

DIGITAL TECHNOLOGY ACCESS AND INFORMATION UTILIZATION AMONG WOMEN DAIRY FARMERS

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ABSTRACT

Women play a crucial role in dairy farming in India, contributing significantly to livestock management, milk production, and income. With the increasing emphasis on digital extension services and technology-driven advisory systems, understanding the level of access to digital tools and information-seeking behaviour of women dairy farmers has become essential. The present study was undertaken to analyze the socio-economic profile, access to digital technology by women dairy farmers. The study was conducted at Mahila Pashupalak Talim Kendra, Kamdhenu University, Anand and data were collected from 100 women dairy farmers through a structured interview schedule. The study examined socio-economic characteristics, digital access, information utilization and constraints faced by the respondents. The findings revealed that a majority of women dairy farmers belonged to the middle-age group and possessed primary to secondary level education, with most maintaining small to medium herd sizes and having moderate farming experience. The level of digital access was found to be moderate, as a significant proportion of respondents relied on basic mobile phones and shared devices, with limited smartphone ownership. Internet connectivity was also identified as a major issue, with many respondents reporting poor network availability. Information utilization through digital platforms was relatively low, with only a small proportion of respondents using social media regularly for dairy-related knowledge. The study concludes that improving digital infrastructure, enhancing digital literacy, and providing targeted training programs are essential to promote effective utilization of digital technologies among women dairy farmers, thereby improving their productivity and livelihood outcomes.

Keywords: digital technology, information utilization, women dairy farmers

INTRODUCTION

India's dairy sector is one of the most important components of the rural economy and plays a vital role in income generation, employment and nutritional security. India continues to be the largest milk producer in the world, with milk production exceeding 239 million tonnes, largely contributed by small and marginal farmers (Anonymous, 2024). Women constitute a major workforce in dairy farming and are actively involved in day-to-day activities such as feeding, milking, cleaning, animal health care and management practices. However, despite their significant contribution, women dairy farmers often have limited access to timely and reliable technical information, which affects productivity and adoption of scientific practices (Patel *et al.*, 2022; Mahammad *et al.*, 2021; Mahammad *et al.*, 2022).

In Gujarat, dairy farming is strongly supported by cooperative institutions and extension systems, and women's

participation has increased through organized training and capacity-building programmes. Training centres such as the Mahila Pashupalak / Mahila Talim Kendra of Kamdhenu University, Anand, play a crucial role in enhancing the knowledge and skills of women dairy farmers. Studies shown that smartphone applications and mobile-based advisory services significantly enhance farmers' access to agricultural information and support decision-making (Chauhan *et al.*, 2016; Pratik & Vinaya, 2022; Chaudhari *et al.*, 2021).

However, the extent of ICT utilization varies widely depending on factors such as age, education, experience, digital skills, and infrastructure availability (Khodifad & Solanki, 2023). Research evidence further indicates that while many farmers possess mobile phones, their effective use for agricultural and dairy-related purposes remains moderate, particularly among women farmers (Tankodara *et al.*, 2022). Constraints such as poor internet connectivity, lack of digital confidence, and limited awareness of value-added

information restrict the full potential of digital extension services (Challa, 2024).

In this context, the present study was undertaken to assess the socio-personal profile, access to mobile and internet services, technology exposure level, and information preferences of women dairy farmers attending training programmes at Mahila Pashupalak Talim Kendra, Kamdhenu University, Anand.

OBJECTIVES

- (1) To study the socio-economic profile of women dairy farmers.
- (2) To assess the level of access to digital technology and technology exposure among women dairy farmers.
- (3) To identify the constraints faced by women dairy farmers in accessing and utilizing digital technologies.

RESULTS AND DISCUSSION

Table 1: Socio-economic profile of women dairy farmers

(n=100)

Sr. No.	Profile	Categories	Frequency	Percentage
1	Age	26-35	24	24
		36-45	42	42
		46-55	25	25
		Above 55	09	09
2	Education Level	Primary	36	36
		Secondary	38	38
		Higher Secondary	20	20
		Graduate & above	06	06
3	Herd Size	Small (1-3)	36	36
		Medium (4-6)	39	39
		Semi-large (7-10)	18	18
		Large (>10)	07	07
4	Experience in dairy farming	Up to 5 years	29	29
		6-10 years	38	38
		11-15 years	22	22
		Above 15 years	11	11
5	Annual Income	Low (Up to 75,000)	26	26
		Medium (75,001-1,50,000)	41	41
		High (1,50,001-3,00,000)	21	21
		Very High (Above 3,00,000)	12	12

