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Constraints perceived by the field extension functionaries of Dairy Development Department, Kerala#

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Abstract

The study was conducted in Kerala state in 2021–2022, with the objective of identifying the constraints related to effective role performance as perceived by the Field Extension Functionaries (FEFs) of the Dairy Development Department (DDD). Through non-proportionate stratified random sampling, a sample of 120 FEFs was chosen, of whom 60 were Dairy Extension Officers (DEOs) and 60 were Dairy Farm Instructors (DFIs). The study found that inadequate infrastructure facilities and lack of transport facilities were the major physical constraints perceived by the respondents. Among organisational constraints, inadequate staff strength and heavy administrative work were cited as the major constraints. The most significant technological constraints perceived were inadequate knowledge about dairy innovations among the farmers and lack of technical support for implementing schemes. Inadequate budget allocation for programme execution and lack of monitoring and evaluation of schemes were the major managerial constraints. Under communication constraints, weak research-extension-farmer linkage, and lack of feedback from farmers were perceived as the major ones.

Keywords: *Constraints, role performance, field extension functionaries, dairy department*

India's dairy industry has grown significantly over the years. India ranks first among the world's milk-producing nations, with an annual output of 198.40 million tonnes in 2019-20, from 187.75 million tonnes in 2018-19, representing a 5.68 per cent increase (DAHD, 2020). In addition, global milk output increased by 1.43 per cent from 848 million tonnes in 2019 to 860.1 million tonnes in 2020 (NDDB, 2020). The dairy sector is a significant sub-sector of Indian agriculture, accounting for almost 17 per cent of the value of production from agriculture and allied sectors.

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Dairying plays a vital role in the economic growth of Kerala's rural population. Kerala ranks 14th nationally, even though the state produces just 1.5 per cent of the total milk production in India (Kerala State Planning Board, 2022). Milk procurement by Kerala Cooperative Milk Marketing Federation Limited increased dramatically from 52000 litres per day in 1983 to 15.2 lakh litres per day in 2021-22 and the average milk sale per day for 2021-22 has been 14.29 lakh litres (Kerala Cooperative Milk Marketing Federation, 2022).

The Dairy Development Department (DDD) of Kerala plays a pivotal role as an agency providing extension services in dairying in the state. Kerala is on the verge of achieving self-sufficiency in milk production, irrespective of the natural disasters encountered in recent years. During the financial year 2019-20, milk production in the state was around 25.42 lakh metric tonnes (MT), and 6.75 lakh MT of milk was procured by dairy cooperatives, thus contributing to about 26.5 per cent. The procurement status in the financial year 2020-21 was around 7.12 lakh MT (DDD, 2021). The per capita availability of milk in the state during the year 2019-20 has been 198 g/day (NDDB, 2020). The FEFs of the department are instrumental in strengthening the dairy cooperative sector of the state owing to the performance of multiple tasks including implementation of dairy and fodder development programmes, augmentation of quality milk production through rural extension and advisory services, and establishment of liaison with stakeholder organisations. Identification and analysis of the perceived constraints that impede their role performance would be a sensible strategic measure towards enhancing organisational efficiency. Accordingly, the present study was carried out to identify the constraints perceived by FEFs of DDD, Kerala.

Materials and methods

The current research study was conducted in Kerala State in the year 2021-2022 to analyse the constraints perceived by FEFs of DDD. Non-proportionate stratified random sampling was adopted for this study. An exploratory research design was followed. DDD has categorized the block panchayats of the state into four strata based on average daily milk procurement *viz*., A, B, C and D (Kerala Dairy Farmers Welfare Fund Reports; DDD, 2020-2021). Fifteen DEOs and 15 DFIs were selected randomly from each stratum. Thus 120 respondents constituted the sample size.

