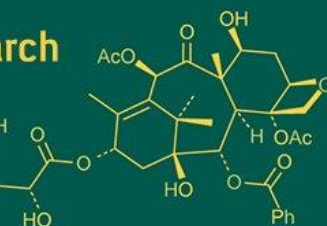
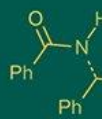


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Marketing management of milk and milk products by dairy processing units in Kittur Karnataka region of Karnataka

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Abstract

The study analyses the marketing management of milk and milk products by dairy processing units in the Kittur Karnataka region of Karnataka, focusing on marketing costs, margins, price spread and efficiency across four major marketing channels. Primary data were collected from 30 cooperative and private dairy processing units across seven districts, complemented by secondary information. Marketing costs were estimated by accounting for procurement, processing and distribution expenses, while marketing efficiency was computed using Acharya's method. Results revealed substantial variation in price spread and marketing efficiency among different dairy products and across marketing channels. Fluid milk products like toned, standardized and full cream milk consistently exhibited lower price spreads, minimal distribution costs and no GST, resulting in higher marketing efficiency across all channels. In contrast, value-added products such as ghee, butter and paneer showed higher marketing margins but also incurred significantly higher production and distribution costs, coupled with GST rates of 12 percent, leading to comparatively lower marketing efficiency. Among channels, Channel-I (Processor → Consumer) demonstrated the highest marketing efficiency owing to the absence of intermediaries, while Channel-IV (Processor → Depot → Wholesaler → Retailer → Consumer) recorded the lowest efficiency due to increased cost accumulation and wider price spreads. Producer's share in the consumer's rupee was highest for paneer, ghee and butter, especially in channels with fewer intermediaries. The findings underscore that reducing intermediary layers, improving distribution efficiency and promoting value addition can enhance the overall marketing performance of dairy products in the region. This study provides critical insights for policymakers, dairy cooperatives and private processors to optimize marketing strategies and strengthen the dairy value chain in Karnataka.

Keywords: Dairy marketing efficiency, price spread, marketing channels, milk products, marketing margins; dairy value chain

Introduction

India has one of the largest stocks of buffaloes and cows and contributes to 25 percent of global milk production, with an annual growth rate of 6 percent. The country achieved annual milk production of 239.30 million tonnes during 2023-24 with per capita availability of 471 grams per day (Ministry of Animal Husbandry, Dairying and Fisheries, 2024) which is greater than the average milk availability in the world i.e., 322 grams per day.

Indian states have state milk federations, and several co-operative dairy milk unions, private dairy plants, primary milk co-operative societies which play an important role in promoting production of milk in the state. There are 22 state milk federations with 183 district-level unions, more than 1,77,000 village-level co-operative societies, and 16.3 million milk producer members. These co-operatives collect an average of 98 litres of milk every day. Karnataka is the 9th largest milk-producing state (5.5 metric tonnes) constitute 5.34 percent of the country's total milk production. Further, Karnataka ranks 2nd in the procurement of milk by the Milk Producers' Co-operative Societies (MPCs). MPCs function at the village level, which acts as a catalyst between farmers and co-operative milk unions. In Karnataka, about 1.33 crore households seek employment, out of which approximately 60 percent of households got the employment directly and indirectly (Census, 2019) ^[2].

Milk co-operatives play a significant role in providing supplemental income and employment to these households. On a national level, manufacturing including the production of various dairy products such as butter, ghee, milk powder, ice cream, kulfi, khoa and cheese engages only 1.20 percent of dairy staff in both the formal and conventional informal sectors. Over 6 percent of the dairy sub-sector employees are engaged in wholesaling and retailing of milk and milk products. As predicted, in rural areas, a higher proportion of employees in the dairy sector are engaged in production-related activities, i.e., 95 percent and less than one percent in processing. Around 31 percent of the dairy employees are engaged in selling milk and milk products in urban areas. Future production prospects depend heavily on productivity gains, primarily through improved breeding and optimum feeding practices. Demand for feed and improved genetic features may offer opportunities for increased trade. India's dairy co-operatives and private sector processors have played a key role in expanding milk and milk-products marketing and catalyzing more production. India's network of farmer-owned dairy co-operatives, organized using the "Anand model" originated in the State of Gujarat before independence, has been one of the most successful co-operative movement in India and the critical early driver of dairy development in the country.

Methodology

Kittur Karnataka consists of seven districts namely, Dharwad, Belagavi, Vijayapura, Bagalkot, Gadag, Haveri and Uttara Kannada. The present study is based on both primary and secondary data. The primary data was collected using a well-designed and comprehensive schedule exclusively prepared for the study. The required primary data was gathered from selected processors, and various intermediaries in the study area. 30 processing units were selected in cooperative and private sectors from these seven districts of Kittur Karnataka region.

Costing Methodology

(a) Marketing cost

In a dairy plant, the total marketing cost comprises costs on milk procurement, its processing and distribution of dairy products.

