Determinants of Preference of Milk and Milk Products : The Case of Rural and Urban Areas in Kanchipuram District of Tamil Nadu

** S. Rameshkumar*
*** A. Vikraman*

Abstract

This paper attempted to examined the factors that influenced the decision of rural as well as urban consumers of Kanchipuram District of Tamil Nadu in the purchase of milk and milk products and thus tried to bring to fore the similarities, if any, in such decisions. The primary data collected from a sample size of 360 respondents selected through the convenient sampling technique were put to a microscopic analysis by employing the percentage analysis, chi-square test, and factor analysis approach. The results showed that among the various factors, the product - oriented factor, which included the variables like high quality, affordable price, taste, aroma, thickness, availability in required quantity, and no harmful effects had a greater influence in determining the preference of the respondents towards milk and milk products. However, no significant difference in the factors influencing the purchase decision of milk by the consumers of both the areas was traceable and a significant difference was found in the factors influencing their purchase decision of milk products. As the milk consumers in the study area were very much concerned about the product oriented factors at the time of purchase of milk and milk products, utmost care and attention of the milk producers and distributors on these factors would certainly ensure maximization of profitability by exploiting the potential still untapped in this industry.

Keywords : **Operation Flood, milk derivatives, value added versions, non-branded milk, modern retail formats**

Paper Submission Date : March 21, 2017 ; Paper sent back for Revision : August 12, 2017 ; Paper Acceptance Date : January 19, 2018

India is predominantly an agrarian society where the dairy industry plays an important role in the socioeconomic development of the country. Dairying is the unfailing source of livelihood for millions of small and marginal farmers and landless labourers here. Dairy farming occupies a notable place in the agricultural economy of India and milk and milk products are the second largest contributor to gross national product (Choodambigai, 2011). It is pertinent to note that India's milk production has become an important secondary source of income for 70 million rural households engaged in dairying (Department of Economic Affairs, Ministry of Finance, 2015). Though milk is an important and integral part of the Indian food system, India of the post-independence era presented a gloomy picture as there was a deficiency in the production of milk. The yawning gap between demand and production of milk urged the Government of India (GOI) to launch a programme known as 'Operation Flood'. The resounding success of Operation Flood transformed India into not only a self-sufficient country in milk production, but also a marginal exporter.

Today, India is the largest producer of milk and the country's milk production increased from around 20 million tonnes in 1960s to 121.50 million tonnes in 2011 (Twelfth Five Year Plan, Tamil Nadu, 2012-17) which increased to 137.97 million tonnes in 2013-14 and reached a record level of 146.31 million tonnes in 2014-15 (Jadhav, 2016).

* *Assistant Professor,* Department of Commerce, School of Commerce and Business Management, Central University of Tamil Nadu, Thiruvarur - 610 005, Tamil Nadu. E-mail: proframeshtcm@gmail.com
** *Lecturer in Commerce and Management,* Sri Sankara Arts and Science College, Enathur - 631 561, Kanchipuram, Tamil Nadu. E-mail: kanchiviki@gmail.com

India continues to top the list of the major milk producing countries in the world followed by the USA, China, Pakistan, and Brazil. India is not only the largest producer but also the largest consumer of milk and milk products in the world. India produces approximately 17% of the world's total dairy production and consumes virtually all of this production. The consumption of milk and milk products is a part and parcel of everyday life of Indians. Over the last several years, the demand for dairy products has shown an upward trend. Increase in income with growing urbanization is sure to boost demand for milk at a faster rate and is estimated to reach 240 million tonnes in 2025 (Ruperal, 2016). Further, value added versions like ghee, butter, yoghurt, paneer, cheese, flavoured milk, ice-cream, milk powder, and UHT processed milk are making the industry most attractive and profitable, which naturally leads to hectic competition among the players in the milk industry to exploit the huge potential for high profitability. For this, the producers or distributors are expected to have a thorough knowledge of the factors influencing the customers' decision on the purchase of their products.

In those days, the consumers had only a limited choice of milk and milk products which they could get from the neighbourhood stores only. The rural people were forced to consume only unbranded and unpacked milk and milk products because of inadequate and improper infrastructural facilities. The emergence of modern retail formats now has changed the way milk consumers are served as they enable the retailers to market dairy products, which could not be routed in the past through traditional retail shops for want of infrastructural facilities. As a result, the present rural market is also flooded with different kinds of branded milk and milk products, which certainly offer a wider choice of products to the rural consumers which, in turn, takes them to the equal level with their urban counterparts in making a choice of milk and milk products. Under these circumstances, it is pertinent to understand whether the emergence of modern retail stores has made any significant impact on consumers' preference of milk and milk products.

It is but natural to examine whether there is any difference in the factors that motivate the rural and urban consumers to purchase a particular brand of milk and milk products. In this context, the present study attempts to analyze the determinants of preference of milk and milk products of both the rural and urban consumers in Kanchipuram District of Tamil Nadu as it is one of the largest milk producing and consuming districts in Tamil Nadu.

Review of Literature

The analysis of the nature of consumer demand for dairy products in Canada showed that butter showed the greatest response to price change (Hassan & Ram Sahi, 1976). Quality and price were found to be the two primary factors that influenced consumers' preference of Aavin Milk and milk products in Royapettah and Mylapore in Chennai, the capital of Tamil Nadu (Shanthi, 1987). The striking features that attracted consumers of German Federal Republic towards pasteurized milk were freshness and nice taste (Burmann, 1987). The quality of milk marketed by Vijaya Co-operative Dairy in Hyderabad was assessed by its fat content, colour and taste, thickness, freshness, hygiene, curd formation, and flavour (Raju, 1992).

