

COVID-19 and Dairy Co-operatives - A Qualitative Assessment using Focus Group Discussions

Girish Mangleek¹

A. K. Tiwary²

Anshu Singh³

Sonal Kadam⁴

ABSTRACT

To restrict the spread of COVID-19, country wide lockdowns were imposed by governments across the countries impacting export, import and consumption of milk & milk products in different ways. In India, imposition of restrictions for the control of COVID-19 pandemic affected supply as well as demand of the milk for dairy co-operatives.

The research conducted was exploratory and qualitative in nature. The research relies on both, primary as well as secondary data. Focus Group Discussion was used to collect primary data. FGDs were divided into two groups. First group included Board of Directors and Managing Directors along with Employees of selected milk unions. Further, Dairy Farmers of respective milk unions formed second group. Two rounds were conducted of each FGD with 19 questions.

Though, during lockdown, milk production, collection, processing and marketing did not stop, negative consequences were seen on the business of co-operative milk unions, private dairies and dairy farmers. Co-operative milk unions, village level milk societies and dairy farmers collectively tackled this pandemic situation.

It was observed that, there have not been any major policy changes undertaken by milk unions after COVID-19 pandemic. Therefore, it is suggested that, they should make strong policy changes like maintaining special funds to face such unprecedented events in future.

Keywords : COVID-19, Dairy co-operatives, Pandemic, Supply chain FGD.

¹ Associate Professor, Head of Centre for Management Development, VAMNICOM, Pune.

² Faculty Member & Head of Centre for Research & Publication & Entrepreneurship Development, VAMNICOM, Pune.

³ Associate Professor, VAMNICOM, Pune

⁴ Research Associate, VAMNICOM, Pune

1. Introduction

Dairy is the most important agricultural commodity in India. Dairy farming plays a crucial role in socio-economically uplifting the lives of rural household in the country. Dairy farming is considered as an important secondary source of income especially for women and marginal farmers. It plays a vital role in generating income for small farmers (1-2 ha land), marginal farmers (below 1 ha land) and landless labourers. Dairy accounts 5% of the national economy and directly employing over 8 crore farmers (*Economic Survey, 2021-22*). As stated by National Investment Promotion & Facilitation Agency, India is the largest producer of milk in the world. India ranks first among world's milk producing nations accounting for 23 percent of total global milk production followed by the United States, China, Pakistan and Brazil.

As mentioned in the annual report of Department of Animal Husbandry and Dairying (2021-22), there were currently 228 dairy co-operative milk unions, 172.63 lakh dairy farmers under 1.96 lakh village level dairy co-operative societies present in India. In Maharashtra, the number of Milk Co-operative Societies present were 20.897 thousand. According to FSSAI licenses (till May 2019), there were 1944 Private Dairies (Milk Processing Units) with a total capacity of 901.6 LLPD.

According to the Committee for the Promotion and Advancement of Co-operatives (copac coop), there were over 2.6 million co-operatives operating globally. As per the World Co-operative Monitor data of 2014, out of top 300 co-operatives in the world, 32% were from agriculture and food industries sector. There were 12.41 lakh agricultural co-operatives worldwide with 1121.20 lakh members.

The World Health Organization (WHO) declared coronavirus disease a pandemic on 11th March, 2020. To restrict the spread of COVID-19, country wide lockdowns were imposed by governments. The pandemic created social and economic disruptions, disrupted demand and supply chains around the world.

COVID-19 virus spread across the globe impacted trade and reduced international price for SMP (Skimmed Milk Powder). Shut down of schools, restaurants and foodservices reduced the domestic demand for milk and milk products worldwide. Decrease in the income of households resulted into decreased demand for milk and milk products. COVID-19 pandemic affected export, import and domestic consumption in different ways. Pandemic

forced small scale dairy business to exit the market due to increase in input costs and compliance with more stringent environmental and safety regulations. The impact of shock on domestic demand varied country wise, depending on family income and the price elasticity of demand for dairy products (*Acosta A. et al., 2021*). In India, imposition of restrictions for the control of COVID-19 pandemic affected supply as well as demand of milk. During the first months of the lockdown, the availability of feed and fodder decreased, making it the most affected supply chain. Dairy farmers suffered double losses as a result of rising milk production costs and a drop in milk prices. The fall in demand, particularly for ice cream and milk-based beverages, posed a significant challenge for dairy processors (*Bhandari G. et al., 2021*).

