



A Study of Product Portfolio of Refrigerated and Frozen Product Offerings by Gujarat Dairy Cooperatives

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This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The present study explores the strategic diversification of value-added dairy and non-dairy products developed by Gujarat-based cooperatives, with a focus on GCMMF's flagship brand, Amul. The research investigates how these cooperatives have evolved their product portfolios beyond traditional liquid milk to include a wide array of refrigerated and frozen items such as ice creams, cheeses, paneer variants, and gourmet frozen foods. Employing a descriptive research design and secondary data analysis, the study examines product variety, packaging, shelf life, usage applications, nutritional considerations, and distribution reach across general trade, modern retail, and e-commerce platforms. Key findings highlight that Amul's ice cream portfolio offers a balanced mix of traditional Indian flavors (Rajbhog, Kesar Pista) and Western variants (Cookies N Cream), in diverse formats—cones, cups, combo packs, and family tubs—tailored for different consumption

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occasions. The cheese portfolio showcases a wide range of processed, spreadable, gourmet, and flavored cheese products designed for both everyday use and gourmet experiences. The paneer product range offers refrigerated, frozen, and ambient variants, making it adaptable for diverse storage and culinary requirements, with notable presence in international markets. The gourmet frozen food segment—featuring pizzas, parathas, burger patties, fries, and snacks—demonstrates Amul's responsiveness to urban consumer demand for convenience, nutrition, and fusion flavors.

Keywords: *Amul; Gujarat Dairy Cooperatives; refrigerated products; frozen foods; product portfolio; GCMMF; value-added dairy; ice cream; cheese; paneer; gourmet foods.*

1. INTRODUCTION

The Indian dairy industry has experienced a remarkable transformation over the last few decades, shifting from subsistence-level production to a globally recognized sector, largely due to the success of cooperative models. Among these, the dairy cooperatives of Gujarat—led by giants such as the Gujarat Cooperative Milk Marketing Federation (GCMMF), popularly known for its flagship brand *Amul*—have been at the forefront of innovation and product diversification. As consumer preferences evolve with rising urbanization, increasing health awareness, and demand for convenience, these cooperatives have expanded beyond liquid milk to an extensive array of refrigerated and frozen offerings, including ice creams, cheeses, frozen snacks, and ready-to-eat meals (Deshpandé 2016).

Moreover, the fusion of dairy consumption with holistic wellness practices like yoga, as highlighted in contemporary studies, further emphasizes the relevance of functional and nutritious dairy offerings in promoting digestive health and overall well-being (Modi et al., 2024). Thus, this study aims to explore how Gujarat-based cooperatives have curated their portfolios to cater to diverse consumer segments while maintaining quality, affordability, and distribution excellence. The study also investigates the alignment of these products with changing lifestyle patterns, their nutritional relevance, packaging innovations, shelf life considerations, and market accessibility across general and modern trade channels.

2. REVIEW OF LITERATURE

According to Gurjar and Modi (2024), Gujarat's milk output reached 17.281 million metric tonnes in 2022–23, with key contributions from Banaskantha, Sabarkantha, and Kheda districts. This extensive milk pool serves as a robust foundation for product diversification into sweets

and gourmet offerings. Complementing this, Modi et al. (2025) emphasize Gujarat's 212% growth in milk production over the last two decades, surpassing national growth rates and enabling large-scale processing and packaging innovation.

Consumer perception and preferences also play a vital role in product portfolio success. Aswini et al. (2020) found that quality, taste, and price are key determinants of consumer preference in dairy products, with ghee emerging as a leading choice in Tamil Nadu. The strategic diversification of Gujarat Dairy Cooperatives into ambient and non-dairy product segments is discussed by Gurjar, Don, and Modi (2025), who note that Amul's product portfolio includes not only ghee and milk powder but also bakery items, chocolates, and frozen foods—catering to a broad spectrum of consumer needs.

The study by Bytyqi et al. (2020) investigates consumer behavior related to the purchase and consumption of milk and dairy products in Kosovo, highlighting key factors that influence household decisions. Based on 699 consumer interviews and SPSS-based statistical analysis, the study identifies product quality, production date, safety, and price as the most significant factors impacting consumer choices, while brand, packaging, and product origin were considered less influential. Supermarkets emerged as the preferred point of purchase, with the majority of consumers buying dairy products at least twice a week. The study also shows how socio-demographic variables such as education, income, employment status, and household size significantly influence purchasing patterns. These findings align with broader literature on consumer behavior, supporting the notion that psychological, economic, and socio-cultural factors play a pivotal role in shaping consumer preferences. The research underscores the importance for dairy producers and marketers to focus on quality assurance, transparent labeling, and strategic retail placement to meet consumer expectations in the Kosovo market.

The study by Srivastava, Das, and Giri (2021) explores consumer buying behavior toward dairy products in India, focusing on how demographic variables, brand loyalty, and awareness impact purchasing decisions. Using a questionnaire-based survey targeting individuals aged 18 to 35 across several Indian states, the research reveals that daily consumption of dairy products is a common habit, with spending typically ranging from Rs. 50 to 100 per day for families of three to five members. The findings highlight that taste, brand preference, and perceived quality significantly influence consumer choices, with a strong inclination toward cow milk in both loose and packaged forms. Moreover, the study shows that consumers demonstrate high brand loyalty, often sticking with familiar dairy brands despite potential price increases, due to the value they place on quality, nutritional content, and product satisfaction. Health considerations, such as lactose intolerance and specific dietary needs, also affect preferences. The research underlines the importance for dairy companies to continually align their offerings with consumer expectations regarding taste, quality, and health benefits to maintain loyalty and market relevance in a highly competitive environment.