Milk procurement cost

Cost of milk procurement included costs on collection, transportation, chilling and delivery of milk at the reception dock by following the methodology outlined by Rangasamy and Dhaka (2018) ^[12].

Manufacturing cost of milk products

The manufacturing cost comprises cost of raw material and total processing cost of dairy products. The total processing cost of dairy products comprises expenditures on electricity, water, steam, refrigeration, maintenance and repairs, stationery and stores, labour, packing materials, detergents, besides quality control expenditure, salaries and administrative expenses, depreciation on buildings, equipments and machinery, interest on investment in buildings, plant equipment and machinery, losses in milk and milk solids and miscellaneous costs. The interest was calculated at the rate of 6.25 percent per annum on the value of equipments and machinery and electric installations in all the sections of dairy plant. The depreciation values of

equipments, machineries and all sections of dairy plant buildings were taken either from the account books or accounts section of the respective dairy plants.

The raw material cost was apportioned based on fat and SNF contents of milk. The costs on electricity, water, steam, refrigeration, detergents were apportioned to different products based on their consumption in different product manufacturing sections. The maintenance charges were apportioned on milk input basis. The stationery and stores cost was apportioned on the basis of value of items used directly for the particular product. Direct labour wages were apportioned to specific operations on man-hour basis. Direct allocation was done for the cost of packing material. The total quality control expenditure was apportioned to different products on the basis of number of their samples tested. Salary of staff of product manufacturing section was allocated based on quantity and value of product produced. Depreciation and interest on investment on buildings was proportionately allocated to different products on the basis of space occupied by the machinery used for their manufacturing.

Distribution cost

Distribution cost included expenses on advertisement, sales promotion, rent of booths and parlours, salary of marketing and sales personnel, stationery, telephone, conveyance, sales commission to wholesalers, retailers and commission agents, transportation of milk and milk products to booths, parlours and sales outlets, storage of milk and milk products under refrigerated condition, loading and unloading of milk and milk products in the dairy plant, sales tax, and depreciation, interest and other miscellaneous costs. Depreciation on transport vehicles were taken from the books and accounts section of the respective dairy plants. The interest was calculated at the rate of 6.25 percent per annum on the value of transport vehicles. Total distribution cost was apportioned to milk and milk products based on their total sales value.

(b) Marketing margin

Marketing margin of a dairy plant was taken as the difference between the selling price of a product per unit and the total cost of its manufacturing and distribution.

Raw material cost

Raw material cost is the cost of total solids (fat and SNF) utilized for manufacturing different dairy products ; and the total marketing cost (I) comprised milk procurement cost, processing cost and distribution cost of dairy products.

Estimation of marketing efficiency

Information on marketing channels, cost and returns of marketing agencies, producer's share in consumer's rupee and price spread was collected and analyzed to calculate marketing efficiency.

I. Price spread

The price spread of an agricultural commodity helped to calculate the economic efficiency of marketing system. Price spread maintained inverse relation with the efficiency therefore smaller price spread would be desirable for higher efficiency of marketing chain. The difference between the price paid by the consumer and price received by the milk

producer defined the price spread (Acharya and Agarwal, 2009) ^[1].

It was calculated as,

$$P_s = P_c - P_f$$

Where,

P_s is the Price spread

P_c is the Consumer's price

P_f is Producer's price

II. Producer's share in consumer's rupee

It is the price received by the farmers and expressed as a percentage of the price paid by the consumer (Acharya and Agarwal, 2009) ^[1]. The producer's share was calculated with the following formula.

$$P_s = (P_f/P_c) * 100$$

Where,

P_s is the Producer's share in consumer's rupee

P_f is Producer's price

P_c is the Consumer's price

III. Marketing efficiency for different marketing channels

Marketing efficiency of different channels was calculated by using the following formula.

$$MME = FP/(MC + MM)$$

Where,

MME is the modified measure of marketing efficiency

FP is price received by producer

MC is marketing cost

MM is marketing margin

Results and discussion

1. Price spread and marketing efficiency of different milk products marketed through channel-I

Table 1 presents the price spread, marketing cost, and marketing efficiency of milk and milk products marketed directly from processors to consumers through Channel-I (Processor → Consumer) in Karnataka. The products studied included toned milk, standardized milk, full cream milk, curd, flavored milk, buttermilk, ghee, butter and paneer. The findings showed that fluid milk products such as toned milk, standardized milk and full cream milk had relatively lower price spreads and marketing costs, while recording the highest marketing efficiency indices, indicating better cost management and efficient marketing. The processing costs for toned milk, standardized milk and full cream milk were comparatively lower than value-added products like ghee, butter and paneer. Processors earned moderate profit margins on fluid milk products, whereas higher margins were observed for value-added products due to their premium nature. GST also contributed significantly to the final consumer prices of products such as flavored milk, curd, buttermilk, ghee, butter and paneer. Consequently, consumer prices were highest for ghee and butter, while fluid milk products remained relatively affordable.

