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CHALLENGES AND ISSUES OF MILK CO-OPERATIVE SOCIETIES IN KERALA STATE

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ABSTRACT

The aim of the current research was to investigate key issues and perspectives for cooperation of milk Co-operatives and their outcomes for improvement of milk collection, financial issues or problems, and infrastructural and technological conditions. The quantitative data was collected from the employees in the Co-operatives through questionnaires and hypotheses testing statistics such as correlation tests, Kruskal-Wallis test and mean ranks. It was observed that gender has a small positive relationship with a belief about how effectively milk is collected from the household final consumers meaning that gender should be taken into consideration within the Co-operatives. Lack of funds for infrastructure and restricted credit needs were acknowledged as severe problems for Co-operatives, whereas changes in the milk price were seen as less important. Views on infrastructure issues such as the cold chain and transport differed with geography suggesting a need for a regional approach. Thus, the research argues that gender dynamics must change, and resources for infrastructure should be secured along with regional approaches to enhance operational efficiency and sustainability in milk Co-operatives. The consequential values of the research include practical significance to the stakeholders, policymakers, and cooperative leaders for developing appropriate strategies to improve the performance and satisfaction of the cooperative employees. It is therefore, the future research agenda should consider gender-inclusive policies for future organizations sustainable financial models to sustain such programs, the effects of digitalization in Organizations, sustainability practices, and psychosocial factors that lead to job satisfaction.

Keywords: ***Milk Co-operatives, FinTech Challenges, Price, Infrastructure, Milk Farmers, Sustainability.***

INTRODUCTION

Milk cooperative societies in Kerala are an essential factor in the state's agricultural economy; acting as valuable intermediaries between producers of dairy products and consumers (Kaur and Singla, 2024). Set up with aim of as providing fair price to their produce to farmers these Co-operatives have really contributed a lot towards the growth of dairy in Kerala. The concept of cooperative farming for dairy production does not only increase the revenue of farmers but also guarantees that the quality of milk produced will be on standard (Molla et al., 2024). These societies have advanced over the years to become large sources of incomes and livelihoods, as well as the boosting of the economy of the rural areas. But still, there are various challenges that are instrumental in compromising the overall sustainability and functional capacity of milk

cooperative societies in the region of Kerala (Toiba et al., 2024). These Co-operatives face numerous difficulties, which can be summarized as operational and financial problems such as ineffective milk collection, transportation and distribution systems as well as problems of financial instability of market prices. Effective operation of the supply chain is also vital as ineffective supply chain adds greater costs affecting the profit abilities of the Co-operatives (Kujur and Bashir, 2024). Further, the sustainability of these societies is slowly eroding based on competition from other private dairies that create other outlets that farmer can sell their milk. rising competition in the industry alongside fluctuating milk prices adds pressure on the Co-operatives to offer affordable prices and retain producer loyalty. The work of milk Co-operatives is also affected by infrastructural and technological concerns (Fifin et al., 2024).

Most of the members in the Co-operatives do not have adequate infrastructure to effectively organize the flow of the milk from producers to processors resulting to losses of milk and compromised quality. Furthermore, the lack of effective utilization of actual resources raising questions about possible application of new techniques that would enable higher efficiency of operations and activity. This position informs the rationale for this study which seeks to establish the experience of milk cooperative societies in Kerala, since it is only by appreciating these difficulties that it is possible to pursue solutions for the sustainability and competitiveness of such societies. The objective of this present study is to examine the problems relating to operation, finance, and infrastructure and technology that affect milk cooperative societies in Kerala. In doing so, the study aims at identifying insights that can inform policy recommendations and practices necessary for improving on resilience of these Co-operatives in the identified critical areas above. The results therefore will be of importance not only to the Co-operatives themselves but also towards advancing the discussion of the type of cooperative systems that fits agriculture, this study's findings will be important for analogous settings with similar problematic that seeks to establish the best models to adopt.