The dairy industry in India has witnessed rapid growth in both production and marketing practices, with cooperative milk producers increasingly embracing modern sales promotion techniques. Sikhakolli et al. (2024) conducted an empirical study in Pune, surveying 100 consumers of cooperative dairy products to assess the evolution of sales promotion strategies in response to technological advancements and competitive pressures. The findings indicated a significant transformation in promotional methods over the past five years, with cooperatives adopting digital tools such as social media, SEO, and electronic media to reach consumers. The study also underscores the importance of aligning promotion efforts with consumer expectations and highlights the growing role of customer-centric marketing in the cooperative dairy sector. This shift challenges the earlier perception of cooperatives as slow adopters of change and positions them as agile players responding to market dynamics. Moreover, the research emphasizes that despite limited corporate infrastructure, cooperatives are leveraging innovative promotional strategies to remain competitive. The statistical analysis, including hypothesis testing via t-test, confirmed that the observed changes in promotional activities were not by chance but statistically

significant, thereby validating the hypothesis that sales promotion techniques in cooperative dairy organizations have indeed evolved meaningfully in recent years (<https://amul.com/>).

Product diversification offers significant benefits such as risk mitigation, stable revenue streams, market expansion, operational efficiencies, and enhanced brand strength by allowing companies to spread their offerings across different products or markets. It enables firms to tap into new customer segments, cross-sell complementary products, and leverage existing resources and brand equity for greater competitive advantage. However, these benefits come with hidden costs, including increased operational complexity, resource dilution, brand cannibalization, and strategic misalignment if diversification lacks a clear purpose. Managing diverse product lines requires specialized expertise and can distract from core competencies. Therefore, while diversification can be a powerful growth strategy, it must be approached with strategic intent and careful evaluation of both potential gains and underlying challenges to ensure long-term sustainability and success. (Source: <https://fastercapital.com/content/Cost-of-product-diversification--Balancing-Act--The-Hidden-Costs-of-Product-Diversification.html>)

The study by Ayeyemi et al. (2024) investigates the effect of branding strategies on the performance of food and beverage manufacturing companies in Lagos State, Nigeria, with a specific emphasis on the moderating role of product portfolio. The findings reveal that branding strategies significantly enhance organizational performance, but this relationship is notably moderated by the nature and complexity of the product portfolio. When companies manage a diversified portfolio, the effectiveness of branding strategies may be compromised due to resource dilution, brand inconsistency, or internal competition. Grounded in the Resource-Based View (RBV) theory and the AIDA (Attention, Interest, Desire, Action) model, the study suggests that firms can enhance performance by strategically aligning their branding efforts with product portfolio management to maximize synergies and consumer engagement. The empirical results underscore the importance of purposeful and coherent branding within a diversified product context, contributing valuable insights into how product strategy can influence branding outcomes in Nigeria's competitive food and beverage sector (Ayeyemi et al., 2024).

The study by Saba et al. (2016) presents a detailed comparative nutritional and sensory evaluation of locally available paneer samples sourced from the North-Western and South-Western zones of Faridabad. The researchers aimed to assess the quality of paneer sold by local vendors and benchmark it against the nutritional standards set by the National Institute of Nutrition (NIN), under ICMR guidelines. Through methodical sampling and laboratory analysis following AOAC standards, along with sensory evaluation using a 9-point hedonic scale, the study uncovered significant regional differences. Paneer from the North-Western zone scored higher in sensory parameters such as taste, texture, and flavor, and exhibited elevated levels of protein and energy, while the South-Western samples recorded higher fat and ash content. Interestingly, both zones demonstrated the presence of Vitamin B6—an element not mentioned in standard NIN values—highlighting potential nutritional variations due to local preparation methods or raw materials. Statistically significant differences were found for nutrients like fat, calcium, phosphorus, and riboflavin, indicating regional variation in paneer quality. The findings emphasize the overall nutritional adequacy of local paneer while suggesting room for standardization, especially in mineral content. The study contributes to existing literature by not only comparing regional paneer samples but also aligning them with national benchmarks to assess public health and dietary quality implications.

The diversification strategies adopted by Gujarat Dairy Cooperatives, particularly through their apex marketing federation GCMMF and its flagship brand Amul, reflect a robust response to evolving consumer demands and market dynamics. Modi Zeel, P.Don, and Gurjar (2025) highlight how Amul has strategically expanded its product portfolio beyond conventional dairy offerings to include culturally resonant Indian sweets such as shrikhand, kheer, and laddoos, as well as gourmet frozen products like pizzas, parathas, and contemporary snack foods. This diversification into refrigerated and frozen segments demonstrates Amul's ability to merge tradition with innovation, leveraging its supply chain efficiencies and R&D capabilities to introduce hygienic, ready-to-consume products that cater to both health-conscious and convenience-seeking consumers. The study emphasizes the role of thoughtful packaging, multi-channel distribution strategies (spanning general trade, modern trade, and e-commerce),

and the incorporation of health and cultural values in enhancing product appeal.