Price was an important factor in influencing the purchase of milk of the organized sector in the Southern region (Bangalore City) which was not so in the Northern region (Chandigarh City) (Jain & Sharma, 1999). Consumers' acceptance of organic dairy products is mainly determined by credible information, knowledge, awareness, and existing values. The fact that quality of milk marketed by different marketing agencies in Andhra Pradesh was assessed primarily on the basis of fat content (Sharma, 2000) was reiterated by the milk consumers of Rajamundry of Andhra Pradesh . The consumers of both Tiruchirappalli and Coimbatore Districts preferred Aavin Milk to other brands because of quality and easy availability (Selvarani, 2004) ; while Chinese urban consumers in Beijing and Shanghai valued freshness, safety, and taste (Fuller, Beghin, Hu, & Rozelle, 2004) and those in the most populated areas of Taiwan valued the taste, flavor, fat content, calcium content, and certified labels while purchasing fluid milk products (Hsu & Lin, 2006).

Taste, brand, and price were mainly considered by the students of the Nicolaus Copernicus University in Torun as well as those at the Warminsko - Mazurski University in Olsztyn while purchasing yoghurt (Niezurawski, 2006). The factors like promotion, price, availability, attractive packaging, and quality were the key determinants of dairy products' choice among the individual and institutional consumers in Chitungwiza and Harare urban markets in Zimbabwe (Chimboza & Mutandwa, 2007).

Income and profession do affect the choice of branded or unbranded milk ; whereas, factors like packaging, price, nutrition, taste, and the like do not affect the choice of a particular brand among the respondents of two Indian cities, namely, Patiala and Ludhiana (Virdi, Bhatnagar, & Kaur, 2007). Preference of unpacked fluid milk was positively related to household size, income, and age of the household head, and negatively to educational level and the status of female household of the family in Turkey (Akbay & Tiryaki, 2008). Personal and interpersonal values were found to be the main motivators behind the purchase of milk products by the consumers from Hazara division in Pakistan (Humayun & Hasnu, 2009). Consumers from three major cities of Pakistan, namely, Lahore, Faisalabad, and Multan mostly perceived packed milk relatively better because of various quality attributes, namely, good quality, hygiene, nutritive value, and packing (Ayyaz, Badar, & Ghafoor, 2011). Of the different milk brands (Amul Taaza, Central Dairy, Dairy Fresh, Prithvi Dariy, Purabi Dairy, and Nandhini) available in the market, Purabi was the most preferred one among the consumers belonging to selected zones (Dispur, Ulubari, Zoo Road, Central, Lukhora, and West Zone of Guwahati in Assam). Peer group endorsement mainly influenced the consumers' preference towards processed liquid packed milk (Kumar & Gogoi, 2011).

The cost of the products and the convenience in shopping were the main reasons behind the purchase and consumption of Mulkanoor brand milk in Karimnagar District of Andhra Pradesh (Rajendra Prasad & Ramchander Rao, 2012). The market - related factors such as availability, advertisement, product quality, and variety & price were the main reasons for the change in consumers' purchase decision of milk and milk products. There is no correlation between the demographic characteristics of the consumers and change in purchase decision of milk and milk products (Ingavale & Thakar, 2012). Product brand, advertisement, and country of origin were significant predictors of consumer-buying behaviour towards imported milk powder in Ho Chi Minh City (Tuan, Phuong, Ngoc, & Mai, 2013). While the price drove a vast majority of rural consumers towards the purchase of Nanjil brand milk and milk products, easy and abundant availability and quality drove a vast majority of urban consumers towards the purchase of Aavin brand milk and milk products in Kanyakumari District of Tamil Nadu (Sivasankaran & Sivanesan, 2013). Price and quality were the driving forces behind the choice of Aavin milk by the consumers belonging to Bharat Heavy Electricals Limited (BHEL) Township, Tiruchirappalli (Jothi Mary, 2013).

Quality, price, and availability are the key factors that influenced the buying behaviour of consumers in Udumalpet Taluk in Tiruppur District of Tamil Nadu as well as those of Pondicherry on the selected brands of milk products (Ananda Kumar & Babu, 2014 ; Rengarajan, Sathya, & Gowthami, 2014). Variables like nutritional information, packaging graphics, and country of origin were highly and positively correlated with consumer buying behaviour of milk and milk products in Karachi (Adam & Ali, 2014). Quality, price, availability, and retailers were the most important attributes that motivated the customers to purchase branded milk in the vicinity of Pauri, Rudraprayag, and Chamoli districts of Uttarakhand (Jamwal & Pandey, 2014). The factors such as food safety, assurance, food poisoning experience, information about food safety standards, education level, and income had significant positive effects on consumers' purchase intention towards safety labeled dairy products among the urban households in Black Sea Region of Turkey (Bozoglu, Huang, Florkowski, & Topuz, 2014).

