

# Conjoint Analysis of Consumers' Preference Towards Packaged Milk

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## Abstract

Consumption of milk is considered as an essential set of choices in our Indian food habits, due to which we attempted to find out the consumer preference of milk towards packaged milk and conducted a conjoint analysis of the factors influencing the purchase decision of packaged milk. The research was carried out with a sample of common individuals/households residing in the Ghaziabad region. We collected the data using a structured questionnaire by using convenient random sampling technique. One-sample t-test was used to ascertain the significant attributes for the purchase of milk. To know the relationship between family size, family income, qualification, and purchase preference of milk categories, chi-square test was conducted. The study found that taste, price, easy availability, and brand were the significant attributes for the purchase of packaged milk. It was found that family income and qualification played a very significant role in the consumers' preference for the purchase of packaged milk. Factors such as packaging, quality, and safe for health were found to be the non-significant factors for the purchase decision of packaged milk. The study found that consumers perceived packaged milk to be more hygienic, safe, and of better quality.

**Keywords :** milk, packaged milk, milk products, dairy products, buying behavior, consumer preference

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Milk is considered as an essential commodity and the most fundamental food ingredient and it provides essential nutrition to our body. As per the statistics, it is calculated that India is one of the major producers of milk in the entire world. Since independence, a number of milk product factories have been established in India and this industry is growing massively and is also contributing an admirable share in the GDP of the nation. The dairy industry provides livelihood to thousands of farmers & milkmen in Ghaziabad region also.

Milk is considered as a good source of nutrition for children, youngsters, old people, and women. It contains many antibodies that help to keep one healthy and free from diseases. Nowadays, packaged milk is used throughout the country due to urbanization. However, some reports say that the deteriorating quality of milk should make us reconsider our choice of milk. Thus, the objective of this research is to find out the buying behavior of milk consumers towards packaged milk and factors influencing the purchase of packaged milk.

The term “*consumer preference*” means the choice of the consumer for any product category or brand concerning various other product categories and brands available in the market. It has been observed that consumers are mostly influenced by various factors like product quality, price, packaging, promotional activities, etc. Consumer preferences are closely related to consumer behavior, where consumers search for a variety of

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goods and services, assess, or evaluate price and products for the consumer surplus and satisfaction because consumers sacrifice time, money, and effort due to which they want to satisfy their needs by purchasing value products.

Consumers are more conscious about buying what, why, when, where, and for whom they buy any product or service. So, the consequences of such evaluation practices impact the future purchases of the consumers as well as the sale of the producers also. Due to this reason, a marketer must be aware of the various factors determining consumer preferences.

Consumer behavior is the study to understand people (individuals, groups, or organizations) and blends of psychology, sociology, and economics that process the consumers' preferences to select the available goods and services. It studies needs, wants, and desires of the individual consumers and assesses various factors which influence the same.

### ***Categories of Milk Available in India***

☞ **Raw Milk :** Raw milk is not pasteurized milk. It is whole milk which is not treated in any manner and is directly extracted from cattle. In India, this milk is available in both organic and inorganic forms. Local dairies often supply these to our doorsteps.

☞ **Packaged Milk :** Packaged milk is the pasteurized, homogenized version of milk that has been heated to a specified temperature to kill pathogens to get rid of bacteria and impurities. Packaged milk comes in three forms : toned, double-toned, and full-cream. The following are the two types of packaged milk : (a) Full cream milk is undiluted and is pasteurized and homogenized as well ; (b) Toned and double-toned are the diluted versions of this milk.

Packaged milk is available in different types of pack sizes, tastes, and brands like Amul, Mother Dairy, Ananda Milk, Dudhsagar Dairy, Sudha Dairy, etc. Easily portable, packaged milk makes for convenient use, while typically containing nutrition facts and vitamins.

### ***Factors Determining Consumers' Preference Towards Packaged Milk***

Nowadays, different varieties of milk products are offered by the producers to the customers. There are numerous factors, which influence the consumers' preference to choose from a variety of available products in the competitive market and it is also a question that on what basis and how the consumers are selecting the products ?

People consume varieties of milk like raw (unpackaged) milk, packaged milk, or flavoured milk, and their preferences and choices differ from person to person based on their age, income, sex, education, profession, and residential status (rural or urban). Consumers' preference may also differ depending on quality, quantity, price, packaging, reliability, and availability, etc.

