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AN ECONOMIC ANALYSIS OF THE CONSTRAINTS FACED BY DAIRY FARMERS IN ALAPPUZHA DISTRICT, KERALA

Sharanya [1], Dr Anumol K.A[2]
[1]*Research Scholar, Post Graduate Department and Research Center in Economics, Sree Sankara College Kalady, Ernakulam,Kerala,*
[2]*Assistant Professor, Post Graduate Department and Research Center in Economics, Sree Sankara College Kalady, Ernakulam, Kerala*

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ABSTRACT----------
India has become a global leader in the white revolution, holding the distinction of having the largest population of cows and buffaloes in the world. Since gaining independence, the country's dairy industry has seen steady and robust growth, characterized by significant enhancements in supply chains and milk processing facilities. Currently, Kerala ranks as the fifteenth-largest dairy market in India. In Kerala, dairying is mainly a subsidiary occupation of many small and marginal farmers. However the dairy farmers in the state continue to grapple with various challenges.The article aims to analyze the major constraints faced by dairy farmers in the three Grama Panchayaths of Alappuzha district, Kerala. A multi stage random sampling method was used to select 300 dairy farmers for the study. The statistical tool Garrett Ranking method was used for the analysis. The study reveals that the primary financial constraint faced by the farmers was the high cost of cattle feed, while the key personal constraint was identified as the lack of adequate infrastructure facilities. The farmers were also found to be faced with the situational constraints of the incidence of diseases among cattle, and the major marketing challenge identified was low milk prices.

KEYWORDS: *Constraints, Dairy farmers, Dairy farming, Milk, Garret Ranking Method*

I. INTRODUCTION

In India's context, the act of dairying holds importance for fostering economic progress. The dairy industry stands out as a sector in the nation, making up about 5% of the overall economy and supporting over 80 million farmers in terms of job opportunities. India holds a position on the world stage when it comes to dairy, leading in milk production and contributing a quarter of the milk supply. India also holds the title of having the highest number of livestock animals at 536 million (PIB in 2024); however, the milk yield per animal falls short when compared to leading dairy producers around the globe.

Small and marginal farmers and agricultural laborers rely on dairy farming as a source of income to support their livelihoods. The dairy sector is distinct within agriculture for several reasons; daily milk production provides a reliable source of revenue for many small-scale farmers.It requires a lot of manual work and creates numerous job opportunities. Considering the economic challenges faced by small milk producers, measures are in place to protect them. "Known as 'white gold' milk is essential for producing a range of top-notch products.The Dairy Cooperative movement in India has played a vital role in making the country a key player in milk production and is admired as a model for other nations world wide.Due to the nature of farming activities in dairy farming,it offers employment opportunities all year round, promoting financial security for those engaged in this field.The main recipients of these dairy programs are small-scale farmers, marginal farmers, and landless laborers."

In Kerala's culture, dairy farming plays a vital part in providing jobs and ensuring food security for rural areas in the state. Out of the 7 million households in Kerala, around 5 lakh rely on livestock for their income, whereas another 5 lakh consider livestock as an additional source of earnings (State Annual Plan of 2023-24). Presently, there are 281000 registered dairy farmers in Kerala State (Dairy Development Department Report of 2024). In Kerala, the animal population mix stands out for its number of crossbreed species in comparison to other regions; for instance,a crossbreed cattle typically yields 10.77 kg of milk per day on average. A ranking that places the state third among all Indian states (State Annual Plan of 2023–24). However, the state still needs support from neighboring states to meet the rising demand for milk. Apart from this,the farmers in Kerala are facing difficulties that affect both their dairy production and profits despite having better weather conditions and high demand for dairy products.

