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ASSESSING THE DEMAND FOR QUALITY ATTRIBUTES OF CHEESE - AN APPLICATION OF CONJOINT ANALYSIS

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Abstract: The study was under taken to assess the demand for quality attributes of cheese in Chennai city, INDIA. Chennai is the fourth largest metro city in India. A total sample size of 450 household consumers were selected by simple random sampling from fifteen zones of Chennai city i.e. 30 consumers from each zone. To assess the demand for quality attributes of cheese, conjoint analysis was used. The conjoint analysis for the overall 450 household consumers found that the ideal cheese had the following attributes: Brand specific ('Amul'), the price level of INR 100 to INR 150 per 500g of cheese and packaging form - tin. The results indicated that the consumers have given more importance on quality factor while purchasing the product. So, this imparts the need for enhancing the production of quality dairy products. The study suggested that a producer should analyze the part-worth utilities of each of the attribute to ascertain how he can increase the consumer's utility from his product. These results have the potential to assist in the construction of a market strategy.
Keywords: Cheese, Consumer Preferences, Quality Attributes, Chennai City.

INTRODUCTION

Dairying in India has come forth as an important sub-sector with an encouraging growth rate of five per cent over the years. It also plays a significant role in changing the social and economic status of people in India by providing a subsidiary source of income. At present, the leading light of dairy world is India, which occupies the first position in milk production with a production level of 127.90 million tones of milk in 2011-12 (Basic Animal Husbandry Statistics, 2013). The per capita availability of milk increased from 130 grams per day in 1950-51 to 290 grams per day in 2011-12 (Basic Animal Husbandry Statistics, 2013). Urbanization is positively correlated with the production and consumption of dairy products. The population of Chennai city was 1.42 millions in 1951 which has increased to 4.68 millions in 2011 as per the census of India (Vinayakam and Sekar, 2013). Chennai is the fourth largest metro city in India and the second oldest corporation in the world. The most observable fact in Chennai city was its massive urbanization. Due to this, consumers of Chennai city were highly skewed towards value added livestock products in which dairy

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products occupy a major space. From the consumer point of view, the price for the dairy products will be fixed, based on quality attributes like colour, texture, fat content, freshness, taste, nutrition and safety. The demand for quality parameters of dairy products at Chennai had undergone a perceptible change in the recent years. Keeping all these factors into mind, the present study was conducted to assess the demand for quality attributes of cheese in Chennai city.

DATA AND METHODOLOGY

For the present study, Chennai metro city, the capital of Tamil Nadu was purposively selected. The Chennai city has three regions viz., North, Central and South and each region has five zones and thus the city is composed of fifteen zones. From each zone, 30 household consumers were selected by a simple random sampling procedure thus yielding a total sample of 450 household consumers for the study.

Conjoint analysis:

Conjoint analysis is a multivariate technique used specifically to understand how consumers develop preferences for products or services and to formulate predictions about market attitude towards product concepts and it is also called as trade-off analysis. This method is based on the multi-attribute product concepts. The power of the method is to provide an explanatory model of consumers' preferences, which can then be used to define the product concepts constituting the optimum combination of the attribute levels (Connor *et al.,* 2006 and Shetti *et al.,* 2006).

The most important decision in conjoint analysis is selecting the attributes to characterise the dairy products. Attributes selected for cheese are given in the Table 1. Based on the attributes and levels given in the table, if the full profile method is used, the number of combinations is 16 (2*2*4).

If large number of combinations is presented to consumers, the non response rate (due to fatigue, boredom) becomes very high. So, the number of cards can be reduced by generating an orthogonal array method using SPSS ® statistical software. Hence the number of cards created for cheese is eight (Table 2). Now, the created card list was given to household consumer for ranking each card from 1 to 8 (1 – highly preferred to 8 – least preferred). With this preference data, conjoint analysis was carried out.