General trade refers to the traditional form of retail where goods are sold through small, independent, and often family-run stores or local kirana shops. These outlets typically operate on a smaller scale, with limited technology use, personalized customer interactions, and often informal credit systems. General trade is widespread in many developing markets and serves the bulk of daily consumer needs. Modern trade involves organized retail formats such as supermarkets, hypermarkets, large chain stores, and online retail platforms. These outlets are usually part of bigger retail chains, have standardized operations, use advanced technology for inventory and sales management, and offer a wide variety of products under one roof. Modern trade focuses on convenience, product variety, and often competitive pricing (Source: <https://beatroute.io/sales-execution/what-is-general-trade-vs-modern-trade/>)

2.1 Research objectives

The key objectives of this research are:

- To analyze the variety and depth of Amul's Frozen product portfolio.
- To study the pack sizes and product types offered under different consumer segments.
- To examine product availability and distribution across Indian markets.

3. RESEARCH METHODOLOGY

This study adopts a descriptive research design, relying on secondary data analysis. The methodology includes Secondary Sources such as Product brochures, GCMMF annual reports, market research articles, peer-reviewed publications, and company websites.

- Approach: Qualitative analysis of product attributes (nutrition, shelf life, packaging), quantitative review of SKU diversity, and regional market segmentation.
- Analytical Framework:
 - Product Line Depth & Breadth: Evaluating the variety and specialization across each product category.

3.1 Analytical Framework

The analytical framework of this study comprises the following components:

1. Product Line Depth and Breadth Analysis

- Depth refers to the number of variants, flavors, and pack sizes within a single product category (e.g., Amul Ice Cream cones, tubs, cups, and premium lines).
- Breadth refers to the range of different product categories offered (e.g., ice cream, cheese, paneer, frozen snacks, parathas, pizzas).

This framework helps assess the extent to which Amul has expanded its portfolio to meet diverse consumer demands.

2. Market Segmentation and Availability

Products are classified based on their distribution across general trade (GT), modern trade (MT), and Amul-exclusive retail outlets (Amul Parlours). This dimension enables evaluation of accessibility across urban and semi-urban geographies.

3. Qualitative Attribute Analysis

Nutritional profiles, cultural associations, health orientation, and packaging innovations are qualitatively assessed to understand how product attributes resonate with consumer expectations. Special attention is given to how Amul balances traditional Indian flavors with global food trends.

4. Comparative Time Lens

While the study is not a longitudinal statistical analysis, it situates current product diversification strategies within the broader trajectory of Gujarat's dairy cooperative growth, drawing on historical performance reports (spanning 2000s–2020s). This contextual framing demonstrates how cooperative-led innovation has evolved over time.

- Scope: Focus is limited to ambient as well as Frozen dairy and non-dairy product segments produced by Gujarat-based cooperatives, primarily under brand Amul.

4. RESULTS AND DISCUSSION

4.1 Amul Ice Cream Portfolio

Ice cream, once considered a luxury or seasonal indulgence in India, has evolved into a widely consumed dessert catering to a diverse population across all age groups. With increasing urbanization, rising disposable incomes, and

greater exposure to global culinary trends, the Indian ice cream market has witnessed rapid growth. Traditionally dominated by kulfi and local frozen desserts, the market now boasts a broad spectrum of products ranging from classic cones and cups to premium tubs and health-conscious variants. Major players such as Amul have not only democratized ice cream consumption through affordable pricing and vast distribution but also introduced regional flavors, fusion formats, and value packs suited to family, individual, and festive needs. This dynamic evolution reflects changing consumer preferences—towards indulgence, health, convenience, and cultural connection—making ice cream not just a product but an experience.

The product portfolio of Amul's ice cream range demonstrates strategic diversification in terms of flavor, packaging, application, and availability, effectively catering to both traditional and contemporary Indian consumers.

1. **Tricone Butterscotch (120 ml)** offers an ideal on-the-go indulgence with its crispy cone, rich butterscotch ice cream, nuts, and chocolate sauce. Targeted toward individual consumers, especially youth, it is positioned as a convenient and enjoyable treat, widely available across General Trade (GT), Modern Trade (MT), and Amul Parlours.
2. **1 Litre Tub Rajbhog** is designed for family or festive consumption. Infused with traditional Indian ingredients like almonds, cashew, saffron, and honey, it delivers a premium, cultural dessert experience, reflecting a preference for nostalgia and richness in flavor.
3. **1 Litre Tub Fruit N Nut Fantasy** blends raisins, cashew, choco chips, and jelly into a multi-textured delight, ideal for celebratory occasions. Its availability across all retail formats underlines its appeal for gatherings and shared consumption.
4. **Jumbo Cup King Alphonso (125 ml)** caters to seasonal preferences with the authentic taste of Alphonso mangoes. The small cup size and wide availability make it a convenient tropical indulgence, especially during summer.
5. **Jumbo Cup Rajbhog (125 ml)** replicates traditional Indian dessert flavors in a single-serve format. The rich ingredients like cardamom, saffron, and nuts make it a royal treat, targeting those seeking ethnic authenticity in modern packaging.