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II. LITERATURE REVIEW

The literature that has been reviewed would assist the research to stay on the right track and to also enhance the findings of the study. Some of the research findings and findings of other researchers on the problem under study have been reviewed under the following headings:

Dairy farmers' socio-economic, psychological, and communication characteristics were explored in detail by Adhikari et al. (2020), and the constraints of the farmers were identified with a high level of accuracy. The research was carried out in Almora district ofUttarakhand. The major constraints identified were the scarcity of quality green fodder throughout the year, low productivity of animals, and poor prices realized for milk. Other problems include the expense of concentrate mixture, no access to resource persons, inadequate information on government policies, no access to drinking water and low conception rates in Artificial Insemination. Anjali et.al, (2020) studied the challenges faced by Vechur cattle farmers in Kerala, selecting 60 farmers from Kottayam, Palakkad, and Thrissur using chain referral sampling. The study identified key issues such as poor year-round green fodder availability, delays in artificial insemination, low-quality Vechur semen, limited marketing options for milk and products, a shortageof high-quality Vechur animals, and inadequate government support.

A range of constraints perceived by contract dairy farmers and integrating firms under contract dairy farming were identified by Kolekar et al. (2013). These encompassed challenges in meeting quality requirements, the relentless pressure to maintain milk quality, delayed payment for milk supplied, inaccuracies in milk grading, delays in sourcing inputs, and inadequate credit for milk production. Similarly, integrating firms were found to be faced with significant obstacles, including continual fluctuations in milk prices, input diversion by farmers, farmers' carelessness in maintaining quality standards, and communication difficulties with farmers.

Constraints perceived by the respondents in the effective put down of science-based dairy farming practices were evaluated in three villages of Karnal district, Haryana. Randomly selected 120 respondents were surveyed by Lokhande et al. (2016). The study revealed that the farmers had difficulties in the breeding, feeding, management, and health care of the animals; this was due to lack of knowledge, high feeding costs, lack of interest in keeping records, and high costs of veterinary treatment.

Research on the problems encountered by rural and peri-urban dairy farms in the Ludhiana district of Punjab was conducted by Mahajan (2010). The constraints reported by dairy farmers included low conception rates through artificial insemination (AI) and repeat breeding in buffaloes and crossbred cattle, expensive concentrates, limited availability and high costs of dry fodder, as well as insufficient mobile and emergency veterinary services.

A study by Mohapatra et al. (2012) revealed that tribal dairy entrepreneurs encountered several constraints that can be classified into four categories, namely, economic, technical, marketing, and general. The major economic constraints included the high costs of concentrates and medicines. Some of the technical problems include the lack of proper veterinary services and the low conception rates. In marketing, the prices of nonremunerative milk, limited marketing channels, storage of milk in summer, and competition from large farms were major challenges. Other constraints included distant artificial insemination (AI) centers, inadequate irrigation for foragecrops, and the lack of knowledge on silage making.

A study was also conducted in Kerala to identify the constraints in dairy farming at research, extension and farm levels with 200 farmers and stakeholders who were selected randomly. Using Garret's ranking technique, Smitha et al. (2019) identified key constraints: dairy farmers were incurring high costs of feed and veterinary inputs. Extension officials were having challenges in the implementation of several schemes at the Panchayat and block levels and had no means of transport for field visits. The major constraint that beset the researchers were that, teaching and extension were the main focus and lack of enough time to transfer technology.

In a comprehensive study, Shaikh et al. (2013) examined the challenges faced in managing the enterprises by dairy farmers in Nagpur district, Maharashtra. The research, which encompassed 100 farmers from 20 villages, unequivocally highlighted various constraints. These encompassed infrastructural issues such as the unavailability of green fodder, economic challenges like high costs of fodder and crossbreed cows, technical constraints including a lack of guidance, and socio-psychological constraints such as time limitations and poor communication with extension agencies.

The problems in the mixed farming production and marketing in Palakkad and Thrissur districts of Kerala were studied by Subhadra et al. (2009), and 300 farmers were interviewed. The study revealed fifteen production problems of which low productivity was ranked first. Non-availability of land was the major constraint to crop production while feed cost was the major challenge to milk production. In marketing, twelve problems were

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identified of which low product price was the major factor that affected marketing. Transportation problems and lack of marketing facilities were also identified as other important factors.