Table 1: List of attributes and its levels of ghee

ATTRIBUTES	LEVELS
Price/500g	INR 100 – INR 150 INR 151 – INR 200
Packaging forms	Plastic box Tin
Brand	Amul Britannia Milky mist Others

Table 2: Card list for cheese

Card ID	Price/500g	Packaging forms	Brand
1	INR 100 – INR 150	Plastic box	Britannia
2	INR 151 – INR 200	Tin	Amul
3	INR 100 – INR 150	Tin	Milky mist
4	INR 151 – INR 200	Plastic box	Others
5	INR 151 – INR 200	Tin	Britannia
6	INR 100 – INR 150	Plastic box	Amul
7	INR 100 – INR 150	Tin	Others
8	INR 151 – INR 200	Plastic box	Milky mist

INR – Indian Rupee.

The results of conjoint analysis show the part-worth utility values and standard error for attribute levels. *Finally,* the measure of the relative importance of each attribute known as an importance score or value is calculated.

$$\text{Relative importance} = \frac{utility\ range\ for\ each\ attribute}{sum\ of\ utility\ ranges\ for\ all\ attributes}$$

The values thus represent percentages and have the property that they sum to 100. Thus, the conjoint analysis identified the attribute combinations that confer the highest utility to the consumers.

RESULTS AND DISCUSSION

Consumers' preferences for quality attributes of cheese

The result of conjoint analysis for quality attributes of cheese was presented in the Table 4. Pearson's R and Kendall's tau values are 0.77 and 0.73 respectively indicates a better fit to the data. The brand was found to be the most important influencing factor in purchasing

behaviour of cheese for household consumers (47.14 per cent; n = 450) followed by price of product (37.71 per cent) and its packaging forms (15.15 per cent). The brand was therefore more than twice as important for household consumers in Chennai city when compared to other attributes such as price level of the cheese and its packaging forms. Similar result was observed by Hu *et al.* (2012) when they conducted a similar study on processed food product. Packaging forms was identified as the least important influencing factor in purchasing behaviour of cheese which is controversy to the study conducted by Murphy *et al.,* (2004). Within the attributes, the utilities of each level were investigated. In brand, the most utility value was obtained for 'Amul' (U = 0.408) followed by 'Milky mist' (U=0.207), whereas the utility of 'Britannia' brand was lower (U = -0.107).

It is interesting that a price level of INR 100 – INR 150 per 500g had the highest utility (U=0.356) when compared to a cheese that is priced at INR 151 – INR 200 (U = -0.356). This shows that consumers in this survey were very sensitive to the price of the product where they deriving a higher utility level from cheese that was offered at a lower price level. If a producer were to change the price value towards higher value, there would be a consequent loss in the utility of 0.712.

Table 4: Conjoint analysis for quality attributes of cheese

Factors	Levels	Utility Estimate	Relative importance (%)
Price/500g	INR 100 – INR 150	0.356	37.71
	INR 151 – INR 200	-0.356	
Packaging forms	Plastic box	-0.143	15.15
	Tin	0.143	
Brand	Amul	0.408	47.14
	Britannia	-0.107	
	Milky mist	0.207	
	Others	-0.168	
Constant		4.500	
*Pearson's R value =0.77**; Kendall's tau value = 0.73***			
n=450			

The respondents obtained a higher utility value for cheese that is packed inside the tin (U= 0.143) than from a cheese that is packed in plastic box (U= -0.143). If a producer were to sell the cheese in tin, there would be a consequent rise in utility of 0.286 for the 450 household consumers.

The conjoint analysis for the overall 450 household consumers found that the ideal cheese had the following attributes: Brand specific ('Amul'), the price level of INR 100 – INR 150 per 500g of cheese and packaging form - tin.

CONCLUSION

The study of consumer preference towards quality attributes of cheese by conjoint analysis found that the ideal cheese had the following attributes: Brand specific ('Amul'), the price level of INR 100 – INR 150 per 500g of cheese and packaging form - tin. The results indicated that the consumers have given more importance on quality factor while purchasing the product. So, this imparts the need for enhancing the production of quality dairy products. The study suggested that a producer should analyze the part-worth utilities of each of the attribute to ascertain how he can increase the consumer's utility from his product. These results have the potential to assist in the construction of a market strategy.

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