The place of buying milk had the highest effect among factors on the probability of milk purchasing of rural households belonging to different areas (Hanoi, Thai Binh, and Hai Duong) in Northern Vietnam (Trung, Giam, Hai, Thao, Hang, Son, & Linh, 2014). Consumers from rural and semi-rural areas of Pollachi Taluk of Coimbatore District in Tamil Nadu bought Aavin milk for its quality and taste (Ahila & Boopathi, 2015). Consumers in Kalyan City preferred non-branded milk because it is cheaper than packed milk and was delivered at their doorstep with no

additional cost. Further, branded milk was preferred because of its guarantee of quality, long shelf life, packaging, and place of purchase (Dutt & Mallah, 2015). Consumers of three major towns and six villages of Chittoor District in Andhra Pradesh seemed to pay attention to the cholesterol level (fat content) while purchasing milk and ghee (Sudheer, Karthik, & Mahalakshmi, 2015). All packaging elements (right choice of packaging colour, background image, wrapper design, innovative ideas) played an important role in attracting consumer's attention and interest towards Mother Dairy's products in the districts of Howrah, Hooghly, and Burdwan in the state of West Bengal (Ghosh, 2016).

Though a number of studies have been separately undertaken on consumer behaviour towards different brands of milk and milk products, the studies that have combined both the milk and milk products only are few. Still, less are the studies that have attempted to compare the attitude of the consumers of milk and milk products in rural and urban areas. Hence, this study was conducted to address this research gap.

Methodology

This paper is mainly based on primary data collected through a scientifically developed interview schedule which was subjected to extensive pre-testing and refinement through a pilot study among 40 respondents. Further, the required data were collected from a sample size of 360 respondents from April - September 2014. Of the 10 taluks of Kanchipuram District, the three study areas, namely, Kanchipuram, Chengalpattu, and Maduranthakam were chosen for this study as these top the list in terms of both production and consumption of milk and also house more number of distribution networks for milk and milk products. The selected taluks were further bifurcated into rural and urban areas on the basis of the information available under the 2011 Census.

As the present study primarily aims at examining whether there exist any significant differences in the factors influencing the preference of the consumers of two different locations (rural and urban areas) towards milk and milk products, two rural and two urban areas were selected from each taluk with 30 respondents from each of them. Thus, a total of 360 respondents were selected from the study area by adopting convenient random sampling technique. The collected data were critically examined with the help of statistical tools such as percentage analysis, chi - square test, and factor analysis approach. The Table 1 presents the details regarding the taluks, rural and urban areas of each taluk, and number of respondents selected for this study.

Table 1. Sample Size of the Study

Name of the Taluk	Rural Area	Sample Size	Urban Area	Sample Size	Total
Chengalpattu	Melamaiyur	30	Chengalpattu	30	60
	Vallam	30	Maraimalainagar	30	60
Kanchipuram	Damal	30	Kanchipuram	30	60
	Ekanampettai	30	Sevilimedu	30	60
Maduranthakam	Chithamur	30	Acharapakkam	30	60
	Mamandur	30	Maduranthakam	30	60
Total		**180**		**180**	**360**

Hypotheses

↳ **H1 :** There is no significant difference among the respondents of two different areas with regard to factors influencing the preference of milk.

↳ **H2 :** There is no significant difference among the respondents of two different areas with regard to factors influencing the preference of milk products.

Analysis and Results

(1) Socioeconomic Profile of the Respondents : It is an established fact that the consumers' behaviour is influenced by a number of factors, which are classified into different groups (Table 2). The most important group

Table 2. Socioeconomic Profile of the Respondents

Variable	Category	Rural		Urban		Total	
		NOR	%	NOR	%	NOR	%
Gender	Male	62	34.4	71	39.4	133	36.9
	Female	118	65.6	109	60.6	227	63.1
	Total	**180**	**100**	**180**	**100**	**360**	**100**
Age	Less than 20 Years	13	7.2	20	11.1	33	9.2
	20 to 30 Years	29	16.1	35	19.4	64	17.8
	30 to 40 Years	82	45.6	66	36.7	148	41.0
	40 to 50 Years	46	25.6	44	24.4	90	25.0
	Above 50 Years	10	5.6	15	8.3	25	7.0
	Total	**180**	**100**	**180**	**100**	**360**	**100**
Marital Status	Single	37	20.6	51	28.3	88	24.4
	Married	143	79.4	129	71.7	272	75.6
	Total	**180**	**100**	**180**	**100**	**360**	**100**
Type of Family	Nuclear Family	117	65	148	82.2	265	73.6
	Joint Family	63	35	32	17.8	95	26.4
	Total	**180**	**100**	**180**	**100**	**360**	**100**
Educational Qualification	Illiterates	19	10.6	6	3.3	25	7
	School Education	62	34.4	33	18.3	95	26.3
	Undergraduates	44	24.4	45	25	89	24.7
	Postgraduates	24	13.3	43	23.9	67	18.6
	Technical Education	18	10.1	24	13.4	42	11.7
	Professionals	13	7.2	29	16.1	42	11.7
	Total	**180**	**100**	**180**	**100**	**360**	**100**
Occupation	Government Employees	11	6.1	16	8.9	27	7.5
	Private Employees	42	23.3	67	37.2	109	30.3
	Self Employed	15	8.4	17	9.4	32	8.9
	Professionals	7	3.9	28	15.6	35	9.7
	Agriculturists	24	13.3	11	6.1	35	9.7
	Homemakers	66	36.7	36	20	102	28.3
	Others	15	8.3	5	2.8	20	5.6
	Total	**180**	**100**	**180**	**100**	**360**	**100**
Income Level	Below ₹ 15000	51	28.3	35	19.4	86	23.9
(Per Month)	₹ 15000 to ₹ 30000	85	47.3	63	35	148	41.1
	Above ₹ 30000	44	24.4	82	45.6	126	35
	Total	**180**	**100**	**180**	**100**	**360**	**100**

Note : NOR- Number of Respondents

is the socioeconomic profile. As far as the milk and milk products are concerned, consumers' preference, consumption pattern, consumers' opinion on satisfaction, and the consumers' switch over to other products are largely influenced by the socioeconomic background of the consumers in the market. The Table 2 presents the socioeconomic profile of the sample respondents in the study area.