METHODOLOGY

The study followed a descriptive research design and was conducted at Mahila Pashupalak Talim Kendra, Kamdhenu University, Anand, Gujarat. The training centre was purposively selected due to its regular involvement in capacity-building programmes for women dairy farmers. A total of 100 women dairy farmers of different dairy cooperatives who had participated in training programmes were selected using purposive sampling. Primary data were collected through a structured and pre-tested interview schedule developed based on relevant literature and expert consultation in local Gujarati language. The variables studied included socio-economic characteristics (age, education, herd size and experience in dairy farming), technology-related variables (mobile phone ownership, type of phone, internet availability and internet use). The statistical tools used for data analysis included percentage, mean, standard deviation and Pearson's correlation coefficient. Garrett's ranking method was used to rank constraints faced by women dairy farmers in accessing and utilizing digital technologies. The data were analysed using excel and SPSS software.

The data presented in Table 1 revealed the socio-economic characteristics of the women dairy farmers. The age-wise distribution shows that a majority of respondents belong to the middle-age group, with the highest proportion (42%) in the 36-45 years category, followed by 46-55 years (25%) and 26-35 years (24%), while only (9%) are above 55 years of age, indicating that economically active and experienced women mainly manage dairy farming. The educational profile reveals that most respondents have basic to moderate levels of education, with (38%) having secondary education and (36%) having primary education, followed by (20%) with higher secondary education, while only (6%) are graduates or above. These results align with those reported by Sahu *et al.* (2023), Vekariya *et al.* (2024) and Bharath *et al.* (2024).

Regarding farm-related characteristics, the distribution of herd size indicates that a majority of women

dairy farmers maintain small to medium herds, with (39%) having medium-sized herds (4-6 animals) and (36%) owning small herds (1-3 animals), while only (18%) fall under semi-large herds (7-10 animals) and a minimal (7%) possess large herds of more than 10 animals, reflecting the predominantly smallholder nature of dairy farming. The experience profile shows that a majority of respondents are moderately experienced, with (38%) having 6-10 years of experience and (29%) having up to 5 years, while (22%) have 11-15 years and only (11%) possess more than 15 years. The distribution of annual income reveals that a majority of respondents (41%) belonged to the medium income category (₹75,001-₹1,50,000), followed by low income (26%), high income (21%) and very high income (12%), reflecting moderate earnings with considerable variation due to differences in herd size and cooperative linkage. Similar findings were reported by Sahu *et al.* (2023), Patel *et al.* (2024) and Vekariya *et al.* (2024).

Table 2: Access to mobile and internet services for dairy information

(n=100)

Sr. No.	Criteria	Category	Frequency	Percentage
1	Type of Mobile	Smart Phone	34	34
		Basic Phone	66	66
2	Network Connectivity	Good	39	39
		Moderate	17	17
		Poor	44	44
3	Information access	Regular	26	26
		Occasionally	42	42
		Never	32	32

The data in Table 2 indicate a moderate level of digital access among women dairy farmers with notable gaps in effective utilization. A majority of respondents (66%) still use basic phones, while only 34 per cent have smartphones, which limits access to advanced digital services and applications. A similar result was found by Sahu *et al.* (2025).

Table 3: Association of Personal and Socio-Economic Characteristics of Women Dairy Farmers with Digital Technology Access and Information Utilization

(n=100)

Sr. No.	Variables	Correlation Coefficient (r)
X ₁	Age	-0.28**
X ₂	Education	0.38**
X ₃	Experience in dairy farming	0.27*
X ₄	Herd size	0.31 ^{NS}
X ₅	Annual income	0.42**
X ₆	Internet access	0.61**

**Significant at 1 per cent level; *Significant at 5 per cent level; NS = Non-Significant

constraint, as (44%) of respondents reported poor network availability, compared to (39%) with good and (17%) with moderate access. Regarding access to dairy-related knowledge through social media, only 26 per cent use it regularly, while a larger proportion use it occasionally (42%) or never (32%). These results align with those reported by Patel *et al.* (2024); Mahammad *et al.* (2021); Chauhan *et al.* (2016); Pratik & Vinaya (2022).