Some consumers are always buying the same product or same brand from a product group because they may be brand loyal, and we can interpret that there may be a relationship between consumers' preferences and educational qualification, or maybe, there is brand loyalty among the age group due to the taste and usefulness of the products. Hence, the main objectives of the present research are :

- ☞ To explore the factors that influence consumer purchase preference of packaged milk.
- ☞ To know the consumers' preferences for packaged milk – toned milk, double toned milk, and full cream milk.
- ☞ To determine the relationship between family income and choice of milk category.

- To determine the relationship between family size and choice of milk category.
- To determine the relationship between qualification and choice of milk category.

## Literature Review

Ahmadi Kaliji, Mojaverian, Amirnejad, and Canavari (2019) attempted to investigate consumers' preferences and the factors affecting the demand for dairy products by using a tested logical model and represented a novel model to determine the preference of the consumers in this competitive environment. Researchers concluded that flavoured yoghurt, toned milk, and low-fat cheese were the most preferred among dairy products because these contain low fat. They also found that price and family cost were the main factors that affected the choice of dairy products and other factors like age, education, and attention to exercise variables were also the major factors that increased the purchase probability of milk products.

Rameshkumar and Vikraman (2018) studied factors which influenced the decision of rural and urban consumers while purchasing milk and other milk products. The study found that the variables like quality, price, taste, smell, purity, and size of packaged milk had a great significance in determining consumers' preference towards packaged milk as the milk consumers in their study area were very much concerned about the product-oriented factors at the time of purchase of milk and milk products.

Barad and Mehta (2017) suggested that consumers preferred packaged milk based on quality, fat level, price, availability, and freshness. Most of the consumers gave higher priority to quality while making the purchase-related decisions. Freshness was a strong variable for purchasing unpackaged milk.

Bousbia, Boudalia, Chelia, Oudaifia, Amari, Benidir, Belkheir, and Hamzaoui (2017) intended to analyze the behavior of milk and dairy product consumers based on socioeconomic conditions and geographical locations. The research highlighted that consumers preferred milk products based on various factors like taste, available nutrition in the milk, ease of carrying the packaged milk, and FSSAI approved items. Brand was observed to be the main factor, which stimulated the consumers to purchase the milk products. The study found that the consumption of raw milk was significantly higher in the rural regions as compared to urban areas. Also, demand for ultra-high temperature pasteurized milk was significantly higher in the urban regions.

Akhtar, Ahmed, Jafar, Rizwan, and Nawaz (2016) attempted to identify the various factors of selecting any items by consumers and the catalysts which boosted the consumption. They concluded in their study that education status, group, marital status, and age influenced the consumption pattern of packaged milk.

Ramesh and Poornima (2016) attempted to examine the preferences of the consumers towards packaged milk. The study concluded that consumers gave more preference to taste over price. As per their result analysis, it was observed that the majority of the consumers were quite satisfied with the quality of packaged milk and there was no significant relationship between the residential status, sex, and level of satisfaction with the packaged milk.

Kurajdová, Tábořecká-Petrovičová, and Kašáková (2015) attempted to identify the factors which influenced consumers' behavior while purchasing milk and found that milk was in the category of daily consumable products with a very high frequency of purchasing. The authors suggested that it needed more customer attention and focus by the marketers on the various aspects which affected and influenced its purchase.

Ahmed, Prammar, and Amin (2014) focused upon how packaging played an important role in consumer preference while choosing or buying any product. The main focus of this research was to scrutinize the crucial factors which acted as a driving force for the success of a brand. The researchers also tried to identify the relationship between various variables which are directly or indirectly related to the buying behaviour of the consumers. The results revealed that packaging was one of the important factors which influenced the consumer buying pattern.

Adam and Ali (2014) attempted to measure the impact of the packaging of a product on the buying pattern of the

consumers and stated that visual elements or appearance of packaging was one of the important elements to boost the consumer preferences to purchase any goods or items.

Broniarczyk and Griffin (2014) examined the key factors that boosted consumer empowerment. It was found that consumers potentially benefited from consumer empowerment factors. Apart from this, there are some other separate key moderators also identified like knowledge and information of the consumer, mental status, and consumer surplus.

Ingavale and Thakar (2012) focused on the importance of dairying as a secondary source of livelihood for the families of rural areas and also emphasized that availability of milk in India has increased due to the increasing purchasing power of people in India. The researchers highlighted in the study about the factors that influenced the buying pattern of milk consumers by using trend analysis by considering the time period from 1991 – 2006 and found that the demand for milk has increased as well as consumers are more conscious about their health and fitness due to which they are demanding hygienic milk, especially good quality packaged milk.

