Research Article

MARKETING OF GIR COW MILK IN THREE MAJOR CITIES OF GUJARAT

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Abstract- India is the largest producer and consumer of milk in spite of less productivity in comparison to advanced countries. These days' consumers are more aware and showing more interest for A2 milk over A1 milk. Indian desi cow breed more specifically Gir Cow has A2 type beta casein; considered in A2 milk categories milk which is good for health due to its easy digestibility. In this context, a study has been put forth in three major Tier II cities of Gujarat, i.e. Ahmedabad, Vadodara and Surat purposively by considering their locational advantage, connectivity and cosmopolitan culture. Consumption pattern and consumer behaviour were two important objective of this study which were handled through chi square test and Garrett ranking technique. Fifty consumers from each district have been studied purposively who consumed Gir milk only. This study concludes that Gir milk consumption depends on both internal (push) factors and external (pull) factors. Increase in family members or higher family structure increase the milk consumption where as consumers prefer nutrition in milk to price of the product.

Keywords- Consumption pattern, Consumer behaviour, Gir milk marketing

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Introduction

India is the world's largest producer of dairy products by volume and has the world's largest dairy herd. Milk production in India has developed significantly in the past few decades from a low volume of 17 million tons in 1951 to 160.36 million tonnes in 2015-16 [1]. Currently, the Indian dairy market is growing at an annual rate of 6.25%. Despite the increase in production, a demand supply gap has become imminent in the dairy industry due to the changing consumption habits, dynamic demographic patterns, and the rapid urbanization of rural India. Besides that 70% of the dairy animal owners in the country own one or two animals for their self-sustenance and here farming has been under the clout of 85.01% of small and marginal farmers who have collectively contributed 75% of the livestock [1]. Both this scenario has revealed the importance of milk as a product on both farming communities and industry as a whole. Milk is a perishable product and its quick disposal is necessary for getting any benefits from it. In this changing and dynamic environment, lots of middlemen come into picture whose livelihood has been integrated since long. About 70% of marketed surplus milk is handled by the informal sector in India [2]. According to NDDB and CRISIL research estimates, India produces around 3.80 million litres per day (LPD) of milk, accounting for a fifth of global output. About 40% of this retained by producers (farmers) for household consumption. Another 41% share is with the unorganised segment. The remaining 19% is procured, processed, sold through organized dairies [3]. Though milk has been processed up to 35% of total food processing of India [4] due to advent of cooperatives after operation flood and it carries up to 10,000 litres per day capacity with some private entities yet 30% of the total marketable surplus milk is handled by this sector only. Private players are more aggressive in their growth as compared to cooperatives and are becoming bigger players [5]. Dairy Farmers are getting more cash when they are supplying milk to the unorganized sectors but are getting more income when they are supplying the same to the organized one [6].Small dairy farmers who are the largest in number in India and the mainstay of milk production are being consciously excluded by the modern private sector which has nearly doubled between 2002 and 2011 after deregulation of the Indian dairy sector, as against the cooperative sector which was more inclusive [6].India is not only the largest producer of milk but also the largest consumer of milk. The policy approach should be to create growth path for the dairy industry. Currently, milk constitutes 15 per cent of the average households' expenditure on food [7]. There are two varieties of cows based on their genes: one that produces Al milk protein, and the other, that produces A2 milk protein. Most dominant cows of today possess Al genes, while the Indian Gir cow, which is on the verge of extinction, possesses A2 genes. Recent studies say that milk from cows with A2 genes is far healthier than its Al counterpart, besides also being compatible with those with lactose intolerance. The dairy farm only keeps Gir cows and grows its own green fodder by using dung manure and bio pesticides. Indian Desi breed like zebu cow's camel, goat, donkey, buffalo, yak, sheep and even jersey cows have beta casein in their milk. That's why their milk has been included in A2 milk categories. According to statement of Dr. Sodhi, MD of Amul, cardio vascular related diseased are prevented by consumption of A2 milk. He also emphasised closeness of mother milk with A2 milk in his published paper in Indian Journal of Endocrinology [8]. India has a total of 137 breeds of domesticated animals, of which about 18 breeds are available in Gujarat. The Gir and Kankrej breeds of cow are well known for

their milk-yield capacity and constitute a valuable genetic resource [9]. Gir cows are originally found in Kathiawar region of Gujarat. They are imported highly to Brazil, USA due to its quality based milk contents. She has a credit of 2063 liters in her 326 lactation days. Her milk has fat percentage in between 4.69±0.04 and 4.97±0.02. Gir animals are hardy in nature with sound mortality. That's why considered as profitable for dairy farmers [10]. Here in this study, consumer behaviour and consumption pattern of Gir milk has been studied. Consumer behaviour is relatively internal in origin. Here consumer identifies its need, go for alternative selection, and purchase the product whereas consumption pattern is relatively external in origin. Where consumer takes in to account time of purchase, quantity of purchase, distance covered during purchase, frequency of purchase and many more.