STATEMENT OF THE PROBLEM

Although the system of milk cooperative societies is the backbone of Kerala as dairy industry, they expose several issues that hinder their functional efficiency and future viability. One of them pointed towards to problems, which have a bearing on operation effectiveness in collection, transport, and distribution of milk. These inefficiencies may lead to spoilage of milk, loss of cash flow and hence the farmers trust to the supply chain integrity is impacted on. Insufficient infrastructure and limited & obsolete infrastructure in logistics make the situation worse, adding operational cost and reducing its competitiveness against private dairies. Another problem that milk Co-operatives encounter is the returns of which financial problems are another hardcore to these Co-operatives. Oscillations in prices of milk make it hard for the farmers and the Co-operatives to earn a stable income in future. But one of the most common problems that many cooperative faces is the problem of scarce availability of credit that provides all the more limited possibility to finance improvements and innovations necessary for the organization. Such financial insecurity reinforces dependence on market trends which may jeopardise the existence of Co-operatives. This is compounded by the fact that private dairy production companies are growing in competition with Milk. Sometimes private player has more capital and more freedom to provide farmers better prices and services than state owned companies. Today, a large number of the milk cooperative societies thus face a problem of defection of members, and hence, low supply and

quality of milk. This means that Co-operatives are forced to develop new ideas and operational models in order to sustain themselves in the face of existing competition.

Infrastructural and technological constraints pose a problem in the modernization of operations. Most Co-operatives do not have the capital investment that is required for handling milk collection and distribution. Due to lack of capital, some Co-operatives might lag behind in implementing efficient practices that can cut across the productivity and profitability of the organization. Such a state of affairs points to the rationale for providing an all-round analysis of the problem affecting the milk cooperative societies in the state of Kerala because the identification of these issues is crucial to devising relevant solutions that will help these societies survive and remain competitive. The challenges that confront Milk cooperative societies in Kerala have dimensions that are complex and that should be underscored. Thus, the purpose of this research is to investigate operational, financial, infrastructural and technological issues of these Co-operatives and to offer useful recommendations that may help to improve their position and increase the sustainability and stability in conditions of higher competitive pressure and unpredicted market flutters.

SCOPE OF THE STUDY

The focus area of this research extends to identification of the different problems that affect milk cooperative societies in Kerala. The primary focus will be on three main areas as the problems encompassing the application include operational concerns, financial problems, and infrastructural and technological concerns. Regarding this area of the research, more attention will be paid to the specifics of milk collection, transportation, and distribution. Such work processes must be understood to better determine where changes can be beneficial and where there are currently issues. Logistics, supply chain and human resources aspect of the organisation will be analysed with a view of establishing the effect it has on the performance of milk Co-operatives. The profitability of milk Co-operatives has to do with the viability of bringing these Co-operatives to the next level. This section will have subtopics such as; The problem of volatile Milk prices; Access to credit; Competition from private dairies. The study will establish how these financial burdens impact on the effective functioning and performance of Co-operatives in this capacity to their members. In terms of objectives of this component, the emphasis will be made on the material and technical support of the work of milk Co-operatives. A brief assessment of current structure, inventory, and technology will be made to determine deficiencies that will require enhancement. The possibilities to apply such technologies as to advance productivity and optimize the organizational activities will also be discussed.

SIGNIFICANCE OF THE STUDY

The relevance of this study therefore revolves around the possibilities of giving impulses towards the sustainability and developmental paths of milk cooperative societies in the region of Kerala. Recognizing and realizing the organizational inhibitors that impact the Co-operatives benefit farmers because they can actively demand change and improvements for their organizations. This kind of knowledge can be useful in improving farmer/Co-operative relationships, making the agricultural business more stable. Policymakers can use the results of this research to develop specific measures utilizing the challenges revealed in the course of the study. This research will assist in the literature review section of the proposed cooperative models and rural development. The study contributes to the existing literature concentrating on the analysis of organisational and

financial performance of agricultural Co-operatives, in this case milk cooperative societies in Kerala state, India, proposing recommendations and evidence which might be useful for other states thrown into similar predicament.

From the above observations, the implications and relevance of the study are apparent to many players in the farming fraternity here and in other developing nations, not to mention policy makers and researchers. In this respect, this research focuses on the case of the milk cooperative societies in Kerala and seeks to improve the company's competitiveness and sustainability to a positive impact on agricultural development.