The Table 2 shows that a majority of the respondents in both the areas belonged to the age group of 30 - 40 years. It is observed that most of the respondents were women in both the locations of the study area. A majority of the respondents (73.6%) belonged to nuclear family, while only one-fourth lived in a joint family. The number of respondents in the joint family category, however, was more in the rural areas than in the urban areas. It is also noted that the number of respondents who completed higher education were more in the urban areas than in the rural areas. The number of illiterates and those who had completed only school education were more in rural areas. A majority of the sample respondents in the study area were private employees and again they were found to be more in urban areas, and in the case of rural areas, the agricultural labourers were more. A majority (41.1%) of the sample respondents in the study area earned between ₹ 15,000 and ₹ 30,000 every month. Further, it is clear that the number of sample respondents who earned more than ₹ 30, 000 per month was higher in urban areas than in the rural areas.

(2) Preference of Milk and Milk Products : The area-wise comparison shows that the respondents who preferred fresh milk were more in rural areas while those who preferred packed milk were high in the urban areas. Nearly three fourths of the respondents preferred to have fresh cow milk. Nearly half of the 312 respondents who opted for packaged milk preferred standardized milk closely followed by those (44.2%) who liked toned milk and the remaining 7.7% went in for full cream milk and full cream milk was the least preferred in both rural and urban areas. The most preferred branded milk in the study area is Arokya followed by Aavin and Cavin's. In the rural areas, majority of the sample respondents preferred Arokya, while in the urban areas, the most preferred brand is Aavin. The least preferred brand in rural areas is Thirumala and in urban areas, it is Komatha.

Rural respondents outnumbered urbanites in the consumption of milk powder, ice cream, and milk sweets, but the urbanites overtook their rural counterparts in the consumption of other milk products like ghee, butter, buttermilk, curd, flavored milk, and paneer. Amul tops the list both in terms of preference and consumption of milk powder by the sample respondents in both of the study areas. Most preferred and most consumed brand of ice cream in both the areas is Arun. The most preferred and most consumed brand of ghee in rural areas is Aavin, while in urban areas, the most preferred brand of ghee is AAC, but most consumed is Udyakrishna ghee ; 71.8% of the respondents consumed home-made buttermilk which takes home-made buttermilk to the top of the list in terms of both the most preferred and most consumed in both the rural and urban areas.

The most preferred and actually consumed curd by nearly one third of the respondents from both the areas of the study is home-made curd. As far as milk sweets are concerned, Amul is the most preferred brand in both the rural and urban areas. A close watch over the actual consumption of flavoured milk clearly reveals that Cavin's is the most consumed brand among the rural respondents, and the unbranded variety is the most consumed item among the respondents of the urban areas ; 57% of the consumers in the study area who preferred only branded paneer consumed Hatsun paneer.

(3) Determinants of Preference of Milk and Milk Products : Generally, the consumers' preference of a particular product is influenced by multiple factors from psychological and geographical to socio and economic ones. As the consumers are the center for any business, it is inevitable for the manufacturers or service providers to understand and analyze the factors influencing consumers' preference of a particular product. Hence, here, an attempt is made to identify the determinants of respondents' preference of milk and milk products. For this purpose, we developed 20 statements based on the literature review and interaction with experts in this field. The factor analysis approach was employed to classify the statements meant to identify the determinants of consumers' preference and to

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.822
Bartlett's Test of Sphericity	Approx. Chi-Square	4251.878
	Degree of Freedom	190
	Significant	.000