2. Literature Review

According to WHO, COVID-19 outbreak was more than just a public health crisis; it was a crisis that affected every sector. As a direct consequence, every sector and every person must participate in this battle (*WHO, 2020*).

COVID-19 pandemic has damaged the informal sector of the rural economy. (*Rawal V. et al., 2020*), (*NABARD, 2020*). Around 400 million workers in India working in informal sector were at the edge of falling into deep poverty. Majority of farmers in India are small land holders (*Singh B. P., 2020*). First few weeks of the lockdown were very critical for the farmers. Producers of perishables such as milk, eggs, poultry, fresh fruits and vegetables suffered losses due to crash of export and domestic demand (*Rawal V. et al., 2020*). Widespread fear regarding safety of non-vegetarian food resulted in significant decline in demand for poultry, fish, and sheep/goat/pig (*NABARD, 2020*). The disturbed agricultural marketing system and delayed public procurement forced producers to sell their produce at low prices to whoever was ready in their villages to purchase the produce. Supply of inputs such as seeds, fertilizers, pesticides for crops and cattle feed for dairy animals were disturbed (*Rawal V. et al., 2020*). Those farmers who were suppliers for hospitality sector, those whose farm activities depended on seasonal or migrant workers affected the most (*Phillipson J. et al., 2020*). Return of migrant worker to their villages along with local villagers, created dependency on employment available in their villages. Poor peasants, landless households, dalits, adivasis and women workers were the worst victims in the crisis (*Rawal V. et al., 2020*). Rural economies with large number of entrepreneurs as well as small and micro-enterprises with limited solvency and cash reserves were less prepared to withstand the COVID-19 disruptions

(Phillipson J. et al., 2020). Impact of COVID-19 varied between genders. For rural women entrepreneurs and farmers it was very challenging to handle business and farm and family (Phillipson J. et al., 2020).

Self Help Group is a mean to women empowerment (Dr. George J. et al., 2021). SHGs are the only source of income for rural poor women (Deepak G., 2022). COVID-19 impacted this informal sector unevenly (Dr. George J. et al., 2021). Members of SHGs had access to credit during crisis like COVID-19, but it was of previous savings for a short term. In long term, future savings disrupted. Length of the lockdown had effect on savings of members of SHGs and farmers (De Hoop T. et al., 2020). COVID-19 had a negative impact on daily working and financial aspects of SHGs (Singh M., 2020). Initial period of COVID-19 lockdown was very harsh on SHGs of Kerala. Some units shut down for the whole year generating losses to its members (Deepak G., 2022). Family pressure to not go to office due to fear of COVID-19, having not enough demand for products they were manufacturing, therefore not having enough money to pool into SHGs, not receiving money from customers, unavailability of raw material and supply of finished goods to the market etc. were the challenges SHG members faced. Some SHGs were afraid that they could lose few members permanently (Singh M., 2020). Physical meetings happen in SHGs and work from home was not an option to SHG members. To maintain social distancing and to comply with COVID-19 norms, SHG members could not physically meet each other. 51% of rural women faced issues of domestic violence and debt crisis. SHGs meeting were only places for such women to share and to listen. COVID-19 affected SHG members monetarily as well as emotionally (Deepak G., 2022). Even though their income declined, these members helped Govt. of Kerala by working as frontline workers. They started community kitchens to provide food for quarantined and isolated people (Dr. Tiwari D., 2022). SHGs played a vital role in delivering community based responses, such as door step delivery of dry ration, food, manufacturing PPE kits, masks etc. There were chances of reduced efficiency of SHG members during the time of social distancing due to low mobile phone ownership and less digital literacy (De Hoop T. et al., 2020). If growth parameters like market expansion, infrastructural and technological growth were considered, SHGs were not able to significantly contribute to the growth of women entrepreneurs in India. COVID-19 pandemic brought both challenges and opportunities to members of SHGs (Dr. Tiwari D., 2022).