OBJECTIVES OF THE STUDY

- To analyse the operational challenges faced by milk Co-operative societies in Kerala, focusing on milk collection, transportation, and distribution issues.
- To examine the financial difficulties affecting the sustainability of milk Co-operatives, including fluctuating milk prices, settlement, access to credit, and competition from private dairies.
- To explore infrastructural and technological challenges faced by milk Co-operatives in Kerala and suggest strategies for modernizing their operations and improving competitiveness.

LITERATURE REVIEW

The milk cooperative sector in Kerala has for several years supported the overall development of the state especially in as a source of income for the rural folks (Antony et al., 2016, Geng; Wu; Khan & Luo, 2024). However, the sector experiences a string of challenges that has the potential of compromising its sustainability and efficiency. This literature review focuses on the problems of operations, financial management and infrastructure faced by the milk Co-operatives in Kerala and the imperative for upgrading and radical overhauling (Kaur and Singla, 2023). This paper identifies one of the major problems in operation of the milk cooperative societies in Kerala is the inefficiency in collection of milk and transportation. A major challenge most of the cooperative's face is reduced access to infrastructure and this affects collection and distribution of milk. A network of these Co-operatives may also imply challenges in the delivery of milk especially in the rural areas where transport could be a problem (Radha and Sekhar, 2023). Concerns about quality control during the collection process are always likely to emerge as inadequate hygiene leads to contamination and spoilage, including loss of consumers' confidence. Yet another major operation problem is the absence of training for members, within the framework of the cooperative. It is observed that most of the dairy farmers remain ignorant in terms of raising awareness of the better standards of milk production and hygiene and hence the quality of the products from these farmers is still compilable (Kashyap, and Bhuyan, 2023). Lack of access to training programs may propel cooperative members to failure in meeting market forces and competitive market standards. Fluctuations in financial status are a major problem affecting the growth of milk Co-operatives.

Now and again change in milk prices affects the producers who in most cases rely on these prices for their earnings. Market fluctuation is often a major problem when it comes to maintaining a stable price within a cooperative to its members, which deters many producers from staying

involved in cooperative activity. It can also lead to unpredictable investments in production capacities because the farmer may shy off from investing in full mechanization to enhance production output without certainty on the market returns (Kaur and Singla, 2024). Credit constraint is another major financial problem for the milk Co-operatives Access to credit. A majority of small Co-operatives do not have the required paperwork and adequate records required to obtain funding from lending firms thus constraining their capacities to finance physical and human capital enhancements. Many a time, this financial constraint leads to underinvestment and inefficiency within the cooperative structure. A major challenge that emerged is the capital increase in private dairies which poses another threat to Co-operatives (Galetto and Rossini, 2023). There are denominations that private players provide far better in term of pricing and marketing, hence, the customers begin to shift to the side of cooperative societies. This show that there is competition that Co-operatives have to develop and take a step up in order to grab more people as members/consumers. Lack of infrastructure can be still considered as a major challenge for milk cooperative societies in Kerala.

Some Co-operatives use substandard technologies in processing and keeping milk and other related products that are not fit for today's market (Sarttra et al., 2023). Lack of proper refrigerator leads to massive losses because the product tends to go bad after some time especially if the weather is hot, as is the case for milk. Applying technology in operation of milk Co-operatives will bring significant difference in output and quality of products. Nonetheless, many Co-operatives turn down new technologies because they are fearful of the costs they will incur to upgrade (Molla et al., 2024). Therefore, they fail to get the chance to improve their operational performance, for instance, by adopting improved supply chain management solutions or leveraging performance data (De et al., 2023). Furthermore, the absence of capacity development programmes for members of the Co-operatives limits their capacity to apply and exploit technologies in their operations. Education and extension services in current practices of dairy farming and management should be the key areas to consider in increasing productivity and competitiveness. In view of the difficulties that manginge milk cooperative societies in Kerala, effective strategic recommendation are needed. The overall efficiency of the milk collection and distribution channels can be greatly boosted by upgrading the existing transportation network. Improvement of the road network and other means of transport can reduce losses and delay due to spoilage next (Onyango et al., 2023).