The analysis further revealed that toned milk and standardized milk recorded the lowest price spreads of

₹3.51/kg and ₹3.60/kg respectively, whereas ghee had the highest price spread of ₹96.75/kg due to its higher production and marketing costs. Butter and paneer also showed comparatively high price spreads, while flavored milk, curd and buttermilk recorded moderate spreads.

Marketing efficiency analysis using Acharya's method indicated that full cream milk (11.08) and standardized milk (11.01) were the most efficiently marketed products, followed by toned milk (10.26). Their higher efficiency was mainly due to lower distribution costs and smaller price spreads. In contrast, ghee recorded the lowest marketing efficiency (4.83), despite generating higher selling prices and margins, because of the substantial costs involved in processing and marketing. Overall, the results indicate that fluid milk products were marketed more efficiently, while value-added products such as ghee, butter and paneer offered higher profit margins but lower marketing efficiency because of higher production and distribution costs. Similar findings were reported by Rangasamy and Dhaka (2018) ^[12], who observed that products like ghee and butter provide higher margins but lower marketing efficiency due to increased processing and marketing expenses. Singh & Chauhan (2007) ^[5] found that milk marketing channels in India show significantly higher efficiency in fluid milk distribution compared to processed dairy products because of lower handling and transaction costs.

2. Price spread and marketing efficiency of different milk products marketed through channel-II

Table 2 presents the price spread and marketing efficiency of milk and milk products marketed through Channel-II (Processor → Retailer → Consumer). The results show considerable variation in production costs, marketing costs, margins and efficiency across products due to the involvement of intermediaries, which is consistent with earlier findings of Gill *et al.* (2016) ^[8], who reported that the presence of intermediaries in milk marketing channels significantly increases cost build-up and reduces overall marketing efficiency.

Among all the products, ghee recorded the highest production cost (₹467.78/kg), followed by butter (₹330.82/kg), while toned milk had the lowest production cost (₹36.01/kg). Processing units earned higher profit margins from value-added products such as ghee, paneer and flavoured milk, whereas fluid milk products like toned milk, standardized milk and full cream milk generated comparatively lower margins. Similar trends were observed by Chaudhary *et al.* (2019) ^[6], who noted that value-added dairy products in private and cooperative sectors yield higher processor margins compared to basic milk variants due to their premium pricing structure.

In products such as paneer, flavoured milk and curd, processors retained a larger share of the total marketing margin, indicating better returns to processing units. Distributor margins were highest for ghee (₹26.50/kg), butter (₹21.45/kg), and flavoured milk (₹8.95/kg), while margins for fluid milk products remained below ₹2/kg. These findings are in line with Deokate *et al.* (2007) ^[7], who observed that distributor-level margins are significantly higher for high-value dairy products compared to fluid milk due to higher handling costs and value addition.

GST was not applicable on fluid milk products, but value-added products such as curd, flavoured milk, paneer, butter and ghee attracted GST, which further increased their final

consumer prices. Consequently, ghee recorded the highest price spread (₹129.50/kg), followed by butter (₹89.21/kg) and paneer (₹71.94/kg), whereas toned milk had the lowest spread (₹6.54/kg). Similar patterns of widening price spread with increasing intermediaries were also reported by Bhargav *et al.* (2022) ^[4] and Rebasiddanavar *et al.* (2024) ^[13], who found that longer marketing channels lead to higher marketing costs and reduced efficiency.

Marketing efficiency analysis using Acharya's method revealed that full cream milk (5.99), standardized milk (5.89) and toned milk (5.51) were marketed more efficiently than other products due to their lower marketing costs and smaller price spreads. Products like paneer, butter, buttermilk and ghee showed moderate efficiency, while flavoured milk recorded the lowest marketing efficiency (2.18) because a larger share of the consumer price was absorbed by marketing costs, margins and taxation.

Overall, the study indicates that fluid milk products were marketed more efficiently than value-added dairy products in Channel-II. The involvement of intermediaries increased marketing costs and price spread, thereby reducing overall marketing efficiency, while value-added products still remained attractive due to higher absolute margins despite lower efficiency.

3. Price spread and marketing efficiency of different milk products marketed through channel-III

Table 3 presents the price spread and marketing efficiency of milk and milk products marketed through Channel-III (Processor → Distributor/Dealer → Retailer → Consumer). The results indicate clear variation in marketing costs, margins and efficiency across products due to the involvement of multiple intermediaries, a pattern also supported by Kumar and Staal (2011) ^[10], who reported that traditional multi-layer milk marketing systems tend to increase transaction costs and reduce overall efficiency.