Ayyaz, Badar, and Ghafoor (2011) examined the various determinants of consumer perception towards packaged milk. They elucidated in their results that most of the consumers liked and preferred packaged milk due to its quality and hygiene attributes.

Kumar and Gogoi (2011) tried to understand the pattern of consumer buying habits in various cultural environments and considered all factors including economic factors as well as emotional factors. The study observed that the pattern of consumer buying habits was influenced by various cultural elements. Likes and dislikes of milk by the consumers belonging to a particular culture or subculture affected the marketers to a great extent.

Celik Ates and Ceylan (2010) conducted face-to-face interviews to investigate the pattern of consumption of milk based on the socioeconomic conditions of the consumers. It was evaluated that consumption behaviour of urban and rural consumers was based on socioeconomical differences and the study observed that consumers belonging to rural areas, low income group, and illiterates generally consumed unpasteurized and loose milk and usually made their yoghurt and cheese at home. On the other hand, the educated urban consumers with higher incomes consumed pasteurized milk and purchased packed yoghurt and cheese from the market due to hygiene and health-conscious reasons.

Chung (2009) tried to identify the main internal and external components for the liking of milk among the consumers and tried to correlate the findings of the research with the preference and taste of the consumers to categorize the main factors that affected consumers' liking and disliking of milk. The study found that the sweetness of milk, cream content, and texture of the milk was positively correlated with consumers' liking. The types of raw milk having odd features like grassy smell and raw flavour of the milk were the negative drivers of liking.

Kilic, Akbay, and Tiryaki (2009) identified some characteristics of the customers which were concerned with fluid milk and related products. It was concluded that educated, higher-income groups, youth, and females did not prefer loose, unpasteurized, or unpackaged milk due to health concerns and they considered it unhealthy and unhygienic. Moreover, the customers also agreed that the price of packaged milk was expensive as compared to price of unpackaged milk.

## **Research Methodology**

### ***Research Design***

The present study is a descriptive and cross-sectional research and its data were collected from August – October 2019.

## **Sample Design & Area**

Convenient random sampling method was used for data collection from various locations – milk booth and retail stores in Ghaziabad district under the state of Uttar Pradesh.

## **Sources of Data**

First-hand primary data based on interviews and survey with the help of a structured questionnaire has been used for this study. The data were collected from 300 individual consumers/ households to know about their preferences for packaged milk.

## **Questionnaire**

A two-part questionnaire was developed to collect the data. The first part of which consisted of the basic questions regarding respondents' name, age, qualification, family members, and family income. The second part of the questionnaire consisted of the questions related to the various milk categories and their preference for the purchase of the same. To know the reliability of the questionnaire, reliability test was performed with the help of SPSS, and the value of Cronbach's alpha came out to be 0.834. A value above 0.7 is considered as a good measure of reliability.

## **Tools for Analysis**

To analyze the data, various tests are performed using SPSS version 22. One-sample *t*-test has been used to know the significant attributes for the purchase of milk. Further, to know the relationship between family size, family income, qualification, and purchase preference of milk categories, chi - square test has been performed as both dependent and independent variables are categorical ; so, chi - square test has been used in the study.

## **Data Analysis and Results**

### **Profile of the Respondents**

Table 1 depicts the respondents' demographic profile. From Table 1, we can infer that approximately 63% of the respondents were males and 37% were females. We can observe that there is not too much variation in the number of respondents of all the categories, that is, family size, family income, and qualification.

**Table 1. Respondents' Profile**

	<i>F</i>	%
<b>Gender</b>		
Male	188	62.67
Female	112	37.33
<b>Total</b>	<b>300</b>	<b>100</b>
<b>Family Size</b>		
Less than or equal to 2	102	34
Between 3 – 6	111	37

Above 6	87	29
<b>Total</b>	<b>300</b>	<b>100</b>
<b>Family Income (in ₹)</b>		
Below 2.5 lakhs	60	20
Between 2.5 lakhs – 5 lakhs	93	31
Between 5 lakhs – 8 lakhs	78	26
Above 8 lakhs	69	23
<b>Total</b>	<b>300</b>	<b>100</b>
<b>Qualification</b>		
High School	72	24
Intermediate	72	24
Graduate	93	31
Post-Graduate	63	21
<b>Total</b>	<b>300</b>	<b>100</b>

### ***Attributes Influencing the Purchase Decision of a Particular Pack of Milk***

The study considers seven attributes which can influence the purchase decision of the consumer for packaged milk : taste, price, easy availability, convenient packaging, brand, quality, and safe for health. To determine the significant attributes which influence the consumers' purchase decision for buying packaged milk, *t*-test has been performed. The outcomes of the test are depicted in Table 2.

