# A STUDY OF RESPONSIVE COLD CHAIN THAT HELPS DAIRY BRANDS EARN THE TRUST OF THEIR MILK RETAILERS

**Dr. Sapna Modi**

Associate Dean, ITM Business School, Navi Mumbai

**ABSTRACT:**

In today's business environment, it is an accepted fact that the company which operates the most efficient supply chain makes the most profits. An aspect that was always present but was usually overlooked, was the building of trust among the intermediaries who were ultimately responsible for putting the company's products in the hands of the consumer. A responsive cold chain will ensure that the milk products are consistently delivered on time, with a very small or negligible rate of disruption in its supply.

This research intends to find how a responsive cold chain acts as a catalyst in aiding the dairy brands to build a long-term relationship with its intermediaries, i.e., milk retailers. The main objective of this study is to understand what combination of factors are involved, that makes dairy brands develop a strong market share, popularity and trust of both the milk retailers and the consumers to ultimately reap profits much higher than their counterparts.

The study utilized both exploratory research as well as descriptive research, to analyse and interpret the data and its results. A comparative study of 3 dairy brands was carried out by a self-administered survey questionnaire by visiting multiple grocery stores and milk retailers in Vashi, Navi Mumbai. An interesting observation that was noticed here was, once a dairy brand invested in building a responsive cold chain, it automatically resulted in the brand reducing unnecessary costs along with increasing the quality of service.

***KEYWORDS:*** *Responsive cold chain, Supply chain, Milk retailers, Dairy brands, Disruptions*

## 1: INTRODUCTION

### 1.1 Overview of the Cold Chain Logistics Market in India

Advances in technology today has not only enabled us to live a healthier life or a more comfortable life but also has enabled us to consume a variety of different foods, irrespective of its availability all year round. One of the first liquid foods, i.e., milk, that a baby consumes after the end of its nursing period, comes from the dairy industry. Dairy products being a part and parcel of our daily lives is often taken for granted. But, the process of procuring, processing and delivering the various dairy products to the end consumers is a laborious, difficult and time-bound process. To fulfil such a task, the need for cold chain management arose. In simple terms, cold chain logistics is the transportation of perishable goods in a refrigerated condition.

According to 'Research and Markets', the Indian cold chain market was worth ₹952 crores in 2017 and it is projected to reach ₹2,293 crores by 2023, at a (Compound Annual Growth Rate) CAGR of 15.4% during 2018-2023. The cold chain industry in India is predominantly characterized by unorganized players comprising 70 – 80% market share. With the advent of globalization and advancements in technology, leading players like DHL, Cold Star Logistics, Snowman Logistics, Gati Kausar and others are gradually standardizing this industry. As this market is largely untapped, it presents a huge opportunity for expansion and modernization of the various cold chain logistics practices.

The rise of milktech startups is further streamlining the existing dairy product supply chains with the use of sensor data, data monitoring and analytics. A few milktech startups in India today are Epigamia, Country Delight, Provilac Dairy Farms, Supr Daily, Treat Ice Cream and more. The introduction of technology in the dairy production industry today faces two main challenges, firstly, the shortage of capital & secondly, data monitoring and analytics.

### 1.2 The Origin of Cold Chain Logistics:

Cold chain logistics is the technology and the process which enables safe transportation of temperature-sensitive and perishable goods along the supply chain. It relies heavily on science to balance two critical metrics; temperature and perishability. Any product which is labelled as "perishable" will require cold chain management. This could include items like meat, seafood, agricultural produce, medical supplies and pharmaceuticals.

Though the idea of cold chain transportation is a relatively new concept, the transport of perishable goods and products dates to the late 17$^{th}$ century when ice was used by the British to keep fish from spoiling. In the 18$^{th}$ century, dairy products were transported

from the rural areas to the urban areas to be sold, South America was sending frozen meat to France and Australia, while New Zealand was sending it to Great Britain.

A few elements used in the movement of cold chain logistics are:

**1. Cold Storage:**

Facilities that store goods and products waiting to be transported

**2. Cooling Systems:**

Systems that bring food up to and keep it at an appropriate temperature during all aspects of the supply chain, including processing, storing and transporting

**3. Cold Transport:**

Ensures goods remain at a stable temperature and the required humidity levels

**4. Cold Processing:**

Facilities that allow for processing goods with sanitation in mind

**5. Cold Distribution:**

Deals with loading boxes or crates and pallets to distribute goods.

### 1.3 The Status of Cold Chain Infrastructure in India

As the cold chain management and logistics are still a nascent industry in India, this sector is largely underserved with huge market potential. According to Ken Research, in 2014 alone, there existed a shortage of 3.3 lakh metric tons (MT) of cold storage and 52,700 reefer trucks. India has less than 10,000 reefer trucks with no refrigerated containers in the railways. The 'Alpha Invesco's survey showed that 79% of the cold storages do not provide any transportation as well. Moreover, due to the various challenges faced in the existing cold chain infrastructure, there is a huge loss of food & other resources ranging from ₹52,000 crores to ₹95,000 crores per annum. 36% of India's cold storages today, have a capacity of less than 1,000 metric tons. More than 60% of this capacity is found in West Bengal, UP and Bihar. The storage of potatoes itself consumes more than 70% of the volume. The storage units designed for storing seasonal vegetables, fruits, dairy and processed fish/meat products are mostly found in Maharashtra, parts of Gujarat and the southern states.