Production costs ranged from ₹35.60/kg for buttermilk to ₹467.78/kg for ghee, with value-added products such as ghee and paneer showing higher costs but also higher processor margins. Processor profits were highest for ghee (₹32.52/kg) and paneer (₹31.58/kg), followed by butter and flavoured milk, while fluid milk products like toned, standardized and full cream milk generated relatively lower margins. Similar observations were made by Ohlan (2013) ^[11], who highlighted that value addition in dairy products enhances absolute returns but also increases cost intensity across the value chain.

Distribution costs at the processing stage remained fairly stable, though GST significantly increased the final prices of value-added products, especially ghee and butter, while it remained nil for fluid milk variants. At the distributor and retailer levels, both costs and margins varied widely. Ghee recorded the highest distributor margin (₹26.50/kg) and retailer margin (₹32.45/kg), followed by butter, paneer and flavoured milk. Fluid milk products consistently showed lower margins across all intermediaries.

Consequently, the price spread was highest for ghee (₹164.70/kg) and paneer (₹89.53/kg), while toned milk had the lowest spread (₹9.50/kg). Total marketing costs and margins were also highest for ghee and paneer, reflecting the greater complexity and value addition in these products. The sharing of marketing margins differed across products: fluid milk variants showed a relatively balanced distribution among processors, distributors and retailers, while in value-

added products like ghee, paneer and butter, processors and retailers captured a larger share, reflecting stronger value addition and demand-driven pricing.

Retailer involvement was particularly important in high-value products, significantly influencing final price formation. Marketing efficiency analysis using Acharya's method showed that full cream milk (4.11), standardized milk (3.95) and toned milk (3.79) were the most efficiently marketed products due to lower marketing costs and simpler distribution structures. Paneer, butter, and ghee showed moderate efficiency, while flavoured milk (1.61), curd (1.96) and buttermilk (2.73) recorded lower efficiency because a larger share of the consumer price was absorbed by marketing costs, margins and taxes.

Overall, the findings highlight that although value-added dairy products generate higher profits and consumer prices, they also involve higher marketing costs and more complex multi-tier distribution systems, leading to lower marketing efficiency. In contrast, fluid milk products remain more cost-effective and efficiently marketed. These results are consistent with Bhargav *et al.* (2022) ^[4] and Rebasiddanavar *et al.* (2024) ^[13], who observed that an increase in intermediaries raises price spread and reduces marketing efficiency, and are further supported by Kumar and Staal (2011) ^[10], who emphasized inefficiencies in traditional milk marketing systems, as well as Ohlan (2013) ^[11], who reported that structural complexities in the dairy sector affect efficiency outcomes.

4. Price spread and marketing efficiency of different milk products marketed through channel-IV

Table 4 presents the price spread and marketing efficiency of milk and milk products marketed through Channel-IV (Processor → Depot → Wholesaler → Retailer → Consumer). The results show clear variation across products in terms of cost structure, intermediary margins, and overall efficiency due to the involvement of multiple marketing layers.

Production costs remained consistent with other channels, ranging from ₹35.60/kg for buttermilk to ₹467.78/kg for ghee. Processors earned higher margins from value-added products such as paneer and ghee, followed by butter and flavoured milk, while toned, standardized and full cream milk generated comparatively lower margins. Distribution costs at the processing level were fairly stable for milk variants but slightly higher for ghee and flavoured milk. GST further increased the final prices of value-added products, while remaining nil for basic milk and lower for a few processed items.

At the intermediary level, costs and margins were distributed across depot, wholesaler, and retailer stages, with significant variation among products. Retailers generally earned higher margins in products like ghee, paneer, butter and flavoured milk, while milk variants showed more uniform and lower margins across all intermediaries. The cumulative effect of multiple intermediaries led to a substantial increase in price spread, which was highest for ghee (₹197.10/kg), followed by paneer (₹115.31/kg) and butter (₹132.27/kg), while toned, standardized and full cream milk recorded the lowest spreads (around ₹13/kg).

Total marketing costs increased with product value and complexity, being highest for ghee (₹75.98/kg) and butter (₹55.62/kg), and lowest for fluid milk products. Similarly, total marketing margins were highest for ghee and paneer,

indicating greater intermediary earnings but also higher consumer prices. The producer's share in the consumer's rupee remained relatively high across products, particularly for paneer, ghee and butter, reflecting strong value addition at the processing stage.

Marketing efficiency analysis using Acharya's method showed that full cream milk (3.10), standardized milk (2.95) and toned milk (2.79) were the most efficiently marketed products due to lower marketing costs and simpler distribution. Paneer (2.83) also showed moderate efficiency, while butter (2.50) and ghee (2.37) followed. Flavoured milk (1.23), curd (1.52) and buttermilk (2.13) recorded the

lowest efficiency, mainly due to higher marketing costs, GST, and more complex handling requirements.