Financial independence gives certain level of dignity to women entrepreneurs. But COVID-19 pandemic threatened this status of women (*Jaim J., 2021*). Women are involved in business related to tourism, education and beauty. Lockdown and social distancing had a huge impact on these businesses making women business owners vulnerable (*Sangem M., 2020*). Raw material prices, delivery charges increased making hard to do business. Increased burden of domestic duties and maternal role made women difficult to operate their business activities from home. Some women entrepreneurs had to shut down the business, as their businesses were not online (*Jaim J., 2021*). In Vietnam, enterprises led by women faced more challenges during pandemic than men. Women business owners already had issues of financial constraint, lack of motivation, low digital literacy, fear of failure, lack of family support; COVID-19 pandemic added more stress into it (*Maheshwari G. et al., 2021*). In Nigeria and Ghana, most businesses that temporarily closed were of women. It was because, their businesses fell into informal sector. Access to agricultural inputs, information and liquidity was lower for female farmers, affecting their farm productivity and food security. Closure of schools, social distancing increased burden of care related tasks on women and girls. There was possibility of permanently affecting women by making them exit from labour market or education. Women also have to face gender based violence which surges during crisis, isolation and lockdown. Impact of COVID-19 varied for people from different backgrounds. Crisis mostly affects those who are vulnerable, intensifying already existing inequalities across countries, communities, household and individuals (*Copley A. et al., 2020*).

Stable supply chains are essential to a country's enhanced economic growth (*Goel R. K. et al., 2021*). Because all processes and stages in supply chain are inextricably linked, a minor delay or errors can cause a butterfly effect, resulting in a significant loss in a yield and outcome (*FAO, 2020*). As a consequence of COVID-19 and lockdown, there was unavailability of labourers and truck operators. Due to this, food distribution system severely affected. Along with food distribution, MSME sector also had a worst impact of COVID-19 (*Singh S. et al., 2021*), as these were largely depended on logistics and supply chain sectors (*OECD, 2020*). In case of food inventory network, COVID-19 affected entire cycle from the field to the customers (*Barman A. et al., 2021*). The COVID-19 prevention policies had the greatest impact on demand in the supply chain (*Grida M. et al., 2020*). Demand for some specific items decreased, showing a temporary surplus supply

(for example, milk for cheddar; potatoes for French fries). Parallely, buyers observed empty shelves in stores at the beginning of the epidemic, as the sudden swollen demand disrupted food supply (OECD, 2020). The lockdown hampered both domestic and international supply chains. As an outcome, this pandemic caused significant job losses, which ultimately reduced demand, resulting in a serious global economic crisis (De Vito et al., 2020). If distributors and processors are disrupted, the entire nation is at danger (Staniforth, 2020). The COVID-19 pandemic caused significant disturbance in certain labour intensive industries such as livestock farming, horticulture, planting, harvesting and crop processing (Stephans et al., 2020). Disrupted supply chain and reduced demand followed reduction of dairy production and horticulture. Prices of agricultural inputs were estimated to be increased due to closure of shops, markets and disruption in supply chain. Though banking activities like loans, deposit and recovery were severely impeded, digital transactions increased (NABARD, 2020). Due to restrictions, farmers were forced to destroy food essentials on the farm. Dairy farmers dumped litres of milk due to the impeded supply chain. Tea plants were impacted due to logistical issues. Maintaining logistical continuity is a critical component in the food industry during global disaster. The supply chain was considerably affected by shutdown when workers were absent from work due to illness or travel restrictions (Barman A. et al., 2020). To achieve United Nation's Sustainable Development Goals (SDGs 2) of ending hunger through achieving food security and improved nutrition; agriculture supply chain is vital. It was found that, supply risks demand risks, financial risks, logistics and infrastructure risks, management and operational, policy and regulation and biological and environmental factors have major impact on agriculture supply chain (Sharma R. et al., 2020).

Co-operative societies help members for better standard of living (Enwa S. et al., 2020). 80 percent of milk is marketed through unorganized sector and 20 percent through organized sector which included government and co-operative societies. Dairy co-operatives help in eliminating rural poverty by generating employment in dairy sector. Co-operatives also provide training to the individuals in respective fields. Strengthening the co-operatives can alleviate challenges such as producer's bargaining power, lack of proper infrastructure for milk collection, storage, processing, marketing-local as well as global etc. (Rajendran K. et al., 2004).

The dairy sector was affected by COVID-19 from both demand and supply sides in several waves. Depending on region and nation, economic profiles, relative resource shortage, income per capita, and market structure, these waves have had various effects on the dairy industry. Researchers were expecting more milk producers to leave dairy business for medium or long period of time (Acosta A. *et al.*, 2021). COVID-19 severely affected dairy sector in US and China in a way such as reduced farmgate prices, closing of roads, schools, restaurants, hotels leading to difficulty in milk supply chain and shutdown of several dairy processing units, scarcities of worker, increased production costs and lack of working capital (Qingbin W. *et al.*, 2020). At the start of the pandemic, feed and fodder availability decreased as a result of lockdown. The milk producers had to bear losses from increased cost of production as price of cattle feed increased and reduced prices of milk supplied as demand from customers- individual as well as institutional, decreased. Dairy processors faced a challenge of drop in the demand for processed milk products such as ice-creams and other milk based beverages (Chandel B. *et al.*, 2021).