High capital costs to procure refrigerator units and land, coupled with a lack of basic infrastructure like roads, water supply, power supply & drainage pose another challenge. A Snowman Logistics report highlights the amount of capital required for establishing a multi-commodity cold chain warehouse. The cost per pallet ranges from ₹60,000 to ₹65,000 (considering 1 pallet = 1 ton in India). So, setting up a 5,000 pallets multi-commodity warehouse could cost around ₹30 crores of initial investment without considering any operating costs, licensing fees and depreciation charges applicable. The Government of India today is now giving more impetus towards enabling a seamless cold chain infrastructure network across the country with its flagship scheme, Scheme for Agro-Marine Produce Processing and Development of Agro-Processing Clusters (SAMPADA) for food processing sector which is worth ₹6,000 crores. It has also sanctioned 42 mega food parks and 234 cold chain projects worth ₹35,000 crores till date, having a preserving and processing capacity of 139 lakh tons of agricultural produce.

To conclude, fruits, vegetables, meat, seafood, dairy products and any other perishable goods which can go stale if not maintained at accurate temperatures for a long time can now be easily transported from one part of the world to another through the help of cold chain logistics. Cold chain technological solutions provide a way for food products to prolong their perishable period by providing conducive temperatures. This avoids the loss of food which is estimated to be up to several tons every day. The cold chain industry today is growing at a rate of 7% per year globally, with an estimate to reach a value of $234.49 billion by the end of the year 2020. Thus, a cold chain plays a major role in the global food supply chain and the overall world economy.

## 2: LITERATURE REVIEW

### 2.1 Collection of Relevant Literature & Quote the Source of Each Material

1. **K. Venkata Subbaiah, K. Narayana Rao and K. Nookesh Babu (2009)** in their research paper **"*Supply Chain Management in a Dairy Industry – A Case Study*"**, developed a supply chain model for the dairy industry in Andhra Pradesh, India. The researchers ranked attributes namely raw milk, suppliers, plant, warehouse and customers. Emphasis was mainly given to production and distribution activities, to find out material purchase plan, production plan, inventory plan and transportation plan. The model developed by the researchers was able to reduce the total cost of the supply chain by 9.8 per cent compared to the previously existing supply chain model. The supply chain model developed can be customized accordingly to varying demand and costs. The researchers believe that the model developed by them can also be applied to fast-moving consumer goods (FMCG).

2. **Rohit Joshi, D.K. Banwet and Ravi Shankar (2010)**, in their research paper **"*Consumer link in cold chain: Indian scenario*"**, studied the awareness, behaviour and practices of Indian consumers, regarding maintenance of cold chain from retailer's place to home and at homes within the food safety guidelines. A survey sample of 524 consumers was taken from 12 retail stores and a few household visits. The researchers found out that the consumers do not have adequate knowledge about refrigeration practices or consider themselves responsible for maintaining cold chain and food safety practices. The researchers believe that all food and cold chain unsafe practices at homes need to be communicated through proper education and effective awareness programs.

3. **Purushottam A Petare (2013)** in his research paper **"*Issues and Challenges of Supply Chain Management with perspective to Indian Dairy Industry''*, studied the issues and challenges at the various levels of the Indian dairy supply chain like smallholder farmer level, collection level, processing level, storage level, logistics level, co-operative level along with the issues and challenges in marketing. The findings show that, due to increased competition resulting from the globalization of supply, processing and distribution networks, high levels of service expectations and competitive pricing, a dairy firm's efficient and optimized supply chain management is a prerequisite to survive in the Indian dairy industry.

4. **Rajeev Kumar and Ashutosh Mohan (2014)** in their research paper **"*Antecedent of Dairy Supply Chain Management Practices: A Conceptual Framework*"**, developed a conceptual framework of Dairy Supply Chain Management (DSCM) by studying various existing models of DSCM, through extensive literature review. The proposed model illustrates the earlier dairy supply chain management practices and marketing orientation as independent variables and organizational performance and customer satisfaction as the dependent variables. The researchers refined and validated the theory-derived framework from the perspective of practitioners by interacting with them. The researchers found out through various literature that marketing orientation helps in enhancing DSCM practices which is the implementation of marketing concepts and composed of three sets of organization-wide activities: (a) generation of marketing intelligence of current and future customer needs, (b) dissemination of the intelligence across department, and (c) responsiveness to market intelligence (Kohli and Jawarski, 1990) which ultimately leads to higher organizational performance and better customer satisfaction to the end consumers.

5. **M. Subburaj, T. Ramesh Babu and B. Suresh Subramonian (2015)**, in their research paper ***"A Study on Strengthening the Operational Efficiency of Dairy Supply Chain in Tamil Nadu, India"***, conducted a comparative study of Tamil Nadu Cooperative Milk Producers Federation with the Gujarat Cooperative Milk Producers Federation (AMUL). The authors studied the issues influencing dairy farming through literature survey, field study and past work experience and recommended areas of improvement to policymakers to increase operational efficiency. The five recommended areas of improvement are (i) Creation of special dairy zone, (ii) Implementing dynamic milk procurement method, (iii) Strengthening cooperative societies, (iv) Creation of feed bank and increasing fodder productivity, and (v) Integrated animal health plan and information technology.

6. **Kameswara Rao Poranki (2016)**, in their research paper **"*The Efficient Supply Chain Practices in Indian Dairy Industry in their research paper*"**, studied the critical issues plaguing the dairy supply chains and provide possible solutions to the management of the firm under study, on how to gain profitability by cutting the cost through efficient supply chain management practices. Data was collected through surveys and observation of the company under study. Although the company understudy had implemented efficient supply chain practices, the key to success, in this case, was possible only by increasing the efficiency of the supply chain model of its suppliers.