Overall, the findings indicate that while value-added dairy products generate higher margins and consumer prices, their efficiency declines due to multi-tier marketing, higher logistics costs, refrigeration needs and taxation. In contrast, fluid milk products remain more efficient due to simpler distribution systems and lower costs. These results are consistent with Rebasiddanavar *et al.* (2024) ^[13], who observed lower efficiency in channels with more intermediaries, and Kaur *et al.* (2020) ^[9], who reported higher efficiency in direct marketing systems compared to indirect dairy marketing channels.

Table 1: Price spread and marketing efficiency of different milk products marketed through channel-I (Processor → Consumer)

Particulars	Milk and milk products								
	Toned milk	Standardized milk	Full cream milk	Flavoured milk	Curd	Butter milk	Butter	Ghee	Paneer
Cost of production incurred by processing unit (₹/kg)	36.01	39.62	43.21	77.87	37.24	35.60	330.82	467.78	326.71
Profit margin of processing unit (₹/kg)	1.76	1.85	2.15	13.84	6.52	2.36	17.44	32.52	31.58
GST	0.00	0.00	0.00	4.77	2.27	1.99	42.12	60.48	18.04
Cost of distribution incurred by processing unit (₹/kg)	1.75	1.75	1.75	3.75	1.75	1.75	2.75	3.75	2.56
Purchase price of consumer (₹/kg)	39.52	43.22	47.11	100.23	47.78	41.70	393.13	564.53	376.33
Price spread (₹)	3.51	3.60	3.90	22.36	10.54	6.10	62.31	96.75	52.18
Total marketing cost (₹)	1.75	1.75	1.75	8.52	4.02	3.74	44.87	64.23	20.60
Total marketing margin (₹)	1.76	1.85	2.15	13.84	6.52	2.36	17.44	32.52	31.58
Index of marketing efficiency (Acharya's method)	10.26	11.01	11.08	5.63	3.53	5.84	5.31	4.83	6.26

Note: 1. GST-Goods and Service Tax, 0%-Toned milk, Standardized milk and Full cream milk 5%-Flavoured milk, Buttermilk, Curd and Paneer. 12%-Ghee, Butter

Table 2: Price spread and marketing efficiency of different milk products marketed through channel-II (Processor → Retailer → Consumer)

Particulars	Milk and milk products								
	Toned milk	Standardized milk	Full cream milk	Flavoured milk	Curd	Butter milk	Butter	Ghee	Paneer
Cost of production incurred by processing unit (₹/kg)	36.01	39.62	43.21	77.87	37.24	35.60	330.82	467.78	326.71
Profit margin of processing unit (₹/kg)	1.76 (51.31)	1.85 (51.25)	2.15 (52.44)	13.84 (60.73)	6.52 (65.07)	2.36 (54.76)	17.44 (44.84)	32.52 (55.10)	31.58 (66.48)
GST	0.00	0.00	0.00	4.77	2.27	1.99	42.12	60.48	18.04
Cost of distribution incurred by processing unit (₹/kg)	1.75 (56.27)	1.75 (56.27)	1.75 (56.27)	3.75 (29.37)	1.75 (32.83)	1.75 (33.72)	2.75 (5.47)	3.75 (5.32)	2.56 (10.47)
Purchase price of distributor (₹/kg)	39.52	43.22	47.11	100.23	47.78	41.70	393.13	564.53	376.33
Cost incurred by distributor (₹/kg)	1.36 (43.73)	1.36 (43.73)	1.36 (43.73)	4.25 (33.28)	1.31 (24.58)	1.45 (27.94)	5.45 (10.83)	6.25 (8.87)	3.84 (15.71)
Profit margin of distributor (₹/kg)	1.67 (48.69)	1.76 (48.75)	1.95 (47.56)	8.95 (39.27)	3.50 (34.93)	1.95 (45.24)	21.45 (55.16)	26.50 (44.90)	15.92 (33.52)
Purchase price of consumer (₹/kg)	42.55	46.34	50.42	113.43	52.59	45.10	420.03	597.28	396.09
Price spread (₹)	6.54	6.72	7.21	35.56	15.35	9.50	89.21	129.5	71.94
Total marketing cost (₹)	3.11	3.11	3.11	12.77	5.33	5.19	50.32	70.48	24.44
Total marketing margin (₹)	3.43	3.61	4.1	22.79	10.02	4.31	38.89	59.02	47.50
Index of marketing efficiency (Acharya's method)	5.51	5.89	5.99	2.18	2.42	3.75	3.71	3.61	4.54
Producer share in consumer's rupee	92.87	93.27	93.44	88.36	90.85	92.46	93.59	94.52	95.01

Note: 1. GST-Goods and Service Tax, 0%-Toned milk, Standardized milk and Full cream milk 5%-Flavoured milk, Buttermilk, Curd and Paneer. 12%-Ghee, Butter 2. Figures in parentheses indicates percentage to total marketing cost and total marketing margin

Table 3: Price spread and marketing efficiency of different milk products marketed through channel-III (Processor → Distributor/Dealer → Retailer → Consumer)

