Factors Influencing the Buying Pattern of Selected Carbonated Dairy Drink by the Consumers in Anand City, Gujarat

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

This study is conducted and intended to identify the factors influencing the buying pattern of a selected carbonated dairy drink by the consumers in Anand city, Gujarat. In order to analyze the information, primary data was collected with the help of collecting the information from 100 consumers using non-probability sampling method under which convenience sampling method is used. According to the findings of the study conducted, using the chi-square analysis and correlation co-efficient, it was observed that there was significant positive correlation between the income and the consumption, no significant difference between the age group and frequency of consumption and education qualification of the respondents is independent to the purchase

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decision in consumption of selected carbonated drink. The survey also reveals that most of the respondents were satisfied with the taste of the product. About 70 percent of the respondents reported that they would like to shift to the other brand carbonated drinks. Based on the study, awareness among the customers should be created by using suitable marketing and sales promotion strategies [1]. Mass communications and digital communications are to be used, utilized and delivered effectively to build brand preference, attract new consumers and nurture the existing ones [2].

Keywords: Chi-square analysis; correlation co-efficient; carbonated beverage; dairy; whey protein.

1. INTRODUCTION

"Carbonated drinks or frizzy drinks are beverages that contain dissolved carbon dioxide. These are the packaged drinks that are available in bottles, cans, and PET bottles without any alcohol content. The global carbonated beverages market size was valued at USD 440.56 billion in 2020 and it is expected to grow at a compound annual growth rate (CAGR) of 5.1 percent from 2020 to 2027" [3]. Asia Pacific market has been witnessing the fastest growth whereas North America enjoys the leading position in the carbonated beverage market [4]. Less stringent norms and regulations and rising disposable income among consumers in emerging countries such as China, India, South East