Surkar et al. (2014) conducted a study where dairy farmers were asked about various constraints they face in quality milk production measures. The majority of these constraints encompassed the absence of milk chilling and bulk storage facilities at the village level, poor knowledge of animal care and management, dissatisfaction with the price of milk, limited knowledge of mastitis in dairy animals, limited knowledge of quality milk production, the absence of well facilities in the villages for the production of quality milk, the absence of ectoparasite control measures, the space constraint for proper tying and the lack of marketing facilities for dairy business.

III. STATEMENT OF THE PROBLEM

Earlier, dairy farming was predominantly practiced in regions where the locals had ample means to care for their livestock. In the day individuals are involved in dairy farming despite having resources. In Kerala a significant number of dairy farmers belong to the category of marginal or small-scale farmers. Even though milk procurement through the Dairy Cooperative Societies shows an increasing trend, the overall state production has shown a declining trend in the last few years. Kerala continues to depend on neighboring states such as Tamil Nadu and Karnataka to fulfill their milk needs. The central and State governments are putting efforts towards enhancing the livelihood of dairy farmers by implementing various schemes and policies through institutions like MILMA, but it is not adequate enough to solve their problems. An individual farmer cannot make sufficient profit from dairy farming due to certain problems pertaining in the dairy sector. In this situation, it is essential to identify the challenges faced by dairy farmers and to make recommendations to ameliorate these problems, especially in a district like Alappuzha, where no significant studies have been made concentrating on this aspect.

IV. OBJECTIVES

The primary objectives of this study are as follows:
1. To assess the economic, personal, situational, and marketing challenges encountered by dairy farmers in Alappuzha district, Kerala.
2. To provide policy recommendations and viable suggestions based on the findings.

V. DATABASE AND METHODOLOGY

The current research uses a combination of both primary as well as secondary data sources. The primary data was gathered from the Alappuzha district of Kerala. In order to ensure a group of participants among dairy farmers for the study sample selection process, a multi-stage random sampling method was employed where three grama panchayaths -Kanjikuzhy, Muhamma, and Aryad were selected at random. Two wards were then chosen from each grama panchayath, resulting in a total of six wards being part of the study. Subsequently, 50 dairy farmers were chosen from each ward to create a sample size of 300 dairy farmers for the research study.

The gathering of data was done using a crafted interview schedule that had been tested beforehand and was standard for this study's goals. The respondents provided information through this organized method. After the data collection phase was completed, a collaborative effort with experts and a comprehensive review of the literature was conducted to pinpoint the challenges encountered by dairy farmers. In order to assess these limitations thoroughly and comprehensively, the Garret Ranking Method was employed, under which the constraints were classified into four categories: situational, personal, and marketing. The participants were asked to prioritize the listed factors based on their significance. These priorities assigned by the participants were then translated into numerical rankings through a predetermined formula, allowing for a measurable evaluation of the challenges encountered by dairy farmers in the designated research region.

$$\text{Percent position} = \frac{100\,(Rij - 0.5)}{Nj}$$ Where

Rij = Rank given for the ith variable by jth respondent
Nj = Number of variables ranked by jth respondent
The ranking of each position was transformed into scores based on the table provided by Garrett and Woodworth (1969). After adding up the scores for each factor from users and dividing them by the number of respondents, the constraints mean scores were arranged in descending order to determine their importance. By assigning ranks from crucial to least significant, the top constraint was placed first, while the least significant issue was placed last.

VI. RESULTS AND DISCUSSIONS

Challenges faced by dairy farmers when carrying out animal care tasks at their farms are known as constraints in dairy industry operations. This research inquires into the types of constraints that dairy farmers encounter and categorizes them into four groups - Financial constraints, personal constraints, situational constraints, and

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marketing constraints. Table 1 represents the financial constraints encountered by dairy farmers in the study area. From Table 1, it can be inferred that the major constraint faced by dairy farmers in the area of finance was the high cost of cattle feed. About 63.16 percent of respondents ranked it in the first position. High feed costs significantly narrow the gap between production costs and procurement prices, leading to diminished profitability for farmers. The high cost of veterinary services and medicine was identified as the second major financial constraint with an average score of 53.76 percent. Farmers can access services and medications at no charge, from the clinic. In some cases, though not all prescribed medications may be stocked in the dispensary, leading to farmers having to buy these drugs and injections themselves. In times of emergency, farmers need to reach out to a vet or livestock inspector, which brings about costs from transportation, bumping up the total cost of treating the animals. Some agricultural communities have taken a proactive approach by hiring veterinarians who provide diagnostic and treatment services to members at affordable rates. The third major financial limitation found was the high interest rate on loans for cattle (51.81 percent). Since the majority of the dairy farmers in the research have taken out cattle loans, the challenge of high interest rates is a concern.