3. Objectives of the Research -

1. To understand the implications of COVID-19 on the lives and livelihoods of Dairy Farmers.
2. To understand the coping strategies and mechanisms adopted by Milk Unions to manage the disruptions caused by COVID-19.

4. Milk Unions Undertaken for Study

Two milk unions from Pune district and one milk union from Ahmednagar district were selected for the research. Those were - **Pune Zillha Sahakari Dudh Utpadak Sangh, Katraj (Pune), Baramati Taluka Sahakari Doodh Utpadak Sangh, Baramati (Pune) and Sangamner Taluka Sahakari Dudh Utpadak & Prakriya Sangh, Sangamner (Ahmednagar).**

4.1 Pune Zillha Sahakari Dudh Utpadak Sangh, Katraj (Pune) :

Pune Zillha Sahakari Dudh Utpadak Sangh, Katraj also known as Katraj milk union was established in the year 1960 to facilitate village level farmers located at Pune district organized facility of milk collection. It sales milk and milk products as well as cattle feed under the brand 'Katraj'. During the year 2020-21, 827 societies were members of Katraj milk union.

Katraj milk union manufactures and distributes milk and milk products such as pasteurized/ homogenized-cow milk, toned milk, double toned milk, standardized milk, full cream milk, cow & buffalo cream milk and ghee, shrikhand, amrakhand, malai paneer, dahi, flavoured milk, lassi, jeeratak, table butter, milk powder, softy ice cream, pedha, khoa, sterilized milk in 200 ml bottle and hard ice-cream with different flavours in different pack sizes and mango, anjeer&malaiburfi, kalakand&kajukatali.

Along with milk and milk products, Katraj milk union provides following technical input services to dairy farmers- Artificial insemination for cow and buffalo, arrangement of camps to check infertility among milch animals, sale of cattle feed, chaff cutter, fodder seed, mineral mixture, vaccination of milch animals, deworming etc.

4.2 Baramati Taluka Sahakari Doodh Utpadak Sangh, Baramati (Pune) :

Baramati Taluka Sahakari Doodh Utpadak Sangh incorporated on 1st December, 1977. Its products are sold under the popular brand 'Nandan'. At the end of the 31st March, 2021, 264 primary societies were members of Baramati milk union.

Baramati milk union manufactures and sales wide range of milk and milk products- pasteurized homogenized milk, pasteurized homogenized toned milk, shrikhand, amrakhand, paneer, dahi, lassi, buttermilk, full cream milk, basundi, khoa, ghee.

It provides following services to dairy farmers- cattle feed and chelated mineral mixture, fodder seeds, chaff cutter, milking machine, artificial insemination on subsidy and vaccines to milch animals.

Along with these products and services, Baramati milk union also started petrol and diesel pumps.

4.3 Sangamner Taluka Sahakari Dudh Utpadak & Prakriya Sangh, Sangamner (Ahmednagar):

Sangamner Taluka Sahakari Dudh Utpadak & Prakriya Sangh was established on 12th November, 1977 by Sahakar Maharshi Bhausahab Thorat at Sangamner, Ahmednagar. Its products are sold under the brand name 'Rajhans'. Till March 31, 2022, 203 primary co-operative milk societies were members of Sangamner milk union.

Its range includes the following products- milk, ghee, pedha, shrikhand, amrakhand, lassi, paneer, buttermilk, masala buttermilk, dahi, flavoured milk,

khoa, gulabjamun, sonpapdi, rasgulla, berry, ice-cream, burfi, cheddar cheese, processed cheese, mozzarella cheese, whey cheese, skimmed milk powder, butter, packaged drinking water (Rajhans Aqua), mango drink, carbonated drink (orange, jeera, lemon etc.), amrutraj tea (green tea, masala tea, dust, premium tea).

Additional services provided by milk union were- artificial insemination, vaccination, preventive healthcare scheme, cattle feed, chelated mineral mixture, chaff cutter, modern dairy farm, loose housing for cattle, fodder seeds, milking machine, cow lifting machine, veterinary diagnostic laboratory, veterinary medical shop, etc.