7. **Rahul S. Mor, Sarbjit Singh, Arvind Bhardwaj and Shubham Bharti (2017)**, in their research paper **"*Exploring the Causes of Low-Productivity in Dairy Supply Chain using AHP*"**, proposed a framework for the evaluation of critical factors for Dairy Supply Chain Management (DSCM) practices using Analytic Hierarchy Process (AHP) approach. The researchers conducted a comprehensive literature review and pilot study of select cooperative dairy industries of north India and identified a total of 32 critical factors (CFs) causing low productivity in a dairy supply chain. Eight CFs were further assessed using AHP analysis based on the criticality of CFs. The CF which has a higher score was classified as a major CF. The findings indicate that the poor logistics and transportation facilities are the most critical factor hampering productivity in the cooperative milk processing units of north India.

8. **Rahul S Mor, Arvind Bhardwaj and Sarbjit Singh (2018)**, in their research paper ***"A Structured-Literature-Review of the Supply Chain Practices in Dairy Industry"***, conducted a Structured-Literature-Review (SLR) of the articles relating to Dairy Supply Chain Management (DSCM) practices. They discussed the key challenges after categorizing the past papers of 11 years into three main subjects of the supply chain i.e. distribution management (DM), risk management (RM), and decision-making strategies (DMS).

9. **Dr. Andukuri Raj Shravanthi and Dr. K Mahendran (2018)**, in their research paper **"*Relationship and information management activities of cold storage warehouses with its stakeholders: A study in Guntur district of Andhra Pradesh*"**, conducted a study to examine the relationship and information management activities of Cold Storage Warehouses (CSW) with its stakeholders in Guntur district of Andhra Pradesh. The researchers randomly interviewed 180 farmers and 60 traders as part of the study. Further, 45 cold storage warehouses were studied using the snowball sampling method.The study a noted that, since the farmers showed higher loyalty than traders, the CSWs gave priority to farmers over other customers in providing storage space, so that both the CSWs and the farmers would be benefitted.

10. **Rahul S Mor, Arvind Bhardwaj and Sarbjit Singh (2018)** in their research paper **"*Benchmarking the Interactions Among Barriers in Dairy Supply Chain: An ISM Approach*"**, explored key barriers in the dairy supply chain and analyzed their effects in the context of the Indian dairy industry. Eight barriers have been identified through literature review and the opinions of an expert team consisting of managerial and technical experts from the dairy industry and academics. The research findings indicated that the dairy industries need significant improvement in their operations management, technological innovations, information systems, wastages management as well as the responsiveness of machine operators followed by effective traceability systems.

11. According to a **Ken Research's** report which was published in **2018** and titled **"*RK Foodland, Snowman Logistics, Dev Bhumi, MJ logistics and Gati Kausar are some of the major players operating in India Cold Chain Market*"**, in 2014 alone, there existed a shortage of 3.3 lakh metric tons (MT) of cold storage and 52,700 reefer trucks.

12. According to **Alpha Invesco**, a recent survey in **2019** has indicated that India has less than 10,000 reefer trucks with no reefer containers in the railways. The survey also indicated that 79% of the cold storages do not provide any forms of transportation as well.

### 2.2 Objective of the Study

This paper focuses on 2 main objectives:

1. To understand the role of a responsive cold chain which helps dairy brands, earn the trust of their milk retailers.
2. To understand the advantages a responsive cold chain has over a non-responsive cold chain.

## 3: RESEARCH METHODOLOGY

The term 'research methodology' refers to the practical aspects of how the research is performed. To make it more specific, it is about how a researcher systematically designs a study to get the desired and accurate results.

The following two types of research are going to be used in this project:

- ***Exploratory Research:***

To gather information in an unstructured and informal manner, from all the obtainable sources and review them to find out the core of the research. Here it is performed in the form of literature review

- ***Descriptive Research:***

To depict the characteristics and behaviour of a population or phenomenon being studied for the research. It does not answer questions about how/why/when the characteristics occur or how does it behave. Rather it addresses the "what" question. This method is used when the researcher wants to illustrate a specific behaviour or characteristic as it occurs in the surrounding. Though there are a variety of descriptive research methods available, the method that answers the question and provides a conclusion is adopted.

This study is both descriptive and exploratory in nature and the selected area of study is Vashi, Navi Mumbai.

### 3.1 Data Source

- ***Primary Data:***

It is the data collected by a researcher from first-hand sources, using methods like surveys, interviews or experiments. It is collected with scientific research in mind, directly from primary sources. For this project, primary data was collected through a self-administered questionnaire by visiting the local grocery stores and interviewing shopkeepers.

- ***Secondary Data:***

It is the research data that has previously been gathered and may be accessed by researchers. It is used to increase the sampling size of research studies and is also chosen for the efficiency and speed that comes with using an already existing resource. For this project, suitable secondary data from various sources such as research papers and white papers will be utilized.

The combination of both primary and secondary data, along with its thorough analysis and interpretation will help me yield the desired conclusion for this project.