Particulars	Milk and milk products								
	Toned milk	Standardized milk	Full cream milk	Flavoured milk	Curd	Butter milk	Butter	Ghee	Paneer
Cost of production incurred by processing unit (₹/kg)	36.01	39.62	43.21	77.87	37.24	35.60	330.82	467.78	326.71
Profit margin of processing unit (₹/kg)	1.76 (33.12)	1.85 (32.40)	2.15 (34.68)	13.84 (42.66)	6.52 (52.08)	2.36 (35.54)	17.44 (32.21)	32.52 (35.55)	31.58 (51.11)
GST	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	4.77 (30.83)	2.27 (34.76)	1.99 (31.14)	42.12 (79.37)	60.48 (82.59)	18.04 (65.03)
Cost of distribution incurred by processing unit (₹/kg)	1.75 (40.51)	1.75 (40.51)	1.75 (40.51)	3.75 (24.24)	1.75 (26.80)	1.75 (27.39)	2.75 (5.18)	3.75 (5.12)	2.56 (9.23)
Purchase price of distributor dealer (₹/kg)	39.52	43.22	47.11	100.23	47.78	41.70	393.13	564.53	376.33
Cost incurred by distributor dealer (₹/kg)	1.36 (31.48)	1.36 (31.48)	1.36 (31.48)	4.25 (27.47)	1.31 (20.06)	1.45 (22.69)	5.45 (10.27)	6.25 (8.53)	3.84 (13.84)
Profit margin of distributor dealer (₹/kg)	1.67 (32.24)	1.76 (30.82)	1.95 (31.45)	8.95 (27.59)	3.50 (27.96)	1.95 (29.37)	21.45 (39.62)	26.50 (28.97)	15.92 (25.76)
Purchase price of Retailer agent (₹/kg)	42.55	46.34	50.42	113.43	52.59	45.10	420.03	597.28	396.09
Cost incurred by Retailer agent (₹/kg)	1.21 (28.01)	1.21 (28.01)	1.21 (28.01)	3.20 (20.69)	1.20 (18.38)	1.20 (18.78)	2.75 (5.18)	2.75 (3.76)	3.30 (11.90)
Profit margin of Retailer agent (₹/kg)	1.75 (33.78)	2.10 (36.78)	2.10 (33.87)	9.65 (29.75)	2.50 (19.97)	2.33 (35.09)	15.25 (28.17)	32.45 (35.48)	16.85 (27.47)
Purchase price of consumer (₹/kg)	45.51	49.65	53.73	126.28	56.29	48.63	438.00	632.48	416.24
Price spread (₹)	9.50	10.03	10.52	48.41	19.05	13.03	107.18	164.70	89.53
Total marketing cost (₹)	4.32	4.32	4.32	15.47	6.53	6.39	53.07	73.23	27.74
Total marketing margin (₹)	5.18	5.71	6.20	32.44	12.52	6.64	54.14	91.47	61.79
Index of marketing efficiency (Acharya's method)	3.79	3.95	4.11	1.61	1.96	2.73	3.08	2.84	3.65
Producer share in consumer's rupee	86.84	87.05	87.68	79.37	84.88	85.75	89.75	89.27	90.41

Note: 1. GST-Goods and Service Tax, 0%-Toned milk, Standardized milk and Full cream milk 5%-Flavoured milk, Buttermilk, Curd and Paneer. 12%-Ghee, Butter

2. Figures in parentheses indicates percentage to total marketing cost and total marketing margin

Table 4: Price spread and marketing efficiency of different milk products marketed through channel-IV (Processor → Depot → Wholesaler → Retailer → Consumer)