The data presented in Table 3 reveals the correlation of personal and socio-economic characteristics of women dairy farmers with digital technology access and information utilization. The results indicate that internet access showed the highest positive and significant correlation ($r=0.61^{**}$) with digital technology access, suggesting that availability of good internet connectivity is the most critical factor in determining the level of digital information utilization among women dairy farmers. Annual income also exhibited a significant positive correlation ($r=0.42^{**}$), indicating that economically better-off women are more likely to access and utilize digital technologies for dairy-related information. Education level showed a significant positive correlation ($r=0.38^{**}$), confirming that higher educational attainment enhances

Network connectivity appears to be a significant

the ability to access and effectively use digital platforms. Experience in dairy farming was positively and significantly correlated ($r=0.27^*$), suggesting that moderately to highly experienced farmers tend to utilize digital information sources more frequently. Age showed a significant negative correlation ($r=-0.28^{**}$), indicating that younger women dairy farmers are more inclined towards digital technology access and utilization compared to older respondents. Herd size, however, showed a positive but non-significant correlation ($r=0.31^{NS}$), suggesting that the number of animals maintained does not significantly influence digital technology access among women dairy farmers in the study area. Similar results reported by Rebekka and Saravanan (2015) in their study on access and usage of ICTs for agriculture and rural development by the tribal farmers in Meghalaya, India, found that education and annual income showed a positively significant correlation. Similar outcomes were also reported by Khodifad and Solanki (2023); Patel et al. (2025); Sahu et al. (2025); Bharath et al. (2024); Mahammad et al. (2022).

Table 4: Constraints faced by women dairy farmers to access mobile and internet services (n=100)

Sr. No.	Constraints	Garrett Score	Rank
1.	Lack of digital literacy	71.50	II
2.	Language barrier	62.00	V
3.	Poor internet connectivity	74.20	I
4.	Limited access to smartphones	59.00	VI
5.	Social restrictions	52.50	VIII
6.	High cost of smartphone/ internet	65.50	IV
7.	Time constraints	56.00	VII
8.	Lack of training programs	68.20	III

The Garrett ranking analysis of constraints faced by women dairy farmers in accessing and utilising digital technologies revealed that poor internet connectivity was the most significant constraint, securing the first rank with a mean score of 74.20. This was followed by a lack of digital literacy (71.50) and a lack of training programs (68.20), indicating that both infrastructural limitations and inadequate knowledge are major barriers. Time constraints due to household responsibilities (56.00) and social restrictions (52.50) were ranked seventh and eighth, indicating their relatively lower but still notable influence. Overall, the findings emphasise that improving connectivity, enhancing digital literacy, and providing training programs are essential to promote effective digital technology utilization among women dairy farmers.

The findings of the present study are strongly supported by Sahu *et al.* (2025), who emphasised that socio-psychological factors such as education, extension contact, ICT possession, and motivation significantly influence ICT utilisation, while constraints like lack of training and localised content hinder effective adoption.

CONCLUSION

The study was concluded that women dairy farmers exhibit a moderate level of digital access, with significant limitations in effective utilization of digital technologies. While a considerable proportion of respondents have access to mobile devices, the dominance of basic phones, shared ownership, and inadequate internet connectivity restrict their ability to fully benefit from digital platforms. Socio-economic factors such as education, herd size, and experience influence their access and usage patterns. The findings further reveal that information utilization is positively associated with better digital access, highlighting the importance of technology in improving dairy management practices. However, major constraints such as poor internet connectivity, lack of digital literacy, inadequate training, and high costs act as barriers to adoption. Therefore, it is essential to strengthen digital infrastructure, enhance capacity-building programs, and promote affordable and user-friendly technologies to empower women dairy farmers and improve their productivity and livelihoods.

RECOMMENDATIONS

To improve the use of ICT in dairy farming, it is important to first help farmers become more comfortable with digital tools by providing regular, practical training, especially for older and less-educated farmers. Information related to dairy farming should also be made available in local languages so that farmers can easily understand and use it. Better access to affordable smartphones and reliable internet in rural areas will make it easier for farmers to adopt these technologies. At the same time, combining ICT tools with extension services can ensure that farmers receive timely and useful guidance. Lastly, simple, user-friendly apps and platforms that provide accurate and relevant information can encourage farmers to use ICT more effectively in their daily practices.