Table 4. Correlation Matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Correlation	1	1.000	.706	.697	.686	.693	.693	.708	-.066	-.077	-.031	-.042	-.029	-.053	-.036	-.094	-.067	-.046	.104	.060	.050
	2	.706	1.000	.522	.530	.456	.506	.502	.003	-.057	-.011	.059	.051	-.070	-.075	-.088	-.087	-.087	.154	.068	.119
	3	.697	.522	1.000	.524	.469	.506	.520	-.053	-.049	.000	-.050	-.014	-.069	-.112	-.095	-.097	-.071	.096	.072	.055
	4	.686	.530	.524	1.000	.504	.433	.472	-.037	-.058	-.023	-.043	-.010	-.117	-.080	-.118	-.114	-.084	.063	.088	.007
	5	.693	.456	.469	.504	1.000	.507	.450	-.024	-.030	.024	-.037	-.038	-.060	-.068	-.094	-.086	-.039	.116	.070	.031
	6	.693	.506	.506	.433	.507	1.000	.477	-.086	-.116	-.037	-.042	-.093	.008	-.040	-.035	-.016	.044	.086	.039	.059
	7	.708	.502	.520	.472	.450	.477	1.000	.015	.010	.005	.057	.018	-.063	-.011	-.127	-.030	-.082	.025	-.043	-.014
	8	-.066	.003	-.053	-.037	-.024	-.086	.015	1.000	.736	.722	.703	.706	.108	.093	.084	.089	.013	-.039	-.048	-.017
	9	-.077	-.057	-.049	-.058	-.030	-.116	.010	.736	1.000	.535	.525	.459	.084	.084	.071	.055	.067	-.004	-.026	-.012
	10	-.031	-.011	.000	-.023	.024	-.037	.005	.722	.535	1.000	.539	.558	.119	.109	.052	.084	.063	-.051	-.083	.022
	11	-.042	.059	-.050	-.043	-.037	-.042	.057	.703	.525	.539	1.000	.489	.133	.079	.072	.134	.059	-.032	-.033	.014
	12	-.029	.051	-.014	-.010	-.038	-.093	.018	.706	.459	.558	.489	1.000	.033	.046	.058	.027	-.036	.056	.044	.086
	13	-.053	-.070	-.069	-.117	-.060	.008	-.063	.108	.084	.119	.133	.033	1.000	.759	.719	.765	.748	-.084	-.059	.022
	14	-.036	-.075	-.112	-.080	-.068	-.040	-.011	.093	.084	.109	.079	.046	.759	1.000	.518	.614	.540	-.056	-.031	.004
	15	-.094	-.088	-.095	-.118	-.094	-.035	-.127	.084	.071	.052	.072	.058	.719	.518	1.000	.571	.546	.000	-.009	.042
	16	-.067	-.087	-.097	-.114	-.086	-.016	-.030	.089	.055	.084	.134	.027	.765	.614	.571	1.000	.567	-.088	-.053	.030
	17	-.046	-.087	-.071	-.084	-.039	.044	-.082	.013	.067	.063	.059	-.036	.748	.540	.546	.567	1.000	-.037	-.005	.029
	18	.104	.154	.096	.063	.116	.086	.025	-.039	-.004	-.051	-.032	.056	-.084	-.056	.000	-.088	-.037	1.000	.699	.710
	19	.060	.068	.072	.088	.070	.039	-.043	-.048	-.026	-.083	-.033	.044	-.059	-.031	-.009	-.053	-.005	.699	1.000	.539
	20	.050	.119	.055	.007	.031	.059	-.014	-.017	-.012	.022	.014	.086	.022	.004	.042	.030	.029	.710	.539	1.000

identify the factors which have high level of influence over the consumers' decision towards the purchase of milk and milk products. Factor analysis is a method used to transform a set of variables into small number of linear composites which have maximum correlation with original variables. The variables considered under factor analysis include high quality, affordable price, taste, flavour, thickness, availability in required quantity, no harmful effects, replacement of defective products, satisfactory service of the supplier, home delivery of products, gifts and offers, shelf display, brand awareness, packing quality, quality of packing material, hygienic condition at the place of purchase, label information, easy availability, brand loyalty, and recommendation through word of mouth. The five point scaling technique was employed to arrive at the opinions of the respondents on each statement.

Bartlett's test of sphericity and Kaiser-Meyer-Olkin measure of sample adequacy are used for the appropriateness of the factor model. Bartlett's test is used to test the null-hypothesis, that is, to find whether the variables are not correlated. As the value of KMO statistics is 0.822 (Table 3), the factor analysis is considered as an appropriate technique for analyzing the correlation matrix.

Simple correlation between the variables and the factors was studied with the help of factor matrix which

Table 5. Total Variance Explained

Factors	Initial EigenValues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.621	23.103	23.103	4.621	23.103	23.103	4.343	21.714	21.714
2	3.640	18.198	41.300	3.640	18.198	41.300	3.573	17.867	39.580
3	3.120	15.598	56.898	3.120	15.598	56.898	3.424	17.121	56.701
4	2.288	11.441	68.339	2.288	11.441	68.339	2.328	11.639	68.339
5	.645	3.226	71.565						
6	.612	3.062	74.627						
7	.582	2.911	77.538						
8	.536	2.682	80.220						
9	.522	2.608	82.828						
10	.475	2.377	85.205						
11	.454	2.270	87.474						
12	.434	2.170	89.645						
13	.401	2.006	91.651						
14	.395	1.973	93.624						
15	.358	1.789	95.414						
16	.323	1.614	97.028						
17	.220	1.102	98.130						
18	.141	.705	98.835						
19	.120	.600	99.435						
20	.113	.565	100.000						

Table 6. Rotated Component Matrix

Sl.No	Factors	Components			
		1	2	3	4
1	High Quality	.948	-.017	-.041	.029
2	Affordable Price	.765	-.059	.037	.105
3	Good Taste	.768	-.066	-.023	.045
4	Aroma	.749	-.091	-.022	.019
5	Thickness	.738	-.042	-.011	.044
6	Availability in Required Quantity	.751	.051	-.091	.030
7	No Harmful Effects	.757	-.037	.052	-.078
8	Replacement of Defective Products	-.026	.041	.943	-.034
9	Excellent Service of the Supplier	-.056	.042	.786	-.015
10	Home Delivery of Products	.009	.064	.811	-.045
11	Gifts and Offers	.003	.080	.786	-.021
12	Shelf Display	-.011	-.019	.782	.096
13	Brand Awareness	-.029	.950	.068	-.033
14	Packing Quality	-.034	.810	.064	-.026
15	Quality of Packing Material	-.087	.787	.041	.043
16	Hygienic Place of Purchase	-.049	.835	.054	-.036
17	Label Information	-.027	.811	-.010	.009
18	Easy Availability	.084	-.051	-.008	.917
19	Brand Loyalty	.032	-.029	-.034	.847
20	Recommendation through word of mouth	.029	.047	.029	.854