This means that Co-operatives are charged with the major responsibility of devising effective and sustainable marketing policies to better employ with the privately owned dairies (ZUBA-CISZEWSKA et al., n.d). Thus, using internet marketing tools and developing cooperation with local companies can become effective means to increase the attention paid to Co-operatives and expand the circle of customers (Mengistu and Meressa, 2023). Through The involvement of the building councils with more educational institutions and advanced technology companies, we can promote the uptake of the modern practices and technologies (Satria et al., 2023). Partnerships aimed at capacity development as well as partnerships aimed at innovation can help Co-operatives strengthen themselves so that they can adapt their business models to increasingly becoming competitive under new structures (Bolotova, 2023). A number of problems relating to the milk cooperative societies in Kerala involve with operational problem, financial problem and facility problem. Addressing these challenges requires a comprehensive strategy that involves investment in infrastructure, enhanced training programs, and the adoption of modern technologies (Toiba et al., 2024). Through concerted efforts, milk Co-operatives can improve their sustainability and continue to play a vital role in the economic development of Kerala.

METHODOLOGY

- **Research Design:** It is a quantitative and analytical type of study which seeks to make conclusion from the data gathered.
- **Sampling method:** In this study, on the issues and concerns of the milk Co-operative societies participating in Kerala, the study will use the stratified sampling technique in order to have balance of all the population variability. Target population of the study shall comprise all the milk cooperative societies operating in Kerala regardless of their geographic location, size, or membership into small holder farmers and large-scale dairy farmers, North Kerala, Central Kerala and South Kerala are the regions in Kerala and the milk Co-operative societies can be divided into small, medium and large societies. The sample size will be used the proportional allocation technique in order to come up with the representation of the stratum in the population. This method of selection will ensure accuracy in the results obtained since participants will be selected randomly within every stratum. Not only does this enhance precision and accuracy of the findings, but it also promises more holistic observations and understanding of the specific issues that different types of Co-operatives go through and make practices and decisions accordingly to make best usage of limited resources during data collection. Accordingly, the study adopts stratified sampling to capture operational, financial, and infrastructural problems and provide viable recommendations for enhancing the sustainability of milk cooperative societies in Kerala.
- **Sample size:** For analysis, randomly 45 Co-operatives from Kerala are selected to analyse
- **Data collection method:** From the formulated developed questionnaire a structured questionnaire is then developed and administered to the respondents of Co-operatives in Kerala
- **Tools used for Data Analysis:** The data collected from 45 respondents is then analysed by using the Statistical Package for Social Sciences, otherwise known as SPSS. Several quantitative tools namely, Correlation, Kruskal Wallis Test, Friedman test were used

ANALYSIS

a) Rating of current milk collection process effectiveness in the cooperative society

The rating of the current milk collection process in cooperative society of respondents on the basis of effectiveness is summarized in Table 1.

Hypothesis

H0: Analysis also showed that there is no relationship between the efficiency of the existing milk collection in cooperative society and gender of the respondents.

H1: In the effectiveness of current process of milk collection in the cooperative society there was significant relation to the gender of the respondents.

Table 1. Results of the conducted survey regarding the performance of current collection process of milk through the cooperative society.

		Rate the effectiveness of the current milk collection	Gender
Rate the effectiveness of the current milk collection	Pearson Correlation	1	.309*
	Sig. (2-tailed)		.039
	N	45	45
Gender	Pearson Correlation	.309*	1
	Sig. (2-tailed)	.039	
	N	45	45

Source: Primary data

In analyses summarized in table 1, the study examines the association of gender with perceived efficiency of current milk collection in cooperative societies. A little positive relationship is observed by the Pearson Correlation coefficient of 0.309; this showing that the changes in gender are related to the fluctuations in the perceived efficiency of the process of milking collection. The relationship presented a p –value equal to 0.039 and since it is below the 0.05, the null hypothesis (H_0) stating that there is no relationship between gender and effectiveness is rejected. This rejection suggests that gender of the respondents affects their perception on the milk collection process and this relationship is statistically significant. The results show that gender influences the response of the respondents regarding the efficiency rating of the milk collection in the cooperative society most probably due to a variation in the experience or status of the employees in the cooperative society.

b) Financial difficulties

That financial difficulties by using the test called the Friedman Test. Table 2.1 and Table 2.2 and Mean Rank and Test statistic result on this aspect to check the level of preferences of difficulties.