### 3.2 Sample Size

- **Sample Location:** Vashi, Navi Mumbai
- **Sample Size:** 50 records
- **Data Collection Tool:** Questionnaire (Google forms) along with personal interviews

## 4: DATA COLLECTION, ANALYSIS & INTERPRETATION

### 4.1 Types of Data Required

There are two types of data used in making this project:

- **Qualitative Data:**

It is defined as the data that approximates and characterizes. Qualitative data can be observed and recorded. It is non-numerical and is collected through methods of personal observations, personal interviews, conducting focus groups discussions, and similar methods. In this study, general information about the dairy brands such as consistency of delivery, disruptions in supply, shelf velocity, brand popularity and opinions about trusting the dairy brands to make a profit, forms the part of qualitative data.

- **Quantitative Data:**

It is defined as the value of data in the form of counts or numbers where each dataset has a unique numerical value associated with it. This data is quantifiable information which can be used for mathematical calculations, statistical analysis, formulations and equations. In this study, quantitative information includes the quantity of milk procured form each of the dairy brands and their respective profit margins.

**4.2 Sources of Data**

- ***Primary Data:***

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The combination of both primary and secondary data, along with its thorough analysis and interpretation will help me yield the desired conclusion for this project.

**4.3 Descriptive Statistics**

Descriptive statistics is a summary that qualitatively and quantitatively describes or subtly summarizes the main features from the collection of all the details gathered from the questionnaire.

The focus of this project is to understand the role played by a responsive cold chain in generating a high level of trust among the milk retailers. As mentioned earlier, the data was collected by visiting the local grocery stores selling milk products in the streets of Vashi, Navi Mumbai. The respondents of this survey comprise a mix of both the owners and workers, who volunteered to help to provide this data. Data was collected from 50 stores

Following are the survey questions listed below:

1. Do dairy brands deliver their milk products consistently on time, every day?
2. Have you faced any disruptions in the supply of milk due to factors such as lockdowns, curfews, flooding, transport issues, demand uncertainty, etc.?
3. What is the quantity of milk you procure from each of the dairy brands, every day?
4. What is the shelf velocity of each of the dairy brands' milk products?
5. What is the profit margin you earn from each of the dairy brands?
6. How popular are these dairy brands in your area?
7. In your opinion, which of the dairy brands do you trust will make you a profit?

**Please Note:**

- Milk products here, refer to all the variants of both cow milk and buffalo milk.
- Each of the 50 respondents provided the information about all the three dairy brands (Warana, Gokul & Amul) that is considered for this study.
- The names of the cooperative dairy societies who own these brands are listed below:

| Dairy Brand | Cooperative Dairy Society |
|---|---|
| Warana | Shree Warana Sahakari Dudh Utpadak Prakriya Sangh Ltd. |
| Gokul | Kolhapur Zilla Sahakari Dudh Utpadak Sangh Ltd. |
| Amul | Gujarat Cooperative Milk Marketing Federation Ltd. |

*Table 1: Owners of the dairy brands*

### 4.4 Processing, Analysis and Interpretation of Data Collected

With the 50 responses that were collected from visiting multiple local grocery stores who sold milk products, it was analyzed how a responsive cold chain earns the valuable trust of the milk retailers.

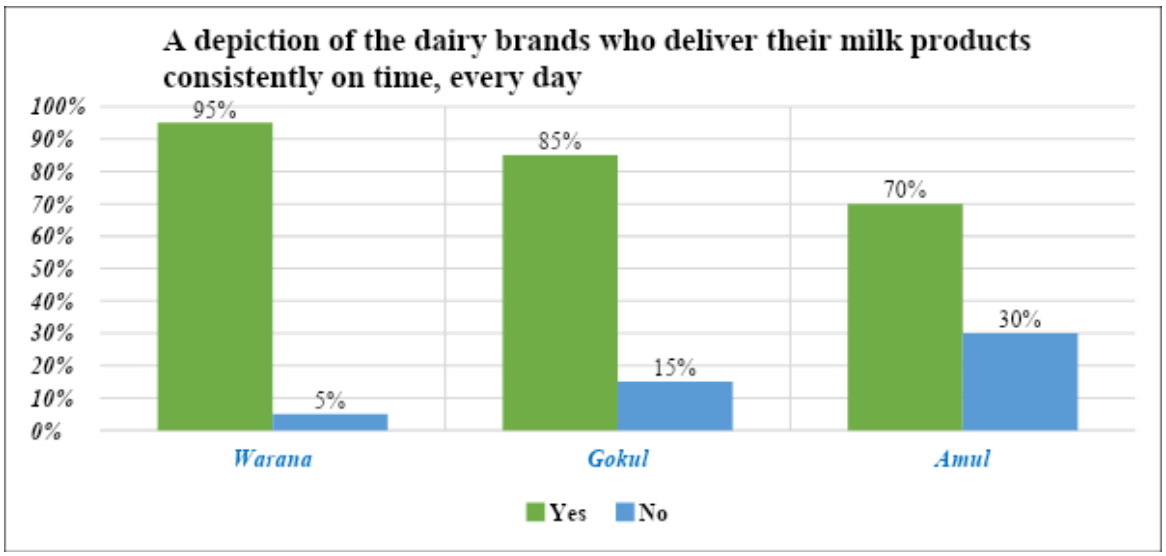


*Figure 1: Consistent delivery of milk on time*

The chart above depicts the percentage of dairy brands who deliver their milk products consistently on time, every day. This data highlights the first major factor involved in maintaining a responsive cold chain. The dairy brands with the most responsive cold chains will always try to keep up with the delivery schedule in the best possible manner.