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization

Table 7. Group of Variables

Factor	Group of Variables	Factor Name
I	High Quality	
	Affordable Price	
	Taste	**Product Oriented**
	Aroma	
	Thickness	
	Availability in Required Quantity	
	No Harmful Effects	
II	Brand Awareness	**Lifestyle**
	Quality of Packing Material	
	Packing Quality	
	Hygienic Condition at the Place of Purchase	
	Label Information	
III	Replacement of Defective Products	
	Satisfactory Service of the Supplier	**Promotions**
	Home Delivery of Products	
	Gifts and Offers	
	Shelf Display	
IV	Brand Loyalty	
	Recommendation through Word of Mouth	**Trust**
	Easy Availability	

contains the factor loadings and the factors. The Table 4 shows the correlation matrix of the factors chosen for the present study. The Table 4 shows the correlation matrix constructed on the basis of ratings. The analytical process is based on the matrix of correlation between the variables. Valuable insights can be gained from an examination of this matrix. For the factor analysis to be proper, the variables have to be correlated. If the correlation between all the variables is small, factor analysis may not be appropriate. In this inter correlation matrix, the correlation between all the variables are in good fit ; hence, the factor analysis may be appropriate.

The Table 5 shows that the Eigen value for a factor indicates total variance attributed to the factor. Factor 1 has a variance of 4.621 which is 23.103 % of the total variance ; similarly, the second and third factors have variances of 3.640 and 3.120, respectively which are cumulatively 56.898 % of the total variance. The fourth factor situation shows 2.288 variance and it is found that fourth factor extracted together accounts for 68.34 % of the variance.

(4) Determination of Factors Based on Eigen Value : The Table 6 reveals the factors that have been identified with different values. The Table 7 not only shows the factor names, but also reveals the number of variables grouped under each factor name. As the variables quality, reasonable price, taste, aroma, thickness, availability in required quantity, and no harmful effects have loadings of 0.948, 0.765, 0.768, 0.749, 0.738, 0.751, and 0.757, respectively they are clubbed into a single factor called 'Product Oriented' (Factor I). Factor II consists of the variables - brand awareness, packing quality, packing material, hygienic place, and label information with high loadings of 0.950, 0.810, 0.787, 0.835, and 0.811, respectively and the clubbing of these five variables constitutes 'Lifestyle'. The variables, namely, replacement, good service, home delivery, gifts and offers, and shelf display have high loadings of 0.943, 0.786, 0.811, 0.786, and 0.782, respectively and the combination of these variables is termed as

Table 8. Relationship Between Location and Determinants of Preference

Particulars	Value	*Df*	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
H1: Location and Determinants of Preference of Milk.					
Pearson Chi-Square	.098(b)	1	.754		
Continuity Correction(a)	.043	1	.836		
Likelihood Ratio	.098	1	.754		
Fisher's Exact Test				.833	.418
Linear-by-Linear Association	.098	1	.755		
No. of Valid Cases	360				
H2: Location and Determinants of Preference of Milk Products.					
Pearson Chi-Square	4.039(b)	1	.044		
Continuity Correction(a)	3.625	1	.057		
Likelihood Ratio	4.047	1	.044		
Fisher's Exact Test				.057	.028
Linear-by-Linear Association	4.028	1	.045		
No. of Valid Cases	360				

'Promotions' (Factor III). The variables, namely, easy availability, brand loyalty, and recommendation which have high loadings of 0.917, 0.847, and 0.854, respectively are clubbed into a single factor called 'Trust' (Factor IV). Though initially, 20 variables have been identified for analyzing the determinants of preference of milk and milk products, the factor analysis has reduced them to four important factors. The derived factors are Product Oriented, Lifestyle, Promotions, and Trust. Factor I (Product Oriented) has an Eigen value of 4.621 and it explains 23.10 % of the variation. The Eigen values of the Factor II (Lifestle), Factor III (Promotions), and Factor IV (Trust) are found to be 3.64, 3.12, and 2.29, respectively. The total variation accounted for by these four factors is 68.34%, which is found to be satisfactory, and hence, it benefits the validity of the study.

(5) Relationship Between Location and Determinants of Preference : In order to examine whether there is any significant difference in the determinants of preference of milk and milk products by the sample respondents belonging to the different study locations, a hypothesis has been formulated as already mentioned and examined with chi-square test and the computed results are presented in the Table 8.

While H1 is accepted as there is no significant difference among the respondents of the two different locations with regard to the factors influencing the purchase decision regarding milk, the H2 is rejected due to the significant difference among them in terms of the factors influencing the choice of milk products.

Discussion and Conclusion

The changing trends in India's dairy industry have not only enhanced the availability of various brands of milk and milk products, but have also paved the way for the milk producers and distributors to exploit the available huge potential. As winning new customers or retaining the existing ones or both pose a challenging problem to the modern businessmen in the face of a highly competitive environment, the milk producers and distributors are expected to have a thorough knowledge of the factors influencing the customers' decision regarding the purchase of milk and milk products.