Materials and Methods

This study encompassed primary data only. The data have been collected in between January to April 2017 from three major Tier II cities of Gujarat purposively, i.e. Ahmedabad, Baroda and Surat by considering their locational advantage, cosmopolitan culture and connectivity. Total 150 consumers were surveyed equally from each district who had consumed Gir milk only and the consumers were interviewed through structured schedules. Here in this study target respondents were those who had bought loose milk from different stakeholders whether from dairy farmers or traders or from retailers. Different product oriented factors that motive consumers for consuming Gir milk had been gathered after a pilot survey and they have ranked according to their preference through Garrett's ranking techniques. The pushing factorswere internal to consumers and they had been analysed through chi-square test due to nature of data (Categorical Data). The study was descriptive in nature.

Chi square test

Chi-square test is one of the important nonparametric tests that is used to compare more than two variables for a randomly selected data. The expected frequencies are calculated based on the conditions of null hypothesis.
It is used to check whether the variables are independent of each other or not. The Chi-square test statistic is,

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

With (r-1) (c-1) degrees of freedom.
Where Oi is the observed count, r is number of rows, c is the number of columns, and Ei is the expected counts.

Garrett Ranking Technique

Here ranks assigned by the indivisual respondents are converted in to their percent position value by using the formula

$$\text{Percent Position} = 100 (R_{ij} – 0.5)/N_j$$

Where
- R_{ij} stands for ranks given for the ith factor by the jth indivisual
- N_j stands for number of items ranked by j^{th} indivisual

Table-1 *shows the internal factors and its corresponding p value significance*											
Internal Factors	Age	Occupation	Education	Family Structure	Family member	Earning Member	Income of Respondent	Purchase decision	Frequency of purchase	Purchase point	Price of Milk
p- value (χ^2 test)	0.614	0.105	0.185	0.000*	0.000*	0.607	0.492	0.977	0.289	0.257	0.799

Results and Discussion

Internal Factors impact on purchase of Gir milk:

Those variables whose p value has been found to be more than 0.05 were insignificant means there was no significant difference between criterion/ dependable variable (consumption of milk by volume) with predictor/ independent variables. In this context, Family structure and family members have shown significance contribution for purchase of Gir milk in the study area where as other factors have no influence on purchase of milk [Table-1]. It might be due to consumers were more health conscious or might be due to better paying capacity of the consumers in this area. No doubt increase consciousness for purchase of A2 milk due to its health benefit impact might increase its quantity purchase with increase in family member. Again, numbers of children and elders in the rural household also have positive effects on the probability of milk purchasing of rural households and milk expenditure [11]. This statement might put more emphasize on higher family structure like Joint Family in comparison to nuclear family. In another study, it has been highlighted when younger generation replace with older one in a same cohort study analysis, milk consumption decreases [12]. But here age wise milk consumption was insignificant might be due to limitation of this study or might be due to purposive sampling method of data collection.

As study area included Tier II population so income of consumer and price of product has not any impact on purchase of Gir milk. Price of the product might be in their affordable range. Milk is a commodity that consumed by the consumer just after his birth. So, purchase decision might be insignificant irrespective to its price or location or frequency of buying of milk. Educational level tends to impact on milk expenditure [11], but here not impact on consumption by volume. Purchase point was shown insignificant may be due to more traders or may be due to unorganised milk marketing of Gir milk in the study area.

Product Specific factors impact on purchase of Gir milk

Nutrition in Gir milk has shown prime factor that pulled the consumers for purchase of the particular varieties of milk. It may be due to presence of A2 type beta-casein in Gir milk that naturally easy to digest by all; more specifically lactose intolerance consumers. Again price of the product and any recommendations from the doctors have shown least importance parameter. Though in many parts of the country, people still prefer unpacked and unprocessed milk delivered by a local milkman because of its taste and the perception of freshness [13]. Here there was a strong affinity for Gir milk consumption irrespective of any internal [Table-1] or external factors [Table-2].

Table-2 *highlights preference wise ranking of Gir milk*

Factors	Garrett's Score	Ranking
Chemicals Free	54.6	3
Freshness	54.7	2
Nutritious	58.7	1
Tastes	53.5	4
Trendy/ fashionable	51.2	5
Doctor's recommendation	26.5	7
Price	40.5	6

Conclusion

Gir milk consumption depends on both internal (push) factors and external (pull) factors. Increase in family members or higher family structure increase the milk consumption where as consumers prefer nutrition in milk to price of the product.

Author Contributions: All authors equally contributed

Abbreviations:
LPD   : litres per day

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

Conflict of Interest: None declared

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