5. Research Methodology

The research study was exploratory and qualitative in nature. The research relies on both primary as well as secondary data. Focus Group Discussion (FGD) method was used to collect primary data. FGDs were divided into two groups. First group included Board of Directors and Managing Director along with Employees of selected milk unions. Further, Dairy Farmers of respective milk unions formed second group. Two rounds of each FGD were conducted. Number of research papers, official websites, and annual reports of selected milk unions, NDDDB, DAHD, etc. were studied to collect secondary data.

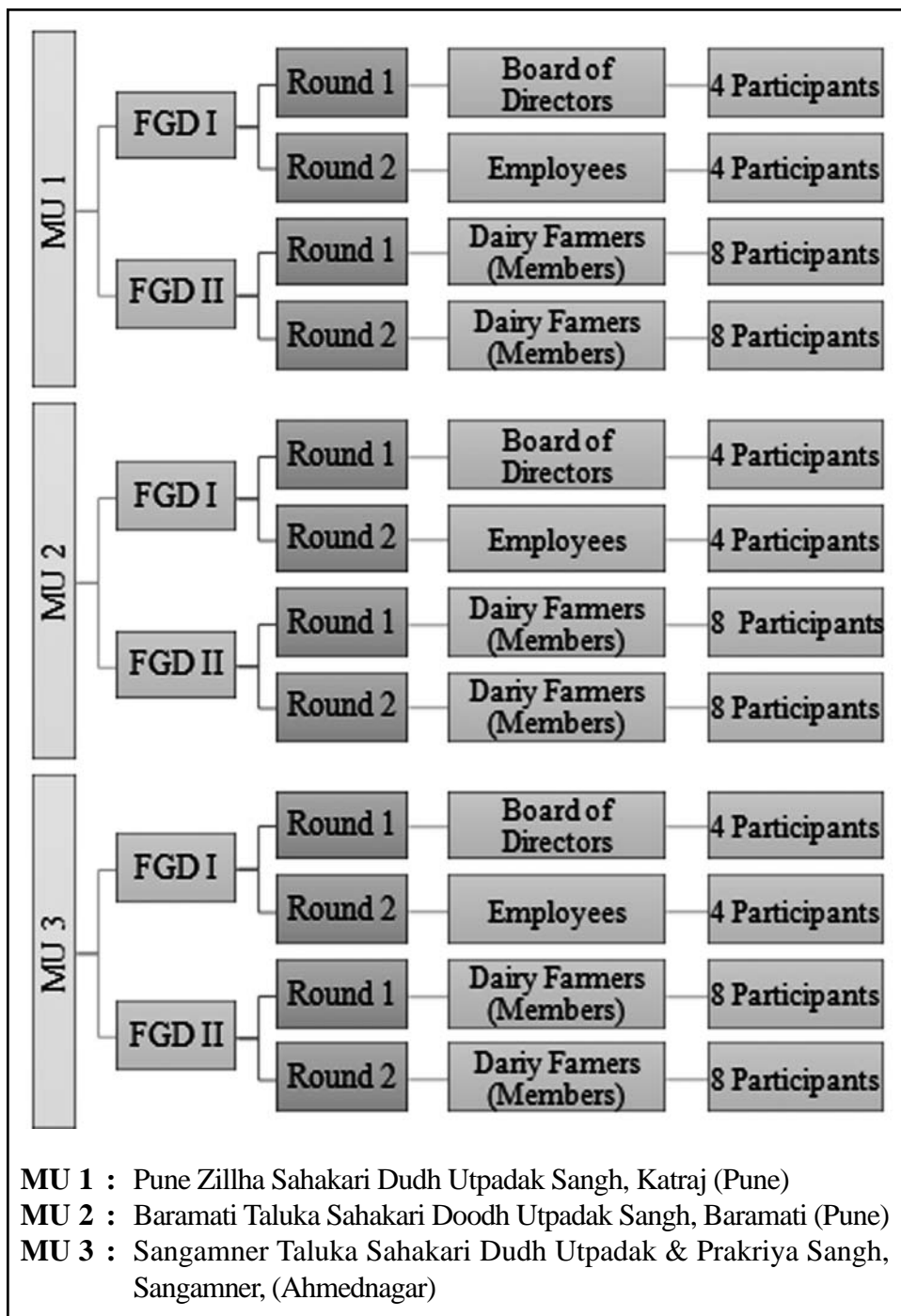
5.1 Focus Group Discussion

Focus Group Discussion is a strategy used in qualitative analysis wherein a free and open discussion is organized between groups of members on a particular research topic. Here, researcher plays a role of moderator (interviewer) or a group facilitator. Researcher stimulates discussion where participants share their experiences and influence each other and are influenced.