Through personal interviews, It was found that the standard delivery time of milk of all three dairy brands in the morning, is between 4.30 AM to 5.30 AM. Among the three dairy brands, we can see that the 95% of the milk retailers have experienced no problems in timely delivery of milk products from the Warana dairy brand, in comparison to Gokul and Amul, with only 85% and 70%, consistent and timely delivery.

We can also see that milk retailers believed Amul, and Gokul faltered on the timely delivery by around 30% and 15% of the time respectively, in comparison to just 5% by Warana. This proves that in the area of Vashi, Navi Mumbai, Warana has implemented a very responsive cold chain in comparison to both Gokul and Amul.

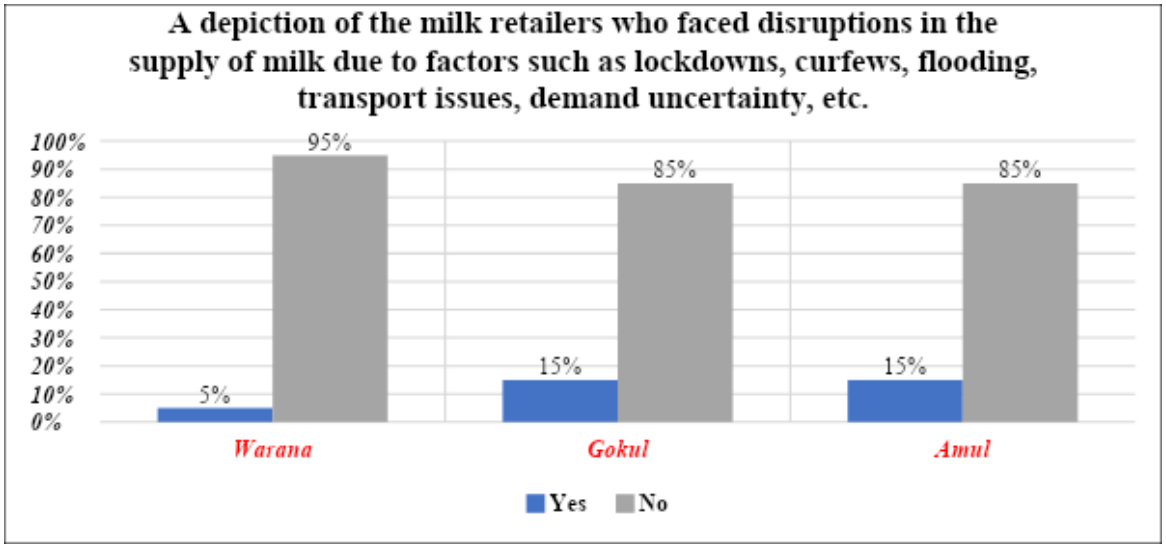


*Figure 2: Supply disruptions faced by the milk retailers*

The above data highlights the second major factor involved in maintaining a responsive cold chain. The dairy brands with the most responsive cold chains will try to mitigate all sorts of challenges and issues in advance with a well chalked backup plan.

Here it is observed that Warana has a relatively low rate of disruption of only 5%, compared to 15% for both Gokul & Amul. It was seen that Warana was able to supply milk without facing any disruptions 95% of the time, compared to just 85% for both Gokul and Amul.

A small informal chat with a milk delivery van's driver helped me understand how they handle disruptions. A few examples of disruptions along with their potential resolutions are listed below:

| Disruption | Resolution |
|---|---|
| Vehicle breakdown or accident | Availability of spare/outsourced vehicles |
| Lockdown or curfew | Getting special permits |
| Peak demand | Increasing the frequency of delivery |
| Labour Absenteeism | A mix of both permanent & contract labourers |
| Labour union strike | Strategic negotiation |

*Table 2: Disruptions and their resolutions*

**Please Note:** Keeping the consideration of human safety and government regulations in mind, the supply of milk products is usually stopped by the dairy brands during the heavy monsoon floods.