Hypothesis

H0: On the question of the correlation of the financial problems and sustainability of the milk Co-operatives, there is no distinction.

H1: In this Case there's a difference in the preferences of the financial hardships impacting on the milk Co-operatives.

Table 2.1 Mean Ranks on Financial difficulties

Factors	**Mean Rank**
Fluctuating milk prices	2.32
Access to credit	3.21
Competition from private dairies	3.07
Operational costs (transportation, etc.)	3.18

Insufficient funding for infrastructure	3.22

Source: Primary data

Table 2.1 shows the mean rank of implementing various financial difficulties in Milk Co-operatives for sustenance in Kerala. They carry out an assessment of some variables such as changing price of milk, credit facilities, private dairies competition, cost of operations, and inadequate capital investments on infrastructure. The mean rank values present the rank position of these challenges according to the impression of the respondents. The factor with the highest mean rank is the factor 9 "Insufficient funding for infrastructure" The results indicate that respondents consider this factor as noteworthy that influences the sustainability of milk Co-operatives. Next is, "Access to credit" (3.21) showing that the availability of funds is also viewed as a considerable barrier. Next on the ladder is "Operational costs (transportation, etc.)" (3.18), which so indebted underlines the financial pressure that these Co-operatives experience in their day to day running. The factor least is "Fluctuating milk prices" has a mean rank of (2.32) meaning that though many view the issue as a problem it is not one that is considered key or significant as many of the financial issues are. These challenges are well ranked to give information to the stakeholders and policy makers on where to intervene, especially on the infrastructure development and credit facilities to support sustainable milk Co-operatives.

Table 2.2 Test Statistics on Financial difficulties

N	45
Chi-Square	29.838
Df	4
Asymp. Sig.	.000
a. Friedman Test	

Source: Primary data

Table 2.2 shows the test statistics in assessing financial difficulties that threaten the sustenance of milk Co-operatives, by using the Friedman Test to compare the preferential choices of respondents on these difficulties. The prepared chi-square value is 29.838 with 4 degrees of freedom and the equivalent asymptotic significance of .000. Research question analysis Since chi-square equal to 46.920 and p-value equal to cero (p= 0.000) The null hypothesis (H0) is rejected at a significance level of 0.05 That means that there is difference in the preference of having financial difficulties that affect sustainability. This suggests that there are indeed considerable variations in the relative emphasis that respondents accord the diverse financial issues affecting milk co-operatives. The results underline the necessity of employing concrete measures to envisage the concrete financial problems that have to be solved, especially the ones that are characterized by the higher mean ranks, as these issues are of paramount importance for the further Co-operatives' functioning. These gaps should be at the forefront concern to the stakeholders to address or factor these disparities while developing policies and interventions to improve sustainability of milk Co-operatives in Kerala.

c) Infrastructure and technology whereas the other two classes are to be filled by the affected individuals.

Due to technological limitations available at different places, infrastructural and technological challenges is examined with the use of Kruskal Wallis test on the basis of the place of residence of the respondents. The result of the analysis is given in the following table 3

Hypothesis

H0: The students' mean score on the infrastructural and technological challenges has no significant difference according to their place of residence

H1: It was possible to reveal the differences not only in the mean scores on the infrastructural and technological challenges depending on the place of residence.

Table 3. Kruskal Wallis Test on Infrastructural and Technological Challenges

	Inadequate cold storage facilities	Lack of modern transportation options	Insufficient access to technology	Poor maintenance of existing infrastructure	Limited training on modern dairy practices
Chi-Square	15.130	11.712	1.302	.793	1.302
df	2	2	2	2	2
Asymp. Sig.	.001	.003	.521	.673	.521
a. Kruskal Wallis Test					
b. Grouping Variable: Place of residence					

Source: Primary data

Table 3 depicts the test statistics for evaluating the prospects of financial difficulties that may they become survival of milk Co-operatives given by analyzing the preferential ranks given by the respondents to these difficulties by employing the Friedman Test. The prepared chi-square value is 29.838 with 4 degrees of freedom and the equivalent asymptotic significance of.000. Research question analysis Since chi-square equal to 46.920 and p-value equal to cero (p= 0.000) The null hypothesis (H0) is rejected at a significance level of 0.05 That means that there is difference in the preference of having financial difficulties that affect sustainability. This implies that the positions held by respondents to various financial issues that impact on milk co-operatives do entail appreciable differences in the numeric weights assigned to the array of issues in question. The results place emphasis on the need to use practical means to predict practical finance concerns that have to be addressed, particularly the ones with higher mean ranks as they are fundamental for further Co-operatives activity. These gaps should be the primary concern of the stake holders to attend to or encase these disparities while formulating policies or interventions to enhance sustainability of the provision of milk Co-operatives in Kerala.