6. **Camel Milk Medium Fat Ice Cream (125 ml)** is a unique, health-oriented offering made from camel milk sourced from Kutch. Free from added colors or flavors, it appeals to the health-conscious niche and is selectively distributed through Amul stores and specialty outlets.
7. **Combo Pack Creamy Almond (750 ml + 750 ml)** offers value for money with a rich, nutty flavor ideal for group or party consumption. Its dual-pack format encourages shared indulgence and bulk buying.
8. **Combo Pack Kesar Pista Royale (750 ml + 750 ml)** provides a saffron-pistachio fusion at an affordable price, blending luxury with tradition. It is particularly suitable for festivals and traditional gatherings.
9. **Combo Pack Strawberry (750 ml + 750 ml)** positions itself as a fruity and creamy family dessert. With its kid-friendly taste and mass appeal, this product is widely available and suited for everyday enjoyment.
10. **Combo Pack Tutti Frutti (750 ml + 750 ml)** evokes nostalgia with vibrant candied fruit pieces, targeting children and family settings. Its colorful and joyful aesthetic enhances its appeal for fun and celebratory environments.
11. **Cup American Nuts (100 ml)** is a gourmet-style personal snack featuring a blend of pineapple-rose flavor, raisins, nuts, and jelly. This unique mix targets adventurous consumers looking for a multi-sensory dessert.
12. **Cup Choco Chips (100 ml)** satisfies chocolate lovers with its intense flavor and crunchy texture. This classic indulgent offering is positioned as a personal treat across all retail formats.
13. **Cup Vanilla Royale (100 ml / 65 ml)** stands as a universal flavor choice, with its simplicity making it versatile for pairings or stand-alone consumption. Its wide distribution supports its role as a basic yet essential dessert.
14. **Premium Cup Cookies N Cream (100 ml)** aligns with Western flavor trends, combining caramel and cookie chunks in a vanilla base. Marketed as a hunger-filling, indulgent snack, it appeals to youth and urban consumers, particularly in MT and GT outlets.

Amul's ice cream range showcases a well-rounded mix of traditional flavors, modern tastes,

and diverse pack sizes, catering to various consumer segments and occasions.

Single-serve products like Tricone Butterscotch, Jumbo Cups (King Alphonso, Rajbhog), and 100 ml cups (American Nuts, Choco Chips, Vanilla Royale) are tailored for individual indulgence, offering convenience and rich flavor profiles. Seasonal variants (like mango) and ethnic options (like Rajbhog) balance novelty with cultural appeal.

Larger tubs and combo packs (1 Litre Rajbhog, Fruit N Nut Fantasy, and 750 ml x 2 packs) target family and group consumption, particularly during festivals and gatherings. These combine premium ingredients—dry fruits, saffron, pistachios—with value pricing and wide availability (<https://www.amul.com/index.php?q=m/brands>).

Innovative offerings like Camel Milk Ice Cream appeal to health-conscious consumers seeking natural, regional alternatives. Meanwhile, western-inspired flavors such as Cookies N Cream reflect changing urban preferences.

Amul effectively leverages its distribution strength across General Trade, Modern Trade, and Amul Parlours to ensure its ice cream range is accessible, culturally resonant, and suited to evolving Indian tastes.

4.2 Amul Cheese Portfolio

Amul's cheese product range reflects a deliberate strategy to meet diverse culinary needs through varied formats, flavors, and applications. From gourmet ingredients to everyday convenience items, the portfolio targets home cooks, foodservice professionals, and health-conscious consumers alike.

- **Variety & Usage:** Amul offers a wide range of cheese products, from spreadable cream cheese and low-fat cheese spreads to processed cheeses, specialty Dutch Gouda, and flavored cheese sauces catering to different culinary needs — spreads, baking, cooking, snacking, dips, and fast food.
- **Nutritional Profile:** Most products are rich in fat and protein, with good calcium content, emphasizing their role as wholesome dairy sources. Cheese sauces have moderate calories and protein, designed as flavorful dips.
- **Shelf Life & Storage:** Most products require refrigeration at or below 4°C and have

shelf lives ranging from 6 to 9 months. After opening, products like cream cheese should be used promptly to maintain quality.

- **Target Market:** These products are widely available across gourmet stores, retail chains, modern formats, and e-commerce platforms, indicating a strong distribution network catering to both Indian urban markets and international exports.
- **Health Considerations:** Amul Cheese Spread Yummy Plain provides a lower-fat option compared to others. Cheese sauces emphasize pure milk content without vegetable oils, appealing to health-conscious consumers.
- **Culinary Flexibility:** The cheese range supports both traditional Indian cuisine (spreads on roti/paratha, fillings) and international uses (pizza sauces, dips, bakery ingredients), making it versatile for diverse consumer preferences.

Spreadables and Cream Cheese: Products like Amul Cream Cheese and Cheese Spread Yummy Plain are ideal for both direct consumption and culinary use. With smooth textures and low-fat variants, they serve well as sandwich spreads, baking ingredients, or healthy snack options. Their convenient tubs or packs with moderate shelf life make them suitable for frequent home use, especially through modern trade and e-commerce channels.