**Table 2. Attributes that Influence the Purchase of Particular Packaged Milk**

Attributes	<i>t</i>	<i>Df</i>	Sig. 2 (Tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Taste	25.835	299	.000	3.430	3.17	3.69
Price	29.435	299	.000	2.530	2.37	2.69
Easy availability	45.935	299	.012	3.450	3.05	3.29
Convenient packaging	41.015	299	.321	3.320	3.35	3.70
Brand	40.115	299	.011	3.719	3.59	3.81
Quality	49.007	299	.562	3.770	3.62	3.89
Safe for health	51.022	299	.213	4.012	3.87	4.21

From Table 2, we can infer that out of the seven attributes, four are significant, that is, taste, price, easy availability, and brand as the significant value is less than 0.05. The other factors such as packaging, quality, and safe for health are not the significant factors for the purchase decision of packaged milk as the significance value of these attributes is above 0.05. It implies that the consumers were not worried about the quality and safety of packaged milk which, in turn, implies that they believed that packaged milk is of good quality and safe for their health. The finding related to quality and safety is similar to the studies conducted by Ramesh and Poornima (2016), Ayyaz et al. (2011), and Kilic et al. (2009). On the other hand, the finding derived regarding the packaging of milk is not similar to the study conducted by Ahmed et al. (2014).



### ***Relationship Between Size of the Family and Purchase Preference of Milk Category***

To know if there is any relation between family size and purchase preference of milk category, family size is categorized into three categories based on the number of members in the family, that is, less than or equal to 2, 3 – 6, and above 6. The milk categories are double toned milk, toned milk, and full cream milk.

**Table 3. Crosstab Between Size of the Family and Milk Category**

		Family Size			Total
		>=2	3–6	Above 6	
Milk Category	Double toned milk	27	36	27	90
	Toned milk	33	30	21	84
	Full cream milk	42	45	39	126
Total		102	111	87	300

From Table 3, we can infer that out of the 90 double toned milk users, 36 were from the family size of 3 – 6 and 27 were from less than or equal to 2 and above 6 categories each. Out of the 84 toned milk users, 33 were from the family size less than or equal to 2, 30 were from 3 – 6, and 21 were from the above 6 members category. Out of the 126 full cream milk users, 42 were from the family size less than or equal to 2, 45 were from 3 – 6, and 39 were from the above 6 members category.

**Table 4. Chi-Square Tests Between Size of the Family and Milk Category**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.701	4	.951
Likelihood Ratio	.701	4	.951
Linear-by-Linear Association	.004	1	.952
N of Valid Cases	300		

From the chi-square test Table 4, we can infer that there is no significant relationship between size of the family and purchase preference of milk category as the significance level is 0.951, which is more than .05. This implies that there is no role of size of the family in the purchase of any category of milk.

### ***Relationship Between Family Income and Purchase Preference of Milk Category***

To know whether any relation exists between family income and purchase preference of milk category, the family income is categorized in four categories based on the income of the family, that is, less than 2.5 lakhs, 2.5 lakhs – 5 lakhs, 5 lakhs – 8 lakhs, and above 8 lakhs. The milk categories are double toned milk, toned milk, and full cream milk.

From Table 5, we can infer that most of the consumers who purchased double toned milk were from the income group having less than INR 5 lakhs of family income ; while on the other hand, most of the consumers who purchased full cream milk were from the income group having more than INR 5 lakhs of income.

**Table 5. Crosstab Between Family Income and Milk Category**

		Family Income (in INR)				Total
		> 2.5 lakhs	2.5 lakhs – 5 lakhs	5 lakhs – 8 lakhs	Above 8 lakhs	
Milk Category	Double toned milk	33	39	6	12	90
	Toned milk	15	27	27	15	84
	Full cream milk	12	27	45	42	126
Total		60	93	78	69	300

**Table 6. Chi-Square Tests Between Family Income and Milk Category**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.995	6	.004
Likelihood Ratio	20.374	6	.002
Linear-by-Linear Association	14.412	1	.000
N of Valid Cases	300		

From the chi-square test Table 6, we can infer that there is a significant relationship between family income and purchase preference of milk category as the significance level is 0.004, which is less than .05. This implies that family income and purchase of milk category is directly related to each other. Families having higher income preferred to purchase full cream milk, while families with low income preferred to purchase double toned or toned milk.