Particulars	Milk and milk products								
	Toned milk	Standardized milk	Full cream milk	Flavoured milk	Curd	Butter milk	Butter	Ghee	Paneer
Cost of production incurred by processing unit (₹/kg)	36.01	39.62	43.21	77.87	37.24	35.60	330.82	467.78	326.71
Profit margin of processing unit (₹/kg)	1.76 (23.07)	1.85 (22.67)	2.15 (24.86)	13.84 (30.58)	6.52 (38.17)	2.36 (25.13)	17.44 (22.75)	32.52 (26.85)	31.58 (37.43)
GST	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	4.77 (26.47)	2.27 (30.35)	1.99 (27.11)	42.12 (75.73)	60.48 (79.63)	18.04 (58.31)
Cost of distribution incurred by processing unit (₹/kg)	1.75 (33.21)	1.75 (33.21)	1.75 (33.21)	3.75 (20.81)	1.75 (23.40)	1.75 (23.84)	2.75 (4.94)	3.75 (4.94)	2.56 (8.27)
Purchase price of Depots (₹/kg)	39.52	43.22	47.11	100.23	47.78	41.70	393.13	564.53	376.33
Cost incurred by Depots (₹/kg)	1.36 (25.81)	1.36 (25.81)	1.36 (25.81)	4.25 (23.58)	1.31 (17.51)	1.45 (19.75)	5.45 (9.80)	6.25 (8.23)	3.84 (12.41)
Profit margin of Depots (₹/kg)	1.67 (21.89)	1.76 (21.57)	1.95 (22.54)	8.95 (19.77)	3.50 (20.49)	1.95 (20.77)	21.45 (27.98)	26.50 (21.88)	15.92 (18.87)
Purchase price of the Wholesaler (₹/kg)	42.55	46.34	50.42	113.43	52.59	45.10	420.03	597.28	396.09
Cost incurred by the Wholesaler (₹/kg)	1.21 (22.96)	1.21 (22.96)	1.21 (22.96)	3.20 (17.76)	1.20 (16.04)	1.20 (16.35)	2.75 (4.94)	2.75 (3.62)	3.30 (10.67)
Profit margin of the Wholesaler (₹/kg)	1.75 (22.94)	2.10 (25.74)	2.10 (24.28)	9.65 (21.32)	2.50 (14.64)	2.33 (24.81)	15.25 (19.90)	32.45 (26.79)	16.85 (19.97)
Purchase price of Retailer (₹/kg)	45.51	49.65	53.73	126.28	56.29	48.63	438.00	632.48	416.24
Cost incurred by the Retailer (₹/kg)	0.95 (18.03)	0.95 (18.03)	0.95 (18.03)	2.55 (14.15)	0.95 (12.70)	0.95 (12.94)	2.55 (4.58)	2.75 (3.62)	3.20 (10.34)
Profit margin of the Retailer (₹/kg)	2.45 (32.11)	2.45 (30.02)	2.45 (28.32)	12.32 (27.22)	4.56 (26.70)	2.75 (29.29)	22.54 (29.41)	29.65 (24.48)	22.58 (26.76)
Purchase price of consumer (₹/kg)	48.91	53.05	57.13	141.15	61.8	52.33	463.09	664.88	442.02
Price spread (₹)	12.9	13.43	13.92	63.28	24.56	16.73	132.27	197.1	115.31
Total marketing cost (₹)	5.27	5.27	5.27	18.02	7.48	7.34	55.62	75.98	30.94
Total marketing margin (₹)	7.63	8.16	8.65	45.26	17.08	9.39	76.65	121.12	84.37
Index of marketing efficiency (Acharya's method)	2.79	2.95	3.10	1.23	1.52	2.13	2.50	2.37	2.83
Producer share in consumer's rupee	80.80	81.47	82.46	71.01	77.31	79.69	84.89	84.90	85.14

Note: 1. GST-Goods and Service Tax, 0%-Toned milk, Standardized milk and Full cream milk 5%-Flavoured milk, Buttermilk, Curd and Paneer. 12%-Ghee, Butter