Constraints were operationally defined as the obstacles that FEFs encountered which impeded the effectiveness of their role performance. A list of 43 constraints under five major domains viz. physical, organisational, technological, managerial, and communication constraints was prepared through a review of recent literature and discussions with experts. The constraints identified were then subjected to a relevancy rating by a panel of 32 judges. The expert panel comprised of faculty from Verghese Kurien Institute of Dairy and Food Technology, Mannuthy, and the FEFs and Assistant Directors from DDD. They were requested to rate each item on a three-point continuum, viz. most relevant, relevant, and not relevant; with scores of 3, 2 and 1 respectively. The maximum and minimum scores that a respondent could obtain were 96 and 32 respectively. The midpoint of the three-point continuum that ranged from 32 to 96 was 64. This was assumed to be the cut-off point for the selection of items. The items that had scores above 64 were selected for inclusion in the final scale. Out of 43 statements, 30 items were selected based on this criterion and included in the final scale. Data collection was done through multiple sources of evidence like personal interviews, telephonic interviews, google forms, and secondary data (Yin, 2018).

Garrett's ranking method (Garrett and Woodworth, 1969) was adopted. Respondents were asked to rank the constraints in accordance with Garrett's ranking technique, which was used to prioritise limitations. The following formula was used to translate the respondents' order of merit into ranks:

$$\text{Per cent position} = [100\ (R_{ij} - 0.50)] / N_j$$

Where,

R_{ij}= Rank given for i^{th} problem by j^{th} individual.

N_j= Number of problems ranked by the j^{th} individual.

The percentile position of each rank was converted into scores using Garret's table.

The mean score of the constraints was calculated using the formula given below:

Mean score of the constraint =

Sum of scores of the individual respondent for a particular problem

Total no. of respondents

Mean scores for the constraints were then ordered in descending order to prioritize the constraints (Dhanavandan, 2016).

Results and discussion

Physical constraints

The data in Table 1 indicated that inadequate infrastructure facilities were ranked first with a mean score of 71.63 as the major physical constraint, followed in rank order by lack of transport facilities (67.32), lack of chilling facilities (44.79), insufficient input supply for programme implementation (41.70), lack of knowledge and skills related to dairy equipment (36.57), and inadequate storage facilities (35.99).

Under physical constraints, the first and foremost one was found to be inadequate infrastructure facilities. These findings are in line with those of Patel (2015) and Das and Borua (2017). As reported by the respondents, they were concerned about the dilapidated condition of office buildings, lack of basic amenities and comforts in offices, scarcity of laboratory equipment required for quality testing of milk, and inadequate digitisation. The physical environment with noisy offices, small rooms, offices with too low or high temperatures and lack of ventilation has been reported as the main source of stress among employees working in public, private and non-government organizations (Bhui *et al.,* 2016).

The FEFs perceived the lack of transportation facilities as the second major constraint. These results concur with those of Goyal (2013) and Kedar *et al.* (2013). Being the grass-root extension workers, Rural Dairy Extension and Advisory Services (RDE&AS) constitute the major activity assigned to the respondents. The department mandates personal contact with farmers through farm and home visits, organizing field-level awareness progarmmes, assistance to farmers in case of natural disasters, and other contingencies as major activities for the transfer of technology (DDD, 2021). Projects such as Karshaka maithri, exposure visits for farmers and Ksheera sanghamam which form components of RDE&AS schemes could be utilized for strengthening transport facilities required for performing routine extension work (DDD, 2022).

The respondents perceived the lack of bulk milk coolers and chilling facilities at dairy cooperatives, as the third major constraint. As maintenance of the cold chain from farm to consumer points is essential to ensure the microbiological quality of milk as specified by the guidelines of FSSAI, the establishment of bulk milk chilling centres (BMCCs) with quality testing facilities in the dairy cooperative Societies (DCSs) across in the state is the need of the hour. In this context, it is commendable that the state DDD has upgraded numerous DCSs to BMCCs. It has also been envisaged to provide need-based assistance for the upgradation of facilities in BMCCs (DDD, 2022). Inappropriate input supply for programmes implementation, inadequate storage facilities, and respondents' lack of knowledge and expertise in dairy

Table 1. Physical constraints as perceived by the FEFs of DDD, Kerala

Sl. No.	Physical constraints	Mean score	Rank
1	Inadequate infrastructure facilities	71.63	1
2	Lack of transport facilities	67.32	2
3	Lack of chilling facilities and bulk milk coolers (BMCs)	44.79	3
4	Insufficient input supply for programme implementation	41.70	4
5	Inadequate storage facilities (Utensils, milk cans etc.)	36.57	5
6	Lack of knowledge and skills related to dairy equipment	35.99	6

equipment were also perceived as physical constraints.