Focus Group Discussion is a low cost, simple and effective method to collect specific data in a short period of time.

5.1.1 FGD Tools and Questions

Fig. No. 1 Structure of FGD



Three milk unions (MUs) were selected to collect primary data through FGD. Six FGDs were conducted, 2 from each milk union. Each FGD group had 2 rounds. In FGD I, first round included discussion of Board of Directors, and second round included discussion of employees. In FGD II, both the rounds included dairy farmers (members) of the respective milk union. There were total 72 participants participated in Focus Group Discussion.

Table No. 1 Questions asked to Participants

FGD	Round	Question No.	Questions
1	1	1.	How COVID-19 impacted Milk Unions?
		2.	What were the challenges faced by Board of Directors?
		3.	What kind of measures were adopted by the board to tackle the challenges arising out of the pandemic during lockdown period?
		4.	What major policy changes Board of Directors have made post COVID-19?
	2	1.	According to you what was the impact of COVID-19 on your department?
		2.	What were the challenges faced by you?
		3.	What kind of financial and marketing support given to members during lockdown?
		4.	How did you tackle the challenges faced by you?
2	1	1.	During COVID-19, what challenges you faced while doing dairy business?
		2.	How COVID-19 and lockdown impacted your economic situation?
		3.	How dairy co-operative societies and Dudh Sangh helped you during pandemic?
	2	1.	What problems you faced while supplying milk to the dairy co-operative society?
		2.	What was the impact of COVID-19 lockdown on your payments?
		3.	What kind of special arrangements society made for their members?

		4.	How dairy co-operative societies and milk unions helped in taking care of your cattle during pandemic?
		5.	What were the other services that you received from your society / union?
		6.	What are the other livelihood sources you have?
		7.	How COVID-19 impacted these livelihood sources?
		8.	According to you, when did the financial situation start improving?

6. Analysis and Discussion

Analysis and discussion is divided into two parts. First part includes FGD result for Board of directors and Employees and second part includes FGD result for dairy farmers (members).

6.1 FGD Result for Board of Directors and Employees

Majority of the board members said that, movement restrictions had a slight impact on milk procurement at the start of the lockdown. It was further added that, milking animals were not affected by pandemic, milking of animals was an unavoidable and continuous process; therefore, it did not affect the milk collection/ availability. Pandemic and lockdown hampered the marketing and distribution of milk and milk products. In the global market, rates of milk powder dropped from Rs. 210-215/- per kg to Rs. 195-210/- per kg. In the domestic market, cow milk powder prices reduced to Rs. 190-205/- per kg from Rs. 210/- per kg (Narute A., 2021). Board members approached district administration and sought government support for the co-operation for excess milk marketing, transportation and distribution.

It was realized that, milk unions faced challenges of milk procurement, marketing and distribution of milk and milk products, human resource, non-co-operation from administration and government bodies at initial stage of lockdown, shortage of raw material to manufacture cattle feed, quality testing and packing material and increased transportation cost.

In March, 2020, after lockdown, dairies in Maharashtra claimed that, out of 1 crore litres of milk collected per day, around 10 lakh litres remained unsold on a daily basis. To tackle this situation, Government of Maharashtra announced plan under apex body of cooperative milk union-MRSDMM

(Maharashtra Rajya Sahakari Dudh Mahasangh Maryadit- Mahanand). Under this plan, the excess milk of 10 lakh litres produced daily would be processed into skimmed milk powder (SMP). This plan was implemented from 6th April, 2020 to 31st May, 2020. While processing milk into SMP, butter is also produced. Under this plan, it was announced that, for excess milk processing, SMP projects would compulsorily get expenses of packaging including GST Rs. 25/- for SMP per kg and packaging including GST Rs. 15/- for Butter.