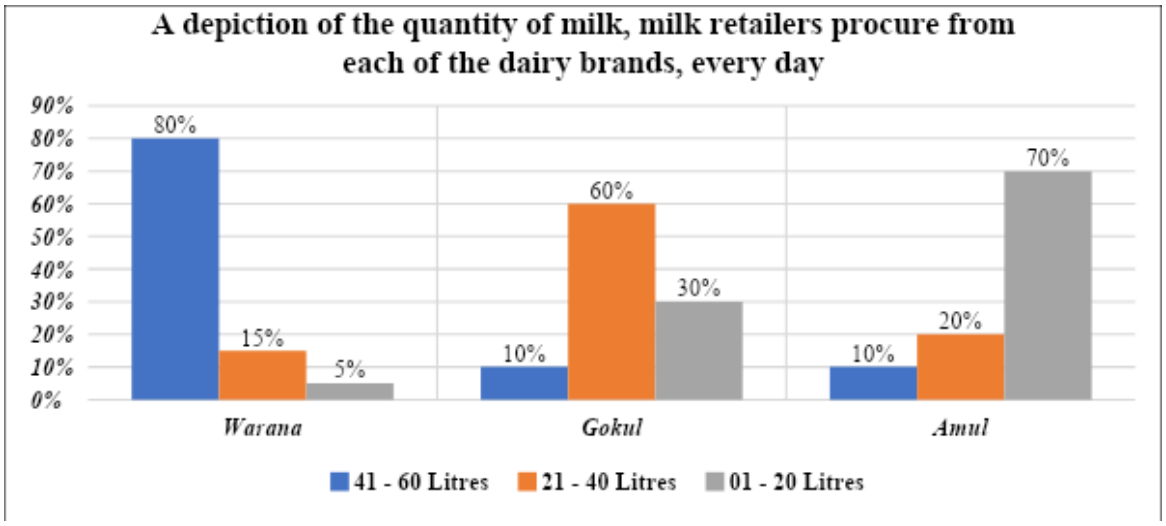


*Figure 3: Quantity of milk procured*

Unlike the above two charts which highlight the two important factors involved in running a responsive cold chain, this chart indirectly shows how much trust milk retailers have on the milk products of these dairy brands. Here we see an interesting insight, Warana having a better performance in factors that are responsible in maintaining a responsive cold chain can boast of the fact that 80% of the milk retailers procured its milk products in the range of 41 – 60 litres. This puts the other two brands to shame since only 10% of the milk retailers procured their milk products in the range of 41 – 60 litres. We can also see Gokul has a foothold in the range of 21 – 40 litres with 60% as compared to just 20% of that of Amul. Here we can see that both Gokul and Amul, should work on finding ways to increase their consumer base. Amul comes last with 70% of the milk retailers buying its products in the range of 1 – 20 litres only.

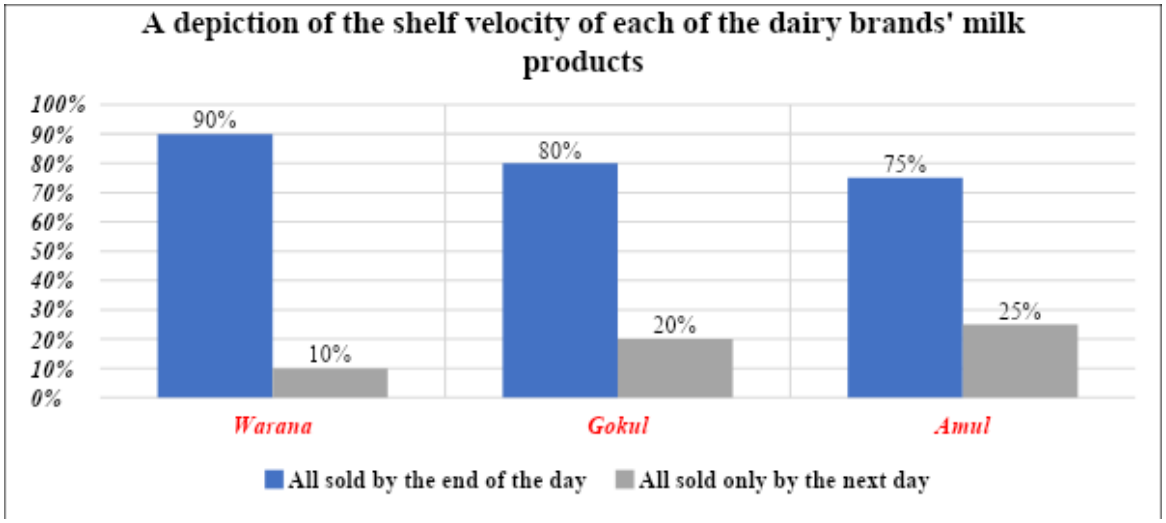


*Figure 4: Shelf velocity of the milk products*

The chart above depicts the shelf velocity of the milk products of each of the dairy brands. Simply put, shelf velocity here is the number of days or hours the product stays at the shelf of a store before being sold to the consumer. As seen from above charts, since Warana performs well in both responsive cold chain factors as well as quantity procured by the milk retailers, it is no surprise that Warana's shelf velocity of milk products is also high. Another factor could be due to the huge popularity of this dairy brand in the Vashi market, which makes 90% of the milk retailers say that its milk products go off the shelves by the end of the day. In contrast to this, only 80% of the milk retailers say that Gokul's milk products go off the shelves by the end of the day and only 75% of milk retailers say Amul's milk products go off the shelves by the end of the day. Here we can deduce two immediate conclusions, Gokul and Amul should focus on either improving their product quality or increase their marketing efforts. They might have to work on both aspects to increase their market share.