Despite the Thiruvananthapuram Regional Cooperative Milk Producers Union (TRCMPU) of Milma's announcement that the interest-free loan scheme for dairy farmers will come into effect from 1st January 2025, where the dairy farmers will get interest subsidy as per the quantity of milk supplied to the dairy cooperatives, still many farmers are unable to take advantage of such schemes. Non-availability of loans ranks fourth among the constraints. An average score of 36.05 percent was attributed to this issue. Many respondents were facing problems in obtaining loans from banks due to reasons such as lack of knowledge about banking services, lack of awareness and education, mistakes in paperwork, lack of property to pledge, etc.

Table :1
Financial constraints faced by dairy farmers

Sl No	Financial constraints	Average Score	Rank
1	Non-availability of loans	36.05	4
2	High rate of interest on cattle loans	51.81	3
3	High cost of cattle feed	63.16	1
4	High cost of veterinary service and Medicine	53.76	2

Source: Sample survey

The major personal constraints reported by the respondents are outlined in Table 2. Among the four major problems examined, lack of infrastructure was identified to be the most significant issue, with an average score of 60.21 percent. Some of the infrastructure-related problems include poor cattle shed construction, inadequate water supply, and limited land available for cultivating green fodder. The health issues faced by dairy farmers represent another important personal challenge. A considerable number of surveyed respondents (54.81 average scores) had respiratory infections, dermatological problems, body fatigue, or other health-related ailments such as disc problems, joint pain, and so on. Time constraint was another problem identified in the study. A significant number of the dairy farmers in the study had taken up dairy farming as a subsidiary occupation because they could not rely solely on it for their livelihood. Consequently, they faced the challenge of having insufficient time to dedicate to their dairy farming activities. Lack of need-based training was also another major constraint identified among the dairy farmers. Several training programs have been implemented through various institutions such as Animal Husbandry Department, Dairy Development Department and Cooperative Societies. It is important to ensure that farmers' training is specialized to meet diverse needs so that training does not duplicate other needs.

Table:2
Personal constraints faced by dairy farmers

Sl No	Personal constraints	Average Score	Rank
1	Health problems	54.81	2
2	Time	47.81	3
3	Lack of infrastructure	60.21	1
4	Lack of training	41.67	4

Source: Sample survey

The study also looked into the contextual factors that affect dairy farmers. Some of the major problems that were highlighted include diseases of cattle, lack of government support, reduced grazing land, and poor climatic conditions (Table 3). Disease prevalence in cattle was a big problem for the farmers as their cattle were prone to several parasitic and viral diseases, which compelled the dairy farmers to incur losses and work under stress. The survey also revealed that farmers also faced challenges in accessing the schemes and support provided by the dairy cooperatives and the government. The major impediments they encountered included the time taken to complete the procedures for benefit claims and the response time. The third major situational constraint that was recognized was the reduction in the size of grazing land. There is a limited amount of land that can be used for

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grazing cattle, and hence, there is a shortage of green fodder, which helps to enhance the production of milk. Therefore, the farmers are now compelled to use both the green and the dry fodder which are imported from other states. But the costs of these fodders are high, and they also raise the cost of production for the farmers. In Kerala, the problems related to feed and fodder are of more importance as the land area is limited and the population density is high, along with an increase in urbanization due to social development. While compared to states like Tamil Nadu, Kerala has very limited land for grazing cattle, which in turn leads to fodder shortage. Climate change was found to be a major issue of concern among the respondents. Alappuzha district comprises 80 percent coastal areas, and the hot and humid climate greatly impacts milk production. They specifically cited the effects of increased temperature on dairy farming. The farmers stated that during the hot hours of the day cattle produced less milk. This increase in temperature also has other impacts, including limited fodder production, enhanced incidences of disease among cattle, and even water shortage, which all translate to low milk production. Moreover, the high temperature and high relative humidity also affect the fat and Solids-Not-Fat (SNF) content in the milk. This reduction is important because it directly impacts on the price which the farmers get for their milk, and hence the income of the dairy farmers is reduced.