Organisational constraints

The data in Table 2 revealed that inadequate staff strength in the department was ranked first with a mean score of 74.32, followed in rank order by heavy administrative work (69.35), diversified job profile (66.70), lack of co-ordination among FEFs (49.28), lack of training in advanced technologies (46.74), lack of motivation from higher officials (39.90), external pressure (38.35), lack of training in disaster management (38.32), minimal promotional opportunities (37.72) and lack of reward and recognition (37.33).

It was evident that FEFs perceived inadequate staff strength as the constraint of major concern. This points out the need for the deployment of essential professionals, both technical and supporting staff, in various institutions under DDD. Heavy administrative work and a diversified job profile were also regarded as significant constraints. These results concur with those of Patel (2015) and Victor and Anilkumar (2019). Administrative work, including attending meetings, preparation of reports, documentation and excess paperwork have been reported as the major constraints by field extension workers (Thun *et al.,* 2018; Verma *et al.,* 2020). Other constraints perceived by FEFs were lack of coordination among themselves, lack of training in advanced technologies and lack of motivation from higher officials. The findings call for devising need-based strategies to address these constraints on war footing as motivated employees are key to organisational performance (Lee and Raschke, 2016).

Technological constraints

Data in Table 3 revealed that inadequate knowledge about dairy innovations among the farmers was ranked first with a mean score of 66.66, followed in rank order by lack of technical support for implementing department schemes (57.50), lack of knowledge about recent techniques in dairy farm management and quality assessment of milk and milk products (49.10), lack of knowledge about the application of ICT in dairy sector (40.33) and unhygienic milking/unscientific milking practices (35.41).

Under technological constraints, the FEFs perceived inadequate knowledge about dairy innovations among farmers as the foremost constraint. This points out the need to strengthen extension services by providing real-time innovative solutions to problems as technological innovations are key enablers that contribute towards sustainable dairy enterprises. These results are in line with those of Goyal (2013), Patel (2015) and Brar *et al.* (2020), who reported that the key challenge faced by extension workers was the lack of knowledge regarding dairy development programmes among farmers. According to Rajpoot *et al.* (2018), inadequate technical expertise to handle dairy animals was a major challenge faced by dairy farmers.

The second most important technological constraint was the lack of technical support for programme implementation. This was reportedly brought on by insufficient

Table 2. Organisational constraints as perceived by the FEFs of DDD, Kerala

Sl. No.	Organisational constraints	Mean score	Rank
1	Inadequate staff strength in the department	74.32	1
2	Heavy administrative work	69.35	2
3	Diversified job profile	66.70	3
4	Lack of co-ordination among FEFs	49.28	4
5	Lack of training in advanced technologies	46.74	5
6	Lack of motivation from higher officials	39.90	6
7	External pressure	38.35	7
8	Lack of training in disaster management	38.32	8
9	Minimal promotion opportunities	37.72	9
10	Lack of reward and recognition	37.33	10

Table 3. Technological constraints as perceived by the FEFs of DDD, Kerala

Sl. No.	Technological constraints	Mean score	Rank
1	Inadequate knowledge about dairy innovations among the farmers	66.66	1
2	Lack of technical support for implementing the department schemes	57.50	2
3	Lack of knowledge about recent techniques in dairy farm management and quality assessment of milk and milk product	49.10	3
4	Lack of knowledge about the application of ICT in the dairy sector	40.33	4
5	Unhygienic milking/Unscientific milking practices	35.41	5

staffing and inadequate budget allocation. The respondents opined that mobilisation of local human resources and linkages with programmes viz. Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and Kudumbasree would be of immense help. These findings are in line with the findings of Patel (2015) and Ravikishore *et al.* (2022).

Respondent's revelation pertaining to lack of knowledge about recent techniques in dairy farm management, quality assessment of milk and milk products, and ICT applications in the dairy sector deserves serious attention. These findings concur with those of Das and Borua (2017). This calls for regular capacity-building programmes to update the functionaries on emerging technologies and practices in smart and quality dairying. In a study on Information Communication Technology (ICT) based extension service delivery, Albert (2014), underscores extension personnel's proficiency in ICT as an essential requirement for farmer education.