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CONFLICT OF INTEREST

All authors declare that they have no conflict of interest.

REFERENCES

- Anonymous. (2024). Basic animal husbandry statistics 2024. Department of Animal Husbandry and Dairying, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, Krishi Bhavan, New Delhi.
- Bharath, C. V. S., Raghuprasad, K. P. and Mounika, B. (2024). Utilization of ICT tools among dairy farmers and associated socio-economic factors. *Gujarat Journal of Extension Education*, 38(1):197-203. <https://doi.org/10.56572/gjoe.2024.38.1.0032>.
- Challa, L. N. (2024). Constraints faced by farm women in accessing and utilization of digital extension services. *Gujarat Journal of Extension Education* 38(1): 154-162.
- Chaudhari, R., Patel, J. B. and Patel, P. C. (2021). Utilization of smartphone applications by farmers in agriculture. *Gujarat Journal of Extension Education* 32(1): 184–187.
- Chauhan, N. B., Patel, J. B. and Vinaya Kumar, H. M. (2016). Innovative ICT Models for sustainable agricultural development. 'National Seminar SEEG-2016': Lead Paper, pp: 75-80
- Khodifad, P. B. and Solanki, A. V. (2023). Utilization of information and communication technologies by the farmers. *Gujarat Journal of Extension Education* 35(2): 122–126.
- Mahammad Shafi R. Sk, Chauhan N. B. and Vinaya Kumar H. M. (2021). Responsible factors to encourage dairy farmers' sons to avail training on animal husbandry. *Guj. J. Ext. Edu.* 32 (1): 202-205.
- Mahammad Shafi R. Sk, Chauhan, N. B., & Vinaya Kumar, H. M. (2022). Participation of young generation of practising dairy farmers in family dairy farming. *Gujarat Journal of Extension Education*, 33(2), 73–76. <https://doi.org/10.56572/gjoe.2022.33.2.0014>
- Patel, D., Verma, A. P. and Singh, S. (2025) Effectiveness of pashu poshan app on adoption of scientific feeding practices among dairy farmers. *Gujarat Journal of Extension Education*, 40(1): 72–77. <https://doi.org/10.56572/gjoe.2025.40.1.0012>
- Patel, S. B. and Patel, P. N. (2024). Profile of farm women involved in dairy occupation and their suggestions to overcome the constraints. *Gujarat Journal of Extension Education* 38(2): 111–116.
- Patel, S. B., Vyas, H. U. and Mistry, H. H. (2022). Participation of farm women in dairy occupation. *Gujarat Journal of Extension Education* 34(2).
- Patel P. K. and Vinaya Kumar, H. M. (2022). Predictive Factors for Farmers' Knowledge of Social Media for Sustainable Agricultural Development. *Indian Journal of Extension Education*, 58 (4): 55-59. <http://doi.org/10.48165/IJEE.2022.58412>
- Rebekka, S. and Saravanan, R. (2015). Access and usage of ICTs for agriculture and rural development by the tribal farmers in Meghalaya State of North-East India. *J. of Agric. Inf.*, 6(3): 24-41.
- Sahu, B. L., Manjula, N. and Behera, J. (2025) Assessing dairy farmers' knowledge on utilization of ICT tools. *Gujarat Journal of Extension Education*, 39(2): 12–19. <https://doi.org/10.56572/gjoe.2025.39.2.0003>
- Sahu, B. L., Manjula, N. and Behera, J. (2025). ICT tools utilization in dairy farming: Relationship with dairy farmers' profile and a SWOC analysis. *Gujarat Journal of Extension Education* 39(1): 12–18.
- Sahu, B., Manjula, N., Jahagirdar, K. A. and Kumar, G. K. A. (2023). Dairy farmers utilization and preference of ICT tools in North Karnataka. *The Pharma Innovation Journal*, SP-12(9): 2356–2361.
- Tankodara, K. D., Chauhan, N. B. and Sharma, P. K. (2022). ICT operational self-confidence of the farmers. *Gujarat Journal of Extension Education* 34(1): 53-56.
- Vekariya, S. J., Rajput, M. B., Rani, D. V. and Bhati, N. B. (2024). Profile of women dairy farmers in Gandhinagar district, Gujarat: An in-depth analysis. *International Journal of Social Sciences*, 13(1): 01–05.

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