Table:3
Situational Constraints faced by dairy farmers

Sl No	Situational constraints	Average Score	Rank
1	Incidence of diseases	63.17	1
2	Climatic condition	40.32	4
3	Lack of Government support	56.28	2
4	Shrinkage of grazing land	44.53	3

Source: Sample survey

A perusal of Table 4 reveals the major marketing constraints identified in the study. Dairy farmers pointed out that the low price of liquid milk is a prominent issue affecting their marketing efforts. Producers have no control over the price they receive for milk and lack influence over input costs. Farmers expressed that, due to rising production costs—such as increased cattle feed prices, high veterinary service fees, and other related expenses—the price they earn for milk is insufficient to operate their dairy businesses profitably. Currently, they receive a price of Rs 46.84 following the price revision made by Thiruvananthapuram Regional Cooperative Milk Producers Union (TRCMPU). Some of the respondents raised the problem of delayed and irregular payment of milk by the cooperatives. Most of the dairy cooperatives provided payment to the dairy farmers weekly, while some dairy cooperatives made some delays in the payment to dairy farmers. When figuring transportation constraints, it was found that most dairy farmers in the study transported milk to the dairy cooperatives either by walking or using two-wheelers. However, the lack of a formal market and milk cooperatives was identified as a minor constraint. The survey respondents revealed that they did not have a hard time in searching for markets or dairy cooperatives to sell their milk.

Table:4
Marketing constraints faced by dairy farmers

Sl No	Marketing constraints	Average Score	Rank
1	Lack of regulated market and milk cooperatives	27.56	4
2	Lack of transport facilities	41.45	3
3	Irregular and delayed payment of milk	52.26	2
4	Low price of liquid milk	66.06	1

Source: Sample survey

VIII. POLICY RECOMMENDATIONS

In Kerala, dairy farmers face numerous obstacles that affect their growth. Although numerous research studies have been done on the problems of dairy farmers in the state, there is still little knowledge of the constraints that are encountered by the dairy farmers in the Alappuzha district, where 80 % of the land includes coastal area and the rest 20 % comprises of the midland area. During the period 2023-24 about 3,22,05,199 liters of milk were procured through Dairy Cooperative Societies (DCS) in the district. Hence this paper aims to fill this research gap by identifying the major problems faced by dairy farmers in three grama panchayats of Alappuzha district. The survey also shows that the major economic barriers include the high cost of feeding the cattle, the high cost of veterinary services and drugs, the high interest on cattle loans, and the nonavailability of loans. To address the problem of high feed costs for cattle, it is important to promote the new scientific culture of efficient feeding among dairy farmers through different training activities. It will also be useful to create cattle feed plants for dairy cooperatives and to develop other ways of forage production. Currently, the farmers are required to pay Rs. 1,500 for 50kg of cattle feed through milk cooperatives. However, the Kerala government has been providing a 50 percent subsidy for cattle feed through panchayats. If these measures are well implemented, then it can be a great help to the farmers. Also, the state government has taken initiatives for the creation of Mobile Veterinary Units (MVUs) in 29 blocks with central funding. These services should also be provided in other blocks as well.

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Furthermore, awareness regarding the e-Samrudha, a digital livestock and e-Health Management system launched by the Animal Husbandry Department of the Kerala government, should be promoted among dairy farmers through dairy cooperatives. All the essential medicines should be made available through dispensaries at subsidized prices in order to support the farmers. Neethi Veterinary Medical Stores, which have been established under Cooperative Societies, are also important in providing medicines and supplements at affordable prices. Another important issue that has been recognized is the high interest rates on credit for dairy farmers, which are higher than those for agricultural purposes. Attention from policymakers regarding this issue is needed immediately as many farmer respondents were seen worrying about the viability of the dairy sector because of the high cost of credit. Dairy Extension Officers of the Dairy Development Department are already working at the block level but there is a need to enhance the dairy extension and information services in the state so that farmers can get benefits of the money given under different schemes. Also, steps should be taken so that small and marginal dairy farmers are made aware of the terms and conditions as well as the procedure for availing of cattle loans.