FINDINGS

- The findings show a probability of <0.05 in most hypothesis, and especially in hypothesis 1 and 2 where gender had a likely effect on the way respondents rate the efficiency of the milk collection in Co-operatives. Interestingly, gender seems to moderate these perceptions in a way that indicates that the nature of the experience of the collection process is different for men and women, perhaps because of differential roles and experiences in the Co-operative. This underlines the need for gender analysis in addressing efficiency of the milk collection system and this should include resource endowment and decision-making opportunities.
- This work highlights funding of infrastructures and access to credit facilities as the foregoing financial problems confronting the milk Co-operatives compared to other one such as volatile milk prices and competition from other private dairies. It brings into focus the requirements of robust physical and financial resources for future cooperative functioning. These results indicate that there are different informality types that Co-operatives encounter and that need different intervention efforts, primarily with regard to financial constraints, especially in terms of access to infrastructure and operating capital.
- It is also clear from the analysis that there are marked regional differences regarding how respondents experience infrastructural issues such as poor cold chain and transportation facilities. The following shows that respondents drawn from diverse regions feel these impacts dissimilarly; thus, the importance of region-specific solutions. Some other problems like inadequate equipment, and poor maintenance of infrastructure regardless of the availability of funds and equipment's were perceived and equally ranked in all the regions, so it was clear that they are universal problems that needed universal solutions.

SUGGESTIONS

1. Much attention should also be directed towards enhancing awareness of matters relating to costs and funding by members of the cooperative society. Effective Administration for developing sources of financial back-up and frameworks would be another way of completing the sustenance of the Co-operatives' exercise to alleviate the pressures such as changing price of milk and competition from individual dairies.
2. The crucial financial problems, namely underfunding of infrastructure and weak credit demand, milk Co-operatives require further micro-financial solutions. Co-operatives themselves should seek partnership with government and financial institutions to provide concessional credit and cash incentives for investment in physical assets, including cold chain facilities and logistics. Also important is the new business relations with private players, especially in the field of dairy industry, which assist Co-operatives to attract investment and skills.
3. It has been established from the geographical comparison of the opinions regarding infrastructural and technological concerns that a single solution cannot fit everybody. Where there are serious cold storage constraints, public-private collaborations to provide or rehabilitate storage infrastructures should be integrated as the first option.
4. Better transport facilities may be affected through subsidies or by working cooperatively towards hiring services of transports. There is a need for Co-operatives to adopt modern

technological solutions in enhancing their operations in all over the world. Besides meeting regional needs, cooperative should also carry out mass awareness about how to use technologies, maintenance of structural facilities, and including putting into practice very frequent check-ups to know the efficiency of operating improvements in the future.

CONCLUSION

The areas of concern presented in this research relate to analysing the problems associated with milk Co-operatives in Kerala efficiency of the milk collection process, their problematic finance, and infrastructural and technological issues. The research also reveals key financial challenges, especially in regard to infrastructure finance and credit constraints. These challenges were considered to be more crucial than issue such as instability of the milk prices or competition from the private dairy firms. This calls for enhanced investment in infrastructure and financial developmental support are therefore imperative, and intervention measures such as direct government subsidies, affordable credit facilities and collaborations with private sector players will be indispensable for the enhanced sustainability of these Co-operative formations. The above study also underlines the need for a considered approach towards the issues of development affecting the milk Co-operatives in Kerala. Through gender sensitive polices, relevant financial intervention measures as well as the appropriate infrastructural developments in the different Co-operatives regions there is likelihood of increasing sustainability, operations and competitiveness in a growing dairy market.

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