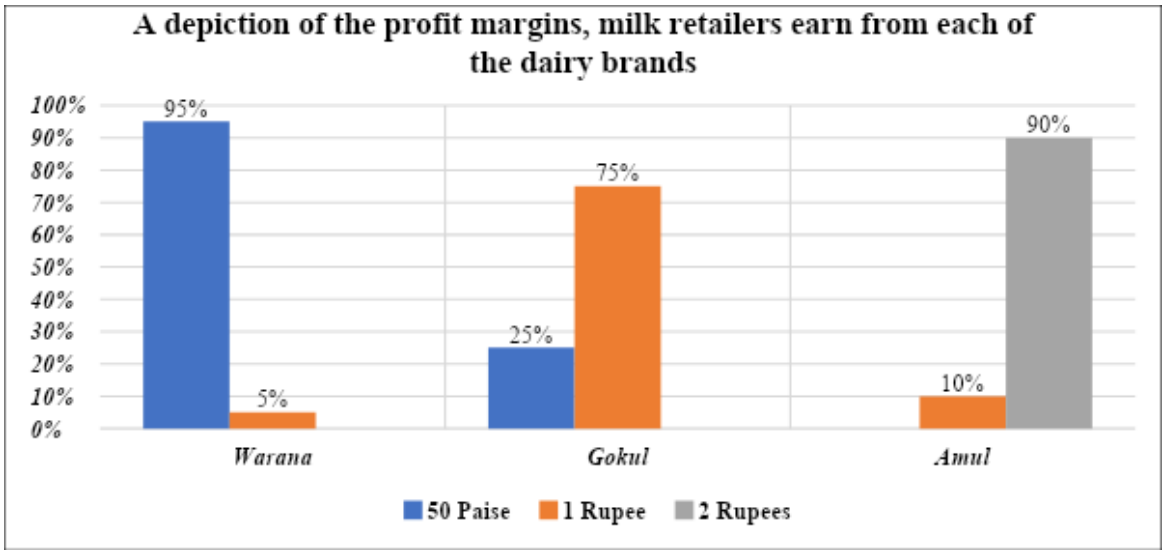


*Figure 5: Profit margins earned*

The above chart truly shows the power of Warana having a strong presence in the market along with keeping milk retailers happy. Unlike other brands, Warana provides 50 paise margin to about 95% of the milk retailers, in comparison to 25% for Gokul. Amul, unfortunately, cannot afford the luxury of providing 50 paise margins as it must make up for the various aspects it is lagging in.

Warana with a large volume of sales can afford to provide a 50 paise margin for most of the milk retailers. However, for Gokul and Amul to remain attractive to the milk retailers, they must provide higher profit margins to hold their market share.

Here we see competition brewing to garner market share while keeping the retailers happy. To reach the interior areas of the city, Amul is strategically providing a margin of 2 Rupees to woo the milk retailers. Gokul on the other hand is stuck between two competitors, one which has a strong presence in the market and the other which is aggressively trying to dethrone its rivals. Based on the changing business environment, only time can tell which brand would have a strong presence in the market, in the long run.

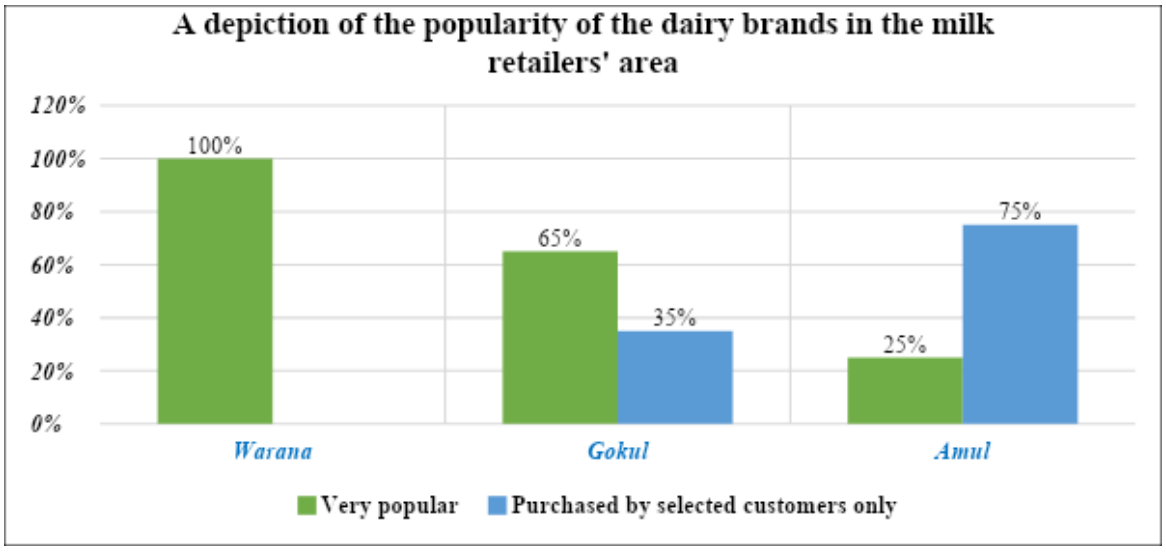


*Figure 6: Popularity of the dairy brands*

Unlike the previous data which was driven primarily by the milk retailers' opinions and activities, the above chart tells what the consumer prefers through the mouths of the milk retailers. Warana enjoys a lot of popularity as it has implemented a responsive cold chain since the beginning and offers a good quality product at an affordable price. In contrast to Warana, only 65% of the milk retailers believe that Gokul is popular in their area. Amul is the least popular with only 25% of the milk retailers claiming that it is popular in their area.

A unique aspect that can be noticed here is that milk retailers say brands such as Gokul and particularly Amul, are only preferred by selected loyal customers. But, both Gokul and Amul can boast of the fact that 35% and 75% of the milk retailers believe that their milk products are sold to a selected set of loyal customers. This behaviour can act as a relief to these dairy brands, who do not have to constantly worry about their loyal customers switching to Warana, easily.