#### ***Relationship Between Qualification and Purchase Preference of Milk Category***

To know if there is any impact of qualification on the purchase preference of milk category, the qualification is categorized into four categories, that is, high school, intermediate, graduate, and post - graduate. For qualification, the highest qualification among the family members is considered in the study. The milk categories are double toned milk, toned milk, and full cream milk.

**Table 7. Crosstab Between Qualification and Milk Category**

		Highest Qualification				Total
		High School	Intermediate	Graduate	Post - Graduate	
M_Category	Double toned milk	30	36	18	6	90
	Toned milk	21	21	21	21	84
	Full cream milk	21	15	54	36	126
Total		72	72	93	63	300

From Table 7, we can infer that most of the consumers who purchased double toned milk had an educational qualification of high school or intermediate ; while, on the other hand, most of the consumers who purchased full cream milk were graduates and post - graduates.



**Table 8. Chi-Square Tests Between Qualification and Milk Category**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.509	6	.017
Likelihood Ratio	16.487	6	.011
Linear-by-Linear Association	10.347	1	.001
N of Valid Cases	300		

From the chi-square test Table 8, we can infer that there is a significant relationship between qualification and purchase preference of milk category as the significance level is 0.017, which is less than .05. This implies that qualification and purchase of milk categories are related to each other. Families having members with higher educational qualifications preferred to purchase full cream milk, while families with members with low educational qualifications preferred to purchase double toned or toned milk. The above finding regarding the qualification of family members and preference for milk category is similar to the finding of Phuyal (2016).

## **Findings, Recommendations, and Conclusion**

Taste, price, easy availability, and brand attributes are found to be the significant factors which influence the purchase of a particular category of packaged milk. Size of the family is found to be a non-significant factor influencing the purchase of milk category. On the other hand, family income and qualification are found to be the significant factors for the purchase of milk category.

From the study, it is also derived that the respondents or consumers in Ghaziabad region were consuming packaged milk mostly, and also, there is a significant difference in consumption of toned, double-toned, and full cream milk. Respondents mostly bought packaged milk from retail stores because these are near to their place of living and can be easily carried and consumed. The respondents also agreed that packaged milk is processed, tasty, and full of minerals and vitamins ; the nutrients are well - preserved, which makes this milk safe for health.

The study finds that taste, price, easy availability, and brand of milk play a significant role in the consumers' buying decision for the purchase of milk. Hence, the milk companies are advised to focus on the easy availability of tasty milk at a competitive price to survive in the present competitive market. Family income and qualification also have a significant impact on the purchase of milk ; thus, milk companies should consider the localities and provide fresh milk in various categories to increase the sale of their products.

## **Managerial Implications**

The study analyzes consumers' preference towards packaged milk. The importance of brand preference, taste, price, easy availability of the products are the significant attributes for the purchase of packaged milk in India and other variables like hygiene, safe for health, and better quality are important variables from the industry perspective because it decides the percentage of consumers who are motivated by 'product' and 'brand' in their purchase decisions.

The individual firms should be more focused on the preference of consumers to make them more loyal to the brand. The promotion budgets of the products should be increased by the marketers to spread enough information about the products. By doing this, it determines what proportion of the consuming population is brand conscious, and it may be possible to identify the selling problem more accurately and to conduct more effective promotion campaigns. However, the policy makers should find the knowledge of these preference parameters for a large

number of product classes as such knowledge would be very useful in understanding the present competitive behavior and in anticipating future developments in the packaged milk distribution system.

## **Limitations of the Study and Scope for Further Research**

The study is limited to the Ghaziabad district only ; so, the findings of this research cannot be generalized. The results of the study are based on the respondents' responses ; hence, due to human behavior, responses received during the study may be biased. The study is based on the preferences of the consumers, and the preferences of the consumers may change with a change in income, time, and other factors. Further studies can be conducted in other districts, states, or at the national level. The study covered only 300 sample units ; future studies can take more respondents to have more precise results. A further comparative study can be conducted for packaged milk and cow/buffalo milk.

## **Authors' Contribution**

Dr. Amit Kumar Arora was responsible for conceiving the idea for this particular research study. He developed the core model design for this particular empirical study along with Dr. Vijay Prakash Gupta. Dr. Gupta collected the relevant research literature of the studies already carried out on this topic and generated concepts and codes for this research design. Dr. Arora developed the research methodology suitable for this particular study. He analyzed the data and interpreted the results with the use of SPSS 22.0 software. Dr. Gupta and Dr. Arora both identified the implications, limitations, as well as the future scope of this study.

## **Conflict of Interest**

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest, or non-financial interest in the subject matter, or materials discussed in this manuscript.

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