A threadbare analysis of the acquired data to find whether there is any significant variation in the determinants of choice of milk and milk products by the consumers in rural and urban areas in Kanchipuram District of Tamil

Nadu sheds light on the fact that among the various factors, the Product Oriented factor, which includes the variables like high quality, affordable price, taste, aroma, thickness, availability in required quantity, and no harmful effects have a greater influence in determining the preference of the respondents towards milk and milk products ; whereas, there is no significant difference among the respondents of the two different locations with regard to the factors influencing their purchase decision of milk, and there is a significant difference between them with regard to the factors influencing their purchase decision of milk products. As milk consumers in the study area were very much concerned about the product oriented factor at the time of purchasing milk and milk products, utmost care and attention of the milk producers and distributors on these factors would certainly enhance their profitability by exploiting the potential still untapped in this industry.

Implications

The uniqueness of this study lies in its focus on both the rural and urban consumers in the study area. The outcome of the study, it is firmly hoped, would enlighten the milk producers and distributors on the factors which influence the consumers in general and their customers, in particular, in making a choice of a particular brand of milk and milk products. Further, it would enable them to know about the satisfaction levels of their customers on the use of their products which, in turn, would help them in designing and executing a suitable business strategy to win the customers' confidence in the years to come. Moreover, it is strongly believed that the outcome of the present study would help the policymakers and other authorities concerned to take appropriate policy decisions not only for the protection and welfare of the milk consumers in the market, but also for the overall development of various stakeholders directly and indirectly connected with the Indian milk industry.

Limitations of the Study and Scope for Further Research

Of the primary and secondary data on which this study is based, data were collected through direct personal interviews with a well-designed schedule. As most of the respondents in the study area did not maintain records to show the details of expenditure on buying milk and milk products and the frequency and quantum of milk products purchased, the present study suffers from a certain degree of recall bias. As the study has covered a very small sample when compared to the actual universe, the results of this study could be applied to different situations after taking care of the likely differences in the characteristics of the population.

The following are the areas that are open for further research in the field of dairy industry in India :

(i) Analysis of the attitude of the younger generation towards milk derivatives.

(ii) The impact of modern retail formats on the buying behavior of the consumers of milk and milk products.

(iii) Analysis of the problems and challenges encountered by the milk producers in the unorganized sector.

(iv) Measurement of the productivity of the milk producers of both the organized and unorganized sectors.

(v) Exploring the possibilities for the export of Indian milk and milk products.

(vi) Analysis of the factors inducing the customers' switchover to other brands of milk products.

References

Adam, M. A., & Ali, K. (2014). Impact of packaging elements of packaged milk on consumer buying behaviour. *International Conference on Marketing-IBAICM, Institute of Business Administration*, Karachi, pp.1 - 45.

Ahila, D., & Boopathi, C. (2015). Consumer behaviour on Aavin Milk and dairy products in Pollachi Taluk of Tamil Nadu. *International Journal of Commerce, Business and Management, 4* (6), 774 - 778.

Akbay, C., & Tiryaki, Y. G. (2008). Unpacked and packed fluid milk consumption patterns and preference in Turkey. *Agricultural Economics, 38* (1), 9 - 20.

Ananda Kumar, A., & Babu, S. (2014). Factors influencing consumer buying behavior with special reference to dairy products in Pondicherry State. *Abhinav International Monthly Refereed Journal of Research in Management and Technology, 3,* 65 - 73.

Ayyaz, S., Badar, H., & Ghafoor, A. (2011). Level and determinants of consumers' perception of packed milk in Pakistan. *Journal of Business and Economics, 3* (1), 60 - 76.

Bozoglu, M., Huang, C. L. L., Florkowski, W. J., & Topuz, B. K. (2014). Consumers' purchase intention towards safety labeled dairy products in the black sea region of Turkey. *Tarim Bilimleri Dergisi -Journal of Agricultural Sciences, 20,* 434 - 445.

Burmann, W. (1987). Consumer attitudes and behaviours with regard to liquid milk in the German Federal Republic. *World Agricultural Economics and Rural Sociology Abstract, 29* (1), p. 40.

Chimboza, D., & Mutandwa, E. (2007). Measuring the determinants of brand preference in a dairy product market. *African Journal of Business Management, 1* (9), S230 - S237.

Choodambigai, R. (2011). Economic profile of milk production in Coimbatore. *International Journal of Current Research, 3* (7), 260 - 263.

Department of Economic Affairs, Ministry of Finance, Government of India. (2015). *Economic survey 2014 -15*. New Delhi : Government of India.

Dutt, K., & Mallah, V. (2015). A study of consumers behaviour towards different milk-type in Kalyan City. *VEETHIKA - An Interdisciplinary International Research Journal, 1* (1), 37 - 44.

Fuller, F. H., Beghin, J. C., Hu, D., & Rozelle, S. (2004). *China's dairy market : Consumer demand survey and supply characteristics* (Staff Report 04-SR 99). Center for Agricultural and Rural Development, Iowa State University, pp. 1-44.

Ghosh, B. (2016). Impact of packaging on consumers' buying behaviour : A case study of Mother Dairy Kolkata. *Parikalpana - KIIT Journal of Management, 12* (1), 63 - 69.

Hassan, Z.A., & Ram Sahi, K. (1976). Consumer demand for dairy products in Canada. *Candian Journal of Agricultural Economics, 24* (2), 81 - 88.

Hsu, J. L., & Lin, Y. - T. (2006). Consumption and attribute perception of fluid milk in Taiwan. *Nutrition and Food Science, 36* (3), 177 - 182.