2. Figures in parentheses indicates percentage to total marketing cost and total marketing margin

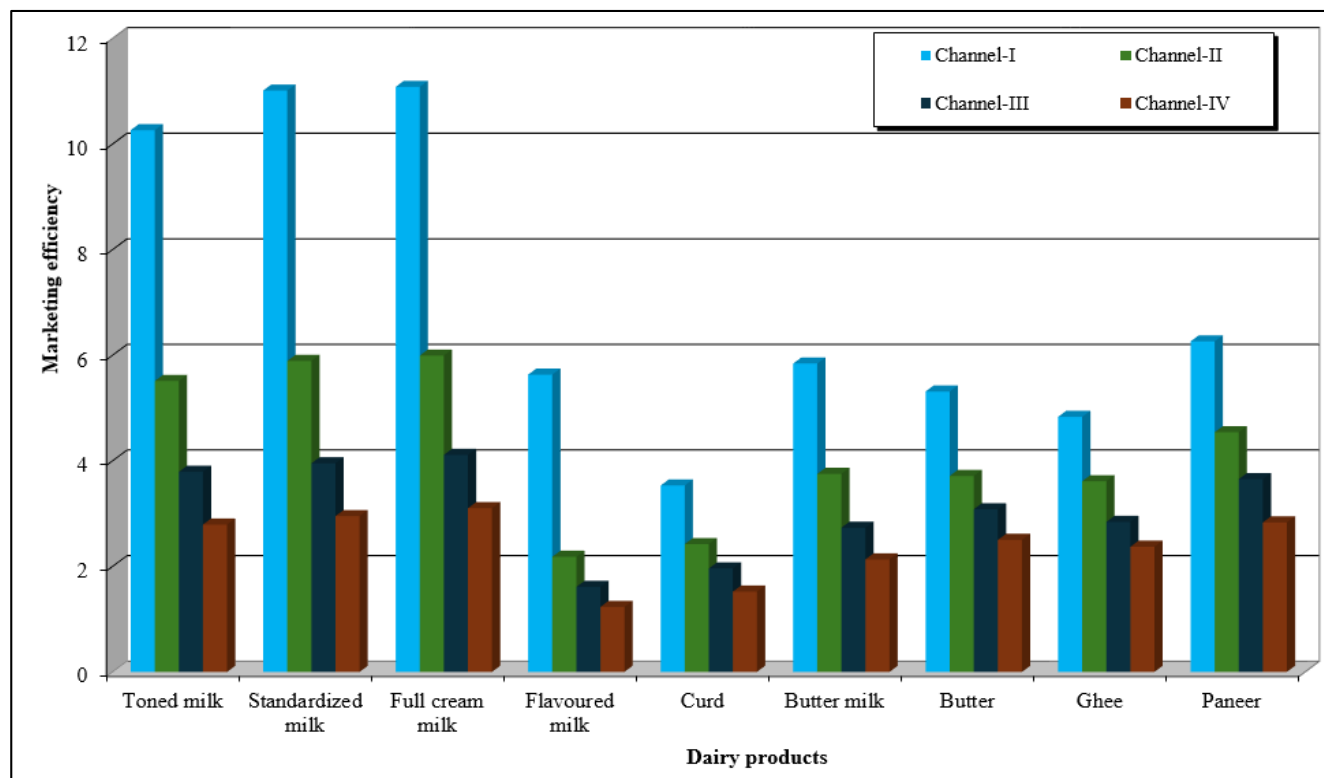


Fig 1: Marketing efficiency of different milk products marketed through various channels

Conclusion

The study highlights significant variations in marketing costs, margins, price spread and efficiency among milk and milk products marketed through different channels in the Kittur Karnataka region. Fluid milk products consistently demonstrated higher marketing efficiency due to lower processing costs, absence of GST and minimal value addition, whereas value-added products such as ghee, butter and paneer incurred higher costs and taxes, reducing their overall efficiency. Marketing channels with fewer intermediaries, especially direct sales from processors to consumers showed superior performance compared to multi-tiered channels where accumulated costs inflated consumer prices and widened the price spread. To improve efficiency, policymakers should promote shorter and better-organized marketing channels, encouraging value addition through technology support and tax rationalization for processed dairy products can improve profitability. Training programs for producers and processors on cost management, quality improvement and market linkages can further strengthen the dairy value chain in Karnataka.

References

- Acharya SS, Agarwal NL. Agricultural marketing in India. 5th ed. New Delhi: Oxford and IBH Publishing Co. Pvt. Ltd.; 2009.
- Anonymous. 20th livestock census-all India report. New Delhi: Department of Animal Husbandry and Dairying, Government of India; 2019. Available from: DAHD Official Website
- Anonymous. Annual milk production and per capita availability of milk, contribution of livestock to agriculture GDP. New Delhi: Ministry of Animal Husbandry, Dairying and Fisheries; 2024. Available from: DAHD Official Website
- Bhargav PS, Maurya MK, Paul A, Rani R. An economic analysis of marketing costs, price spread and marketing efficiency of milk in the Visakhapatnam district of Andhra Pradesh, India. *Asian J Agric Ext Econ Sociol.* 2022;40(10):307-317.
- Singh R, Chauhan AK. Marketing efficiency of milk and milk products in India: A channel analysis. *Indian J Agric Econ.* 2007;62(3):456-468.
- Chaudhary S, Supriya KR, Tripathi AK, Mishra P. Economics and marketing of dairy products in private and cooperative sectors of Uttarakhand. *Bull Environ Pharmacol Life Sci.* 2019;8(6):34-45.
- Deokate TB, Shengade PN, Jadhav KL. Marketing of milk in Amaravati district of Maharashtra. *Indian J Agric Econ.* 2007;62(3).
- Gill R, Sharma JP, Burman RR, Sharma RR, Kar A. Marketing channels, their effectiveness and perceived constraints in milk processing in NCR. *Indian J Anim Sci.* 2016;86(1):82-88.
- Kaur H, Kaur I, Singh VP, Wakchaure NS. Marketing efficiency of value added milk products produced at farm level in Punjab state. *Int J Livest Res.* 2020;10(9):54-61.
- Kumar A, Staal SJ. Is traditional milk marketing and processing viable and efficient? An empirical evidence from Assam, India. *Q J Int Agric.* 2011;49(3):213-225.
- Ohlan R. Efficiency and total factor productivity growth in Indian dairy sector. *Q J Int Agric.* 2013;52(1):51-77.
- Rangasamy N, Dhaka JP. Marketing efficiency of dairy products for co-operative and private dairy plants in Tamil Nadu-A comparative analysis. *Agric Econ Res Rev.* 2018;21(2):235-242.
- Rebasiddanavar RM, Relekar SP, Doni MM, Vajramma B. Optimizing dairy marketing in Karnataka, India: Analyzing cost, efficiency and price spread across channels. *J Exp Agric Int.* 2024;46(9):500-510.