Processed and Institutional Cheese: Amul Processed Cheese, available in blocks, slices, and chiplets, is versatile for cooking, snacking, and melting. Its long shelf life and multiple pack sizes cater to both households and the foodservice sector. It supports a wide range of applications from pizzas to casseroles, enhancing its appeal in both domestic and export markets.

Gourmet Cheese – Gouda: Amul Gouda Cheese targets niche urban consumers looking for European-style table cheeses. With its mild ripening and rich flavor, it pairs well with wine, fruit, and continental dishes, making it a premium addition suited for metro markets and gourmet retail.

Flavored Cheese Sauces: The range of cheese sauces—Pizza, Jalapeno, Mexican Salsa, and Green Chutney—introduces a convenient fusion format for quick-serve meals. These ready-to-use

sauces cater to fast food consumption trends and youth preferences, serving as dips, burger fillings, and pizza toppings. Their consistent 6-month shelf life and easy squeeze bottles enhance convenience and shelf appeal.

Amul's cheese portfolio balances traditional usage and modern food trends. With products ranging from health-focused spreads to globally inspired sauces and cheeses, it serves both value and premium segments. Strategic availability through retail, gourmet stores, and e-commerce ensures wide accessibility, making Amul a dominant player in India's evolving cheese market.

4.3 Amul Paneer Portfolio

Amul offers three main paneer variants — Malai Paneer (frozen), Fresh Paneer (refrigerated), and Sterilized Malai Paneer (ambient shelf stable). All are cream cottage cheese equivalents. All products target culinary preparations, usable across a variety of Indian and international dishes requiring paneer.

Market Reach: Frozen Malai Paneer is available both domestically and internationally in Middle Eastern and Southeast Asian countries. Fresh Paneer is available across major Indian states and metros. Sterilized Paneer is available throughout India, likely supported by its ambient storage advantage.

- **Shelf Life & Storage:**
 - Frozen Malai Paneer lasts up to 6 months at -18°C.
 - Fresh Paneer has a shorter shelf life (45 days) refrigerated at ≤4°C.
 - Sterilized Malai Paneer is ambient stable for 270 days, ideal for wider distribution and longer storage without refrigeration.
- **Product Features:** All maintain high fat, low moisture content with smooth, uniform texture, making them convenient and hygienic options compared to loose paneer. These qualities ensure a rich, creamy mouthfeel desirable in culinary uses.

This comprehensive paneer range offers flexibility to consumers and foodservice providers depending on storage capabilities and shelf life needs while maintaining the characteristic richness and texture of paneer.

Table 1. A Brief summary of amul ice cream portfolio

Sr. No.	Product Name	Pack Size	Description	Features	Product Application	Availability
1	Tricone Butterscotch	120 ml	Butterscotch ice cream in cone with nuts & chocolate sauce	Crispy cone, rich topping, nutty texture	On-the-go treat; self-indulgence	GT, MT, Amul Parlours
2	1 Litre Tub Rajbhog	1 Litre	Almond, cashew, saffron & honey-based Indian dessert	Traditional flavors, dry fruits, premium feel	Family/festive desserts	All retail formats
3	1 Litre Tub Fruit N Nut Fantasy	1 Litre	Choco chips, raisins, cashew & orange jelly	Fruity, nutty, chocolaty blend	Celebratory, sharing treat	Nationwide availability
4	Jumbo Cup King Alphonso	125 ml	Alphonso mango flavor ice cream	Real mango taste, seasonal appeal	Tropical indulgence	Pan-India, GT & MT
5	Jumbo Cup Rajbhog	125 ml	Cardamom, saffron, honey, and nuts	Indian flavors, dry fruit-loaded	Royal dessert option	All retail channels
6	Camel Milk Medium Fat Ice Cream	125 ml	Made from camel milk sourced from Kutch	Health-conscious, no added color/flavor	Healthy indulgence	Select outlets, Amul Stores
7	Combo Pack Creamy Almond	750 ml + 750 ml	Creamy almond ice cream in value pack	Crunchy, rich almond flavor, value combo	Group/party consumption	GT, MT, Amul outlets
8	Combo Pack Kesar Pista Royale	750 ml + 750 ml	Saffron-flavored ice cream with pistachios	Nutty, saffron-rich, budget-friendly bulk pack	Festive & traditional pairing	All major retail formats
9	Combo Pack Strawberry	750 ml + 750 ml	Sweet and creamy strawberry ice cream	Fruity, refreshing, kid-friendly	Everyday dessert, kids' treat	Widely available
10	Combo Pack Tutti Frutti	750 ml + 750 ml	Colorful candied fruit ice cream	Joyful, nostalgic, vibrant presentation	Family treat, children's favorite	Pan-India distribution
11	Cup American Nuts	100 ml	Pineapple-rose flavor with raisins, nuts & jelly	Multi-flavor, nutty, gourmet-like	Gourmet personal snack	All across India
12	Cup Choco Chips	100 ml	Chocolate ice cream with chocolate chips	Crunchy, rich chocolate, indulgent	Choco lovers' delight	All retail formats
13	Cup Vanilla Royale	100 ml / 65 ml	Classic vanilla ice cream	Simple, versatile, pairing-friendly	Universal appeal, dessert base	Widely distributed across India
14	Premium Cup Cookies N Cream	100 ml	Vanilla-caramel ice cream with cookie chunks	Crunchy & creamy, western flavor trend	Hunger filler, indulgence	Available in modern trade and general trade