Humayun, K., & Hasnu, S. A. F. (2009). An analysis of consumer values, needs and behaviour for liquid milk in Hazara, Pakistan. *Proceedings of the 2ndCBRC, Lahore, Pakistan,* 14th November, 2009.

Ingavale, D., & Thakar, H.M. (2012). A study of customer preferences for milk and milk products. *Indian Journal of Marketing, 42* (8), 19 - 26.

Jadhav, R. (2016, February 11). India leads in milk production. *The Times of India.* Retrieved from http://timesofindia.indiatimes.com/city/pune/India-leads-in-milk-production/articleshow/50948543.cms

Jain, D.K., & Sharma, A.K. (1999). Consumer opinion for purchases of milk and milk products. *Dairy Science, 61* (10), 13 - 18.

Jamwal, M., & Pandey, A. C. (2014). Consumer behaviour towards cooperative milk societies : A study on measuring customer satisfaction of 'Aanchal' Milk (a member milk union of UCDF Limited). *IBWL 2020: Needs and Strategies - A Management Perspective, Conference Paper,* January 2014, pp. 1 - 11.

Jothi Mary, C. (2013). A study on consumer behavior of Aavin Milk in BHEL Township : Trichy. *International Journal of Advance Research in Computer Science and Management Studies, 1* (4), 34 - 39.

Kumar, B., & Gogoi, M. (2011). A case study on consumers' buying behaviour and brand loyalty with regard to processed liquid packed milk in Guwahati, Assam. *Indian Journal of Marketing, 41*(5), 48 - 52.

Niezurawski, L. (2006). Determinants of customer satisfaction on the markets of selected dairy products. *Polish Journal of Food and Nutrition Sciences, 15/56* (1), 155 - 160.

Rajendra Prasad, V., & Ramchander Rao, V. (2012). Consumer behaviour towards Mulkanoor Cooperative Dairy Milk - an empirical study in Karimnagar District of Andhra Pradesh. *Golden Research Thoughts, 1* (10), 1-4.

Raju, S.S. (1992). *Market survey of liquid milk in Hyderabad* (Unpublished MTS Report). Anand, Gujarat : Institute of Rural Management.

Rengarajan, P., Sathya, R., & Gowthami, R. (2014). Buying behaviour of selected branded milk products. *EPRA International Journal of Economic and Business Review, 2* (8), 105- 110.

Ruperal, P. (2016, November 15). Milk demand likely to touch 240 million tonnes in 2025. *The Times of India.* Retrieved from http://timesofindia.indiatimes.com/city/vadodara/Milk-demand-likely-to-touch-240-million-tonnes-in-2025/articleshow/55439177.cms

Selvarani, V. (2004). *A study on comparative analysis of cooperative milk producers' union in Truchirappalli and Coimbatore Districts* (Unpublished Ph.D Thesis). Bharathidasan University, Tiruchirappalli.

Shanthi, S. (1987). A study on consumer preferences for Aavin Milk and its products in Royapettahand Mylapore. *Margin, 22* (2), 35 - 44.

Sharma, P. (2000). Marketing of milk - An opinion survey of consumer perceptions, Rajahmundry, A.P. *Indian Journal of Marketing, 30* (4), 10 - 13.

Sivasankaran, S., & Sivanesan, R. (2013). Brand preference of packed milk – Comparative study on rural and urban consumers in Kanyakumari District. *International Journal of Business and Management Invention, 2* (7), 23 - 35.

Sudheer, A. K., Karthik, E. K., & Mahalakshmi, M. S. (2015). An empirical determination of target consumer profile for dairy products. *EPRA International Journal of Economics and Business Review, 3* (12), 213 - 220.

Trung, T. Q., Giam, D. Q., Hai. V. T., Thao, L. P., Hang, N. T. T., Son, L. T. K., & Linh, B. T. H. (2014). Factors influencing milk consumption of rural households in Northern Vietnam. *Greener Journal of Business and Management Studies, 4* (2), 31 - 40.

Tuan, L. T., Phuong, N. T. T., Ngoc, L. T. B., & Mai, L. H. (2013). Powdered milk consumers' buying behaviour. *International Journal of Business and Management, 8* (2), 29 - 37.

Virdi, S. S., Bhatnagar, D., & Kaur, H. (2007). Consumer behaviour regarding branded milk vis-a-vis unbranded milk. *Indian Management Studies Journal, 11* (2), 105 - 125.

About the Authors

Dr S. Rameshkumar has more than 10 years of teaching and research experience. His areas of specialization are Banking and Finance. He has published many research papers in reputed and refereed journals and has presented research papers at seminars and conferences organized by institutions of national importance. He has also attended methodology workshops and FDPs conducted by the institutes like IGIDR, GIDS, VVGNLI, and CPR. He is associated with the Indian Commerce Association and Indian Accounting Association Research Foundation as a life member and is also a recipient of Bharat Jyothi Award. At present, he is engaged in a research project funded by the Indian Council of Social Science Research and his current research interests include Financial Literacy, Ease of Doing Business and FDI, and Bank Profitability.

Dr. A. Vikraman is a seasoned professional in the education domain with more than a decade of experience in knowledge sharing and is an active Research Scholar with hands on experience in research, particularly under Commerce and Business Administration. He is a self learner, motivator, and influencer for students at undergraduate and masters levels.