Managerial constraints

It is apparent from Table 4 that inadequate budget allocation for programme execution was ranked first with a mean score of 58.45, followed in the rank order by lack of monitoring and evaluation of various schemes (50.93), lack of involvement of extension functionaries in decision making (50.48), inadequate participation of extension functionaries in programme planning and implementation (45.38) and lack of proper supervision by extension functionaries (43.76).

It was observed that FEFs perceived inadequate budget allocation for programme execution as the first and foremost constraint. The respondents opined that allocation of funds was imperative for both effective implementation and proper evaluation of development programmes. Inadequate funding hindered not just the program's implementation but also its outcomes, which affected the performance of FEFs. These findings are in line with the findings of Ratnayake (2012), Kshash and Oda (2021) and Verma *et al.* (2020). The second major constraint perceived by the FEFs was the lack of monitoring and evaluation of various schemes. According to the respondents, it was essential to establish and strengthen an online monitoring and supervision system. These findings are in line with those of Ratnayake (2012) and Goyal (2013). The respondents also cited the lack of involvement of FEFs in decision-making as the third major constraint. This might be because the organisation followed a top-down approach with regard to the setting of organizational goals and the involvement of the respondents was dismal.

Table 4. Managerial constraints as perceived by the FEFs of DDD, Kerala

Sl.No.	Managerial constraints	Mean score	Rank
1	Inadequate budget allocation for programme execution	58.45	1
2	Lack of monitoring and evaluation of various schemes	50.93	2
3	Lack of involvement of extension functionaries in decision making	50.48	3
4	Inadequate participation of extension functionaries in programme planning and implementation	45.38	4
5	Lack of proper supervision by extension functionaries	43.76	5

Other managerial constraints perceived by the FEFs were inadequate participation in programme planning and implementation and lack of proper supervision by extension functionaries.

Communication constraints

It is evident from Table 5 that weak research-extension-farmer linkage was ranked first with a mean score of 63.04, followed in the rank order by lack of feedback on the performance of extension functionaries from farmers (55.33), inadequate time for media participation (41.16) and poor communication skills (38.48). Under the communication constraints, the first major one perceived by FEFs was weak research-extension-farmers linkage. These results concur with those of Goyal (2013), Patel (2015) and Kshash and Oda (2021), who reported that a weak linkage between research, extension and farmers was perceived as the major constraint by the respondents. At the grassroots level, technological innovations need to be introduced on a real-time basis. However, for this to happen, there must be a strong research-extension-farmer linkage in order to pre-test technologies for their feasibility, financial viability and social acceptability. The Doubling Farmers' Income (DFI) Committee (2017) identified poor research, extension, farmer and market linkages as an important challenge faced by the public extension system. The World Bank (1985) highlighted the gap between research and extension as an organizational problem of primary importance. According to Sewnet *et al.* (2016), the major causes of weak research-extension-farmer linkages were top-down research and extension management, the disconnected administrative structure of extension and research institutions, shortage of incentives for linkage activities, massive turnover of development agents, poor infrastructural facilities, lack of funding for linkage activities and insufficient development agent competence. Because of the weak linkage and communication gap, farmers might not have been able to provide feedback on the performance of extension functionaries which was perceived as the second major constraint. These findings are in line with those of Goyal (2013).

Other important communication constraints perceived by the respondents were an inadequate time for media participation and poor communication skills.

Conclusion

The primary goal of this research is to improve the role performance of FEFs. They are the front-line personnel in charge of both extension services and the management of primary milk cooperative societies under their jurisdiction. The current study argued that FEFs faced a number of restrictions and limitations that prevented them from performing their roles more effectively. These constraints could be addressed effectively by respective authorities through strategies such as recruiting additional FEFs, increasing farmer participation in development programmes, strengthening the link between research, extension and farmers, providing enough funding, capacity building of functionaries to perform diverse roles and involving them in organisational decision making. To ensure that FEFs are functioning effectively for the farming community's sustainable development, policymakers in the DDD must pay special attention to eliminating undesirable elements and fostering a supportive work environment.

Table 5. Communication constraints as perceived by the FEFs of DDD, Kerala

Sl. No.	Communication constraints	Mean score	Rank
1	Weak research-extension-farmer linkage	63.04	1
2	Lack of feedback on the performance of extension functionaries from farmers	55.33	2
3	Inadequate time for media participation	41.16	3
4	Poor communication skills	38.48	4

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