To get rid of the fear of employees one of the milk unions provided following facilities:

- Provision of disinfection chambers at two parlours
- Facility of wash basin to wash hands and sanitizers for employees and customers
- Provision of face shield to employees and guards
- Provision of masks and sanitizers to all the employees
- Temperature and oxygen level check on the gates of dairy
- Provision of disinfectant solution with pumps to spray on every vehicle coming into the dairy.
- Provision of turmeric milk at affordable rates in the dairy canteen

According to the opinion of board members, to protect the losses of members, firstly board members created awareness about COVID-19 and its protocols among members. At village level, all the three milk unions continued procuring milk from members, although there was excess collection of milk and less demand, to support members financially. Board of directors said that, they gave maximum price per litre of milk to members, according to the quality of milk. Payment of dairy farmers was done timely and milk unions supplied good quality cattle feed to members through societies so that milk production and procurement would not hamper.

COVID-19 pandemic enabled us to use technology more efficiently. It was found from the discussion of board of directors that, instead of offline meetings, virtual meetings increased. Emphasis was given on cashless transactions in societies. Importance of planning, alertness, inventory management, hygiene and sanitation increased. It was discovered that, apart from this, there were no major policy changes made by milk unions.

Supply chain disruption caused disturbance in milk procurement as well as milk marketing at the initial stage of pandemic. It was not possible for dairy workers to work from home during pandemic. Due to movement restrictions, people for loading and unloading were not available. Non-availability of public transport made employees difficult to attend office. Therefore, in some cases milk union offices had to function with less staff and had to work overtime. Employees were afraid of COVID-19 and were hesitant to come to work. It was difficult to reach to dealers and shopkeepers as they were closed due to lockdown. Impact of availability of raw material required for cattle feed manufacturing increased the cattle feed prices. Transportation cost increased because demand for milk from institutional buyers decreased therefore delivery truck operated at lower capacity. Supply of raw material such as chemical for quality testing of collected milk and milk products, packaging material was difficult. Sale of ice-cream decreased because people were afraid to catch cold. Due to lockdown, institutional buyers such as, restaurants, roadside tea vendors, sweet shops, schools, colleges, offices etc. were closed, as a result of which sale decreased.

The board members did not employ any strict measures in terms of cutting down staff salary and payments. In reality, one of the milk unions gave extra daily allowance of Rs. 300/- to employees on attending office and other milk union gave one month salary in advance during lockdown. Employees were allowed to come on alternate days during pandemic to avoid the rush and stop the spread of infection. Stickers mentioning essential worker and milk union's logo were provide to employees for their vehicles. Employees also provided with special identity cards so that Police would not stop them in the middle of the road.

As shops were closed, to reach to the customers, door to door milk distribution started by two milk unions. Other milk union provided water to draught prone areas for cattle so that it would not hamper the milk production.

6.2 FGD Result for Dairy Farmers (Members)

When asked about the challenges faced by dairy farmers (members), it was found that, some of the farmers could not supply milk to BMC (Bulk Milk Coolers). COVID-19 impacted dairy farmer's payments, there were restrictions on movement in their villages and perishability of milk was one of the serious problems dairy farmers had to face during pandemic. As it affected payments received from DCS (Dairy Co-operative Societies), their family income suffered. Cattle feed prices increased and rates per litre of milk decreased. As a result of increased production cost and reduced milk prices, some dairy farmers closed

down their dairy business. It was noted that, some of the DCS helped dairy farmers to collect milk from door to door.

As majority of the dairy farmers said they did not face any difficulty while supplying milk to the BMC, few of the dairy farmers said, at the initial period of lockdown, petrol was not easily available to them. Dairy farmers had to show milk kettles to Petrol Pump workers to purchase petrol and travel to BMC. There were some incidences where, villagers of other villages did not allow dairy farmers to cross village borders and travel to BMC. Some of the dairy farmers said that there was disruption in collection of milk from BMC and milk union. The number of days of disruption varies from 1-5 days to 5-10 days. In such cases, dairy farmers had to throw away kettles of milk on roads, in rivers, use at home or distribute to neighbours. Payments to dairy farmers from DCS were delayed after supply of milk. Rates of milk were reduced during lockdown due to which their income reduced but production cost remained same or increased. Some of the farmers received as low as Rs. 15/- per litre of milk during lockdown. Workers of dairy co-operative societies would help members and whose family members came out COVID-19 positive by collecting their milk from their home. At one instance, when payments of supplied milk from milk union delayed, dairy co-operative society paid members to sustain its member's dairy business. Though demand was decreased, milk unions continued collection of milk from dairy farmers through BMC so that dairy farmers would not suffer. There were incidences where co-operative milk societies accepted 75% or 70% or 60% of milk and rejected 25% or 30% or 40% milk respectively supplied by members during COVID-19 pandemic. Facilities like artificial insemination were provided to dairy farmer members at discounted rates. There were veterinary medical centres of milk unions where medicines were available at discounted rates. Dairy co-operative societies provided loans to needy dairy farmers for dairy business, to purchase green fodder and perform other farming activities. The point to be noted here is that, those dairy farmers who already had a loan in their account were again given loans during pandemic. Some dairy co-operative societies provided masks and sanitizers to their members. Majority of the dairy farmers were doing farming. Dairy was an allied business. Others were having poultry business, sheep rearing business, grocery stores, farm development business, renting out machineries such as JCP, wage labourers, etc. When lockdown happened and supply chain disrupted, it was difficult for farmers to sale their agricultural produce in wholesale markets. There was hardly any income from agricultural produce initially as this produce perished in the farms only with no potential buyers. Due to social distancing, daily wage labourers did not get work. In such cases, dairy was the only source of income to them. Dairy farmers experienced improvement in their financial situation from January to March 2022, as prices of milk started increasing.

