be established in local language and installed at the reach of farmers may be at milk collection centers, panchayat or any other common place in the villages convenient to large number of dairy farmers to visit regularly.

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