• GT = General Trade, MT = Modern Trade

Table 2. A Brief summary of amul cheese portfolio

Sr. No.	Product Name	Description	Packaging	Shelf Life	Storage	Key Features & Applications	Availability
1	Amul Cream Cheese	Spreadable, bake stable cheese	180g pack	6 months	Store at $\leq 4^{\circ}\text{C}$, use within 1 month after opening	Spread, bakery ingredient, dips, frosting, fillings	Gourmet stores, APOs, retail, e-comm
2	Amul Processed Cheese	Pasteurised cheddar, emulsified	Blocks: 200g-1kg, Slices: 100g-750g, Chiplets: 200g-1kg	6-9 months (varies)	Refrigerated at $\leq 4^{\circ}\text{C}$, no deep freeze	Snacking, melts for soups, sauces, pizza, omelettes, casseroles	Major cities, India + export
3	Amul Gouda Cheese	Mildly ripened Dutch-style cheese	250g consumer, 1kg/4.5kg institutional	6 months	Refrigerate $4^{\circ}-8^{\circ}\text{C}$; best flavor at room temp for 30 mins	Table and dessert cheese, pairs with fruit, wine, sandwiches	Gourmet stores, metros
4	Amul Cheese Sauce - Pizza	Cheese sauce with pizza seasoning	200g bottle	6 months	Refrigerated $\leq 4^{\circ}\text{C}$	Dips for nachos, fries, burgers, pizzas, fast food	Retail outlets, e-commerce
5	Amul Cheese Sauce - Jalapeno	Cheese sauce with jalapeno flavor	200g bottle	6 months	Refrigerated $\leq 4^{\circ}\text{C}$	Dips and fast food accompaniments	Retail outlets, e-commerce
6	Amul Cheese Sauce - Mexican Salsa	Cheese sauce with Mexican salsa flavor	200g bottle	6 months	Refrigerated $\leq 4^{\circ}\text{C}$	Dips and fast food accompaniments	Retail outlets, e-commerce
7	Amul Cheese Sauce - Green Chutney	Cheese sauce with green chutney flavor	200g bottle	6 months	Refrigerated $\leq 4^{\circ}\text{C}$	Dips and fast food accompaniments	Retail outlets, e-commerce
8	Amul Cheese Spread Yummy Plain	Soft and cheddar cheese spread, low fat	200g & 400g tubs	9 months	Refrigerated $\leq 4^{\circ}\text{C}$, no deep freeze	Easy to spread, healthy low-fat alternative, good for Indian breads and snacks	Modern stores, e-commerce

Table 3. A Brief summary of amul paneer portfolio

Sr. No.	Product Name	Description	Packaging	Shelf Life & Storage	Key Features	Application	Availability / Markets
1	Amul Malai Paneer	Equivalent to Cream Cottage Cheese	Diced: 100g, 200g, 500g, 1kg; Block: 200g, 1kg	6 months, frozen at -18°C or below	High fat, low moisture, smooth texture, pure & hygienic	Culinary preparations	India + UAE, Kuwait, Oman, Qatar, Singapore, Bahrain, Hong Kong
2	Amul Fresh Paneer	Equivalent to Cream Cottage Cheese	Block: 100g, 200g, 1kg	45 days, refrigerated $\leq 4^{\circ}\text{C}$	High fat, low moisture, smooth texture, pure & hygienic	Culinary preparations	Selected Indian states (Maharashtra, Delhi NCR, Haryana, etc.)
3	Amul Malai Paneer - Sterilized	Equivalent to Cream Cottage Cheese	425g (drained 225g), 210g (drained 120g)	270 days, ambient storage	High fat, low moisture, smooth texture, pure & hygienic	Culinary preparations	All India

Table 4. A brief summary of amul frozen gourmet product portfolio

Product Name	Key Ingredients	Pack Size	Shelf Life	Key Features
4-Cheese Pizza	Mozzarella, Cheddar, Gouda, Emmental, tomato sauce	210g	6 months	Jain pizza, rich cheese blend, herb topping
Garlic Pizza	Amul cheese, garlic sauce, herbs	210g	6 months	Spicy garlic flavor, ready-to-bake
Margherita Pizza	Amul cheese, tomato-based pizza sauce	210g	6 months	Classic cheese pizza, customizable toppings
Paneer Paratha	Paneer, wheat flour, spices	500g (4 × 125g)	24 months	High-protein Indian meal, easy to prepare
Cheese Onion Paratha	Processed cheese, onion, wheat flour	500g (4 × 125g)	24 months	Cheesy Indian flatbread, ideal breakfast
French Fries	Potatoes (92%), refined palmolein oil	200g / 425g / 750g	24 months	Classic fries, deep-fry/air-fry ready
Aloo Tikki	Potatoes, onion, garlic, spices	400g (10 × 40g)	24 months	Indian chaat-friendly snack, crispy texture
Veg Burger Patty	Potatoes, peas, carrot, sweet corn, bread crumbs	360g (6 × 60g)	24 months	Quick burger base, mildly spiced
Veggie Stix	Potatoes, peas, carrot, sweet corn, breaded coating	400g (12 × 35g)	24 months	Snack sticks, crunchy with mild flavor

4.4 Amul Gourmet Products Portfolio (Frozen)

Gourmet food refers to high-quality, carefully prepared food items that often feature premium ingredients, refined preparation methods, and a focus on sensory experience. These products typically stand out due to their uniqueness, creativity, superior presentation, and sometimes global or fusion flavors. Unlike everyday meals, gourmet foods are associated with fine dining, indulgence, and artisanal craftsmanship, and are often curated for discerning consumers seeking a blend of taste, nutrition, and elegance.