7. Suggestions and Conclusion

7.1 Suggestions:

In this section suggestions are given on the basis of data collected through questionnaires, interaction with respondents and observation by researchers. It also includes suggestions given by participants.

- It was found from the research that, there were less women dairy farmers than men. Milk unions can conduct programmes or activities to boost women participation in dairy business, can reward women dairy farmers and help women empowerment.
- As mentioned earlier, dairy farmers received minimum Rs. 15/- per litre of milk. The reason behind this low price might be oversupply, reduced demand for milk in the market and quality of the milk supplied. Members can be trained to maintain or increase the quality of milk supplied to the co-operative milk societies. It will help members to receive better prices.
- It was found that, milk union gives subsidy for building gohar gas plant to its members. This project is implemented by NDDDB through milk union. Dairy farmers can build this gohar gas plants in a group if do not have enough number of cattle. It will help them to have good quality manure for their farms, fuel for house and will also reduce environmental degradation.
- Research also revealed that, many of the dairy farmers were not aware of the government schemes beneficial for them. Milk union as well as co-operative milk societies can conduct awareness programmes for dairy farmers.
- Milk unions or co-operative societies at village level can work on making members digitally literate. For example, teaching members how to use ATM cards and ATM machines, so that, they will not face difficulties if situations like COVID-19 pandemic happen again.
- It was observed that, there have not been any major policy changes undertaken by milk unions after COVID-19 pandemic. Therefore, it is suggested that, they should make strong policy changes like maintaining special funds to face such unprecedented events in future.
- Co-operative milk societies can help members who grow surplus green fodder to store and provide it to landless dairy farmers or those who do not grow it. Focus should be on uninterrupted supply of green fodder to cattle.

- One of the milk union suggested that, there should be an awareness campaign implemented to increase consumption of milk as it is conducted for Eggs.
- It was recommended by dairy farmers that, they should receive above Rs. 30/- per litre of price for cow milk they supply. Prices under Rs. 30/- does not help dairy farmers to have surplus amount in hand to take care of cattle and their family, to invest it further into dairy farm mechanization, farm mechanization or any other business.
- Members also suggested that, there should be Minimum Support Price decided for Milk as it is for other commodities.

7.2 Conclusion :

The unprecedented effects of COVID-19 pandemic and lockdown were faced by all the individuals, communities and countries differently making them less or more vulnerable. It impacted every business including dairy business. Dairy processors as well as dairy farmers had to face various risks and challenges. When it comes to dairy processors –including private as well as co-operative milk unions faced an issue of drop in demand which declined sharply for ice-creams and milk based beverages. Fall in demand for liquid milk created mismatch between demand and supply, it resulted into reduced milk prices, directly affecting livelihoods of dairy farmers throughout the country (Bhandari G. et al., 2021). Apart from reduced milk prices, increased production cost (since cattle feed prices increased due to unavailability of raw material, increased transportation cost as a result of supply chain disruption etc.), unavailability of green fodder etc. were main challenges dairy farmers had to face making some of them to sale their cattle or leave the dairy business.

Most of the private dairies and milk vendors reduced or completely stopped procurement of milk from dairy farmers immediately after demand came down. But co-operatives tried to procure same quantity of milk in spite of fall in sales (Rawal et al., 2020, Jena et al., 2021).

Milk is among the essential commodities. Though during lockdown, milk production, processing and marketing did not stop, negative consequences were seen on the business of co-operative milk unions, private dairies and dairy farmers.

8. References

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