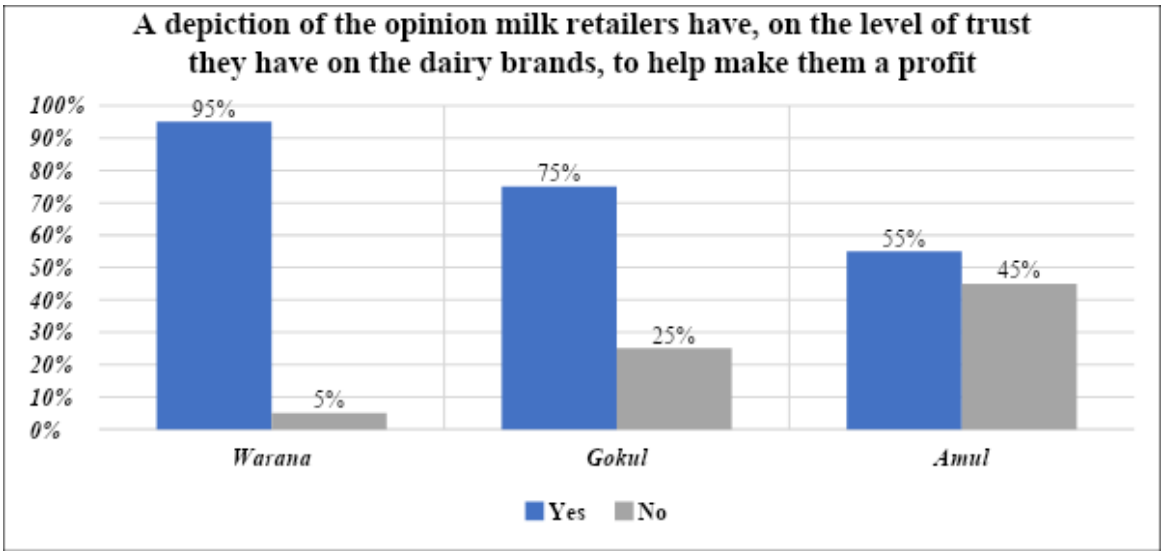


*Figure 7: Level of trust in the dairy brands*

The chart above boils down to the actual reason as to why this study has been undertaken. In business models involving dairy brands such as Warana, Gokul and Amul, both trust and profits must be considered carefully as milk retailers are the doors of access to a wide segment of customers. Here we can see that 95% of the milk retailers say that, in their opinion, Warana can be trusted to help make them a profit, in comparison to 75% for Gokul and only 55% for Amul. Although Warana would not have to worry about its trust being diminished in the short term, however, with the increasing unpredictability of the business environment today, any of the two dairy brands can turn the tables on Warana.

**Please Note:** For the sake of convenience and to facilitate easy comparison, all charts have been represented in the form of a clustered column chart

### 4.5 Discussion of Results

Based on the above analysis, we can easily deduce that Warana has taken enough measures to stay at the top of the game, by focusing on a responsive cold chain, good product quality, brand awareness among the consumers and most importantly a healthy relation with its customers, i.e., milk retailers.

As a result of having a competitive advantage over its rivals, Warana capitalizes on three major advantages it gets from the milk retailers.

- One, the milk retailers stock up enough of Warana's milk products over that of Gokul and Amul.
- Two, the milk retailers would suggest trying out Warana's milk products to those customers who had initially come to purchase milk products of the other two dairy brands but could not purchase it due to a stockout.
- Three, despite Warana providing the least amount of profit margin to most of the milk retailers, they are confident that they will still make a profit since Warana's milk products are sold in large numbers as compared to both Gokul and Amul.

## 5: RECOMMENDATIONS & CONCLUSIONS

### 5.1 Summary and Conclusion

As discussed in this study, a responsive cold chain from the perspective of milk retailers considers two important factors. One, consistent and timely delivery of milk products. Two, the frequency of disruptions faced by the milk retailers. Warana's impressive 95% consistent and timely delivery along with only 5% disruption in the supply of milk products, has allowed itself to carve a reputation for itself in the market. It is no wonder that 80% of the milk retailers procure its milk products in the range of 41 – 60 litres, despite Warana providing only a 50 paise margin to these milk retailers.

Having a strong responsive cold chain surely attracts the milk retailers, but along with it, offering superior quality of milk products at an affordable price increased the shelf velocity of its milk products along with upholding a good level of popularity among the many consumers of milk products in the area of Vashi. Here we get to dispel a common myth among the general populace who believe that a brand becomes trusted only by the might of their marketing campaigns. Here we can see that even in a small study

like this, it is the systematic and smooth functioning of both forward as well as backward integration that makes some companies thrive and others, barely survive or perish. The work involved behind implementing a smooth end to end cold chain forms the foundation on which a company can optimise costs as well as provide superior services. Once the foundation gets in place, the company can then work on improving all other functions and aspects of the trade.

### 5.2 Recommendations

1. Dairy brands must focus on strengthening and improving both the forward as well as the backward integration, equally.
2. Developing an effective and responsive cold chain can go a long way in cutting costs and reaping more profits in the long run.
3. After building trust among the milk retailers, dairy brands can steadily capture market share by introducing new product offerings along with an attractive marketing campaign.
4. Once the milk retailers gain confidence in the dairy brand, they would themselves start promoting it to customers of other diary brands, through word of mouth marketing.

### 5.3 Limitations

The following limitations were encountered during this study.

1. The scope of this study is limited to Vashi, Navi Mumbai.
2. This study is based on a sample size of only 50 respondents due to the COVID-19 pandemic, as many brick and mortar establishments closed their shops.
3. Due to the limited sample size and survey data, the quantitative analysis result may not be comprehensive enough, nor it may apply to every milk retailer present in Vashi, Navi Mumbai.
4. Lack of time and costs were other limiting factors, which made it impossible to conduct a detailed survey.
5. As milk products are part of the list of essential commodities, I have assumed that the COVID-19 pandemic should not cause a large-scale disruption in the daily operations of the dairy brands' cold chain.
6. The above assumption regarding the disruption of the cold chain might not be true for all the dairy brands.

### 5.4 Scope for Future Study

As this study has samples collected only from Vashi, Navi Mumbai, it is highly encouraged that samples from various parts of the country are collected and analysed to introduce a diverse data and enable more comparative and holistic research in the future.

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