Amul's entry into the gourmet segment reflects its transformation from a traditional dairy brand to a complete food solutions provider, catering not only to Indian culinary tastes but also to global food trends. With their innovative fusion of traditional Indian elements and modern gourmet sensibilities, Amul's frozen gourmet line appeals to both domestic and international markets, reinforcing its position as a market leader committed to both innovation and heritage.

Amul's gourmet frozen food range reflects its strategy to provide convenient, ready-to-cook meals that blend Indian tastes with global food formats. This portfolio targets urban consumers looking for quick yet wholesome meal and snack options that retain freshness and flavor over time (<https://www.nddb.coop/information/stats/milkprodstate>).

Frozen Pizzas: The 4-Cheese Pizza, Garlic Pizza, and Margherita Pizza cater to evolving urban palates seeking restaurant-style flavors at home. Each pizza uses premium Amul cheese variants, offering options for Jain preferences, spicy profiles, or classic tastes. The 210g size and 6-month shelf life make them suitable for small households or solo meals, with easy oven-bake convenience.

Stuffed Parathas: Paneer Paratha and Cheese Onion Paratha serve as nutritious and filling Indian meal solutions. High in protein and flavor, these 500g family packs (four pieces each) appeal to health-conscious and traditional consumers seeking convenient breakfast or lunch items. With a 24-month shelf life, they are ideal for stocking as emergency or everyday meal options.

Frozen Snacks: Products like French Fries, Aloo Tikki, Veg Burger Patty, and Veggie Stix offer a

mix of Indian and Western snacking formats. Designed for deep-frying or air-frying, they cater to different occasions—quick meals, kids' tiffin, parties, or chaat cravings. The range emphasizes crispy textures, mild spice levels, and easy preparation, with pack sizes suited for both individual and group consumption.

Amul's gourmet frozen foods successfully blend convenience, variety, and taste. By offering both global formats (pizzas, fries, burger patties) and Indian staples (parathas, tikkis), Amul taps into the growing demand for ready-to-eat foods without compromising on authenticity or nutrition. The long shelf life and wide applicability across meals and snacks position this portfolio strongly in the modern frozen food segment.

Amul's diversification into refrigerated and frozen categories has broadened its consumer base while delivering strong economic outcomes such as revenue growth, market share expansion, and brand consolidation. By moving beyond liquid milk, the cooperative has built value-added revenue streams through ice creams, cheese, paneer, and gourmet frozen foods.

Ice creams illustrate how variety in flavors, pack sizes, and pricing transformed the category into a mass-market product. Affordable options drive volumes in rural areas, while premium variants deliver higher margins, together ensuring consistent sales growth supported by Amul's vast distribution network. Similarly, cheese diversification balances everyday utility products with gourmet offerings, reducing revenue risks and enabling higher margins through institutional sales and exports.

Paneer innovations—ranging from fresh to ambient-stable variants—strengthen both domestic and export markets, with sterilized paneer opening new geographies and foreign exchange opportunities. Meanwhile, frozen gourmet foods like pizzas and parathas tap into the growing convenience sector, increasing per-litre returns on milk and reducing dependence on volatile commodity markets.

Together, these strategies enhance brand stickiness by encouraging cross-category consumption. The result is steady double-digit growth across multiple categories, reinforcing Amul's position as India's largest FMCG brand by turnover.

According to Barot Bijal et. al (2023). AMUL's key strategies for success included decentralized

milk collection, processing facilities, product diversification, innovative marketing and a cooperative structure. The dairy cooperatives played a significant role in socio-economic development by providing farmers fair prices, employment, loans, infrastructure development and empowerment.

The aspect of continuous product innovation and diversification was also highlighted by Abha (2025) who asserts that Amul's success is rooted in its cooperative ethos, strong brand identity, and strategic adaptability. To maintain its leadership, the organization must evolve through digital transformation, product innovation, and international market exploration. Amul stands as a global model for cooperative enterprise in the food and agriculture sector.

According to Deshpande et. al (2016), It is India's largest food product marketing organization, selling 46 products, including pouched milk, cheese, butter, ice cream, and infant food through a million retailers across the country, and is the market leader in almost all the categories in which it operates. Amul is well known among Indian consumers for offering high-quality products at reasonable prices, and runs a highly popular advertising campaign that spoofs current events (<https://www.nddb.coop/information/stats/percapitavail>).