Among the personal constraints analyzed, lack of adequate infrastructure was found to be the most significant problem posed by many of the dairy farmers under the study. The Department of Dairy Development in the Alappuzha district should adopt necessary measures to identify needy farmers and provide the required financial support for ensuring proper housing for cattle and irrigation facilities. The dairy farmers were also faced with many health issues. The development of a dairy laborer-assured health scheme with the provision of regular check-ups of laborers and free or economical treatment options at the nearby health center should be implemented. Also, the farmers should be provided with adequate awareness regarding the biological hazards and infectious diseases that can occur while involved in dairy farming. More attractive and efficient schemes should be introduced by both the central and state governments so that the farmers can adopt dairy farming as their major occupation and can spare enough time in dairy farming without relying on another source of income. Lack of need-based training was another important concern raised by the dairy farmers. Respondents believe that training should focus on core areas, including marketing and financial control, animal welfare management, hygienic milking methods, and housing and environmental management.

The study also revealed that the dairy farmers in the Alappuzha district were also confronted with several situational constraints. One of the biggest challenges that affected the profitability of dairy businesses was the incidence of diseases among cattle. To this end, the dairy development department should ensure that various policy interventions are put in place to raise farmers' awareness of measures that can be taken to prevent and manage cattle diseases, including vaccination and other measures at the panchayat level. Also, the problems of procedural delays in accessing the scheme benefits and slow response times were highlighted. The government and dairy cooperatives should identify these issues and find ways and means of addressing them appropriately. Another major problem that affects dairy farmers is the reduction in the amount of land used for grazing. To overcome the issue of fodder shortage, measures such as fodder cultivation programs on the barren or underutilized land in different panchayats of the Alappuzha district can be started with the help of dairy cooperatives, Self-Helping Groups (SHGs), and other organizations. This way the district would be assured of having enough forage crops. In addition, climatic change also poses a threat to dairy farmers since high temperatures result in low milk production. To resolve this concern, both the central and the state governments should come up with an insurance scheme whereby farmers are compensated depending on the loss of income due to reduced milk production.

The study also looks at the marketing problems that the survey participants encountered. The major challenge that was posed by the dairy farmers included the low price of liquid milk, which they get from the milk cooperatives. To tackle this issue, a regulatory committee should be formed by dairy farmers, government officials, and scientists. This committee would determine the price of milk and review it annually to ensure that farmers receive compensation that exceeds their production costs. The study found that some milk cooperatives were making irregular and delayed payments to farmers, necessitating immediate government intervention. Furthermore, the research identified several other marketing challenges, including inadequate transportation facilities and a lack of regulated markets. However, the majority of the respondents expressed concern about the low prices offered by the milk cooperatives.

IX. CONCLUSION

In the analysis of dairy farming in the Alappuzha district, it was found that the farmers face several critical challenges that affect their financial, personal, situational, and marketing productivity and profitability. The financial constraints are severe with high cattle feed costs as the major challenge that affects the farmers' profit graph. The personal constraints that have been pointed out include poor infrastructure and health issues, which show that there is a need to improve the living and working environment of the farmers in order to improve their

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productivity. The major situational and marketing constraints that were identified in the study were the incidence of disease among the cattle and the low prices of liquid milk from the milk cooperatives. These challenges can only be addressed if there is a systematic approach that involves the provision of financial resources, health care, improvement in the infrastructure, and awareness creation among the farmers on the best practices that are currently prevalent in dairy farming. In general, these challenges need to be addressed not only to improve the situation of dairy farmers but also to sustain adequate milk production within the area and thus enhance food security and nutrition standards. Further research and intervention, as well as support from the government and cooperative societies, will remain vital in the development of dairy farmers and the dairy sector.

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