Further, While ice creams are primarily positioned as indulgent desserts, Amul's diverse range also reflects varying levels of nutritional contribution depending on the ingredients used. Being dairy-based, most products in the portfolio provide a source of milk proteins, fats, and essential micronutrients, while value-added ingredients such as nuts, fruits, saffron, and honey enhance their health profile.

- **Protein and Fat Content:**

All milk-based ice creams inherently contain proteins such as casein and whey, which contribute to muscle repair, satiety, and overall body growth. Amul's ice creams typically provide around 2–4 g of protein per 100 g serving. Fat, an essential energy source, ranges between 7–15 g per 100 g, with premium nut-rich and traditional flavors often being higher in fat due to the inclusion of almonds, cashews, pistachios, or saffron-based bases. In health-conscious variants like Camel Milk Medium Fat Ice Cream, fat content is more balanced, catering to consumers looking for moderate-calorie indulgence.

- **Calcium and Phosphorus:**

As a dairy-derived product, Amul ice creams are a natural source of calcium (approximately 100–120 mg per 100 g) and phosphorus. These minerals are critical for bone health, teeth development, and metabolic functions, especially important for children and adolescents who form a large consumer base.

- **Vitamins (Fat- and Water-Soluble):**

Vitamin A and D: Being fat-soluble vitamins present in milk fat, they are naturally present in most ice creams and support vision, immunity, and calcium absorption.

Vitamin B2 (Riboflavin) and B12: Derived from the milk base, these vitamins contribute to energy metabolism, nerve health, and red blood cell formation.

Vitamin E: Found in nut-enriched variants (Fruit N Nut Fantasy, Creamy Almond, Kesar Pista Royale), offering antioxidant benefits.

- **Nuts, Fruits, and Functional Ingredients:**

Products like Rajbhog, Fruit N Nut Fantasy, American Nuts, and Creamy Almond enrich the diet with dietary fiber, vitamin E, potassium, magnesium, and healthy unsaturated fats from almonds, cashews, and raisins.

Seasonal fruit-based offerings, such as King Alphonso and Strawberry, supply vitamin C, natural antioxidants, and phytonutrients.

Exotic additions like saffron (Kesar Pista, Rajbhog) are known for their antioxidant and anti-inflammatory properties, while honey contributes trace minerals and natural sugars.

5. SUMMARY AND CONCLUSION

The study provides valuable insights into how Gujarat-based dairy cooperatives, particularly Amul under GCMMF, have strategically diversified their offerings to cater to evolving consumer needs in India's dynamic food landscape. The analysis confirms that these cooperatives have successfully transitioned from being traditional liquid milk suppliers to modern food solution providers by developing a comprehensive portfolio of refrigerated and frozen dairy and non-dairy products.

Amul's ice cream portfolio reveals a well-thought-out balance between traditional Indian flavors and contemporary global tastes, offered in varied pack sizes to suit different consumption occasions—from individual indulgence to family gatherings. With innovations like camel milk ice cream and western-styled Cookies N Cream, the brand demonstrates its adaptability to both health-conscious and trend-sensitive segments.

The cheese segment shows similar depth and innovation. From everyday processed cheese and spreads to gourmet offerings like Gouda and flavored cheese sauces, Amul has positioned itself to appeal to home cooks, foodservice professionals, and niche consumers alike. The products exhibit thoughtful design in terms of shelf life, packaging, culinary use, and distribution reach, making them versatile and accessible.

In the paneer segment, Amul offers multiple shelf-life solutions—frozen, fresh, and sterilized ambient—thereby expanding market reach from local Indian kitchens to export markets across the Middle East and Southeast Asia. The consistent quality, texture, and hygienic packaging make these paneer products reliable for both home and commercial culinary uses.

Lastly, the gourmet frozen foods segment showcases Amul's evolution into convenient, premium-quality, ready-to-cook meals. With offerings like multi-cheese pizzas, stuffed parathas, and fusion snacks like burger patties and veggie sticks, Amul bridges the gap between traditional Indian tastes and fast-evolving modern lifestyles. These products combine nutrition, ease of preparation, and long shelf life, aligning perfectly with the needs of urban households.

Overall, Gujarat's dairy cooperatives, led by Amul, demonstrate a robust understanding of market demands and consumer behavior. Their refrigerated and frozen product portfolios reflect a synergy of tradition and innovation, driven by strong cooperative values, high production standards, and an extensive distribution network. The study concludes that this product diversification not only enhances consumer choice but also strengthens the cooperative model's sustainability and competitiveness in the Indian and global dairy markets.

6. LIMITATIONS OF THE RESEARCH STUDY

While the study provides valuable insights, it is subject to several limitations:

1. Secondary data reliance: Findings are based solely on existing literature, brand reports, and publicly available product data.
2. Limited comparative benchmarking: The study focuses on Amul and does not deeply compare other state cooperatives or private competitors.
3. Major focus is on Product range, variants, pack size and other related aspects, hence several other aspects regard product features (such as composition, ingredients, etc.) have not been included. Further, the focus is to just give an idea of enormous product range / variants/ pack size/ pack forms; hence the product portfolio discussed above is not exhaustive, there may be many flavours, many options of a particular product which might have not been considered here.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

COMPETING INTERESTS

Authors have declared that they have no known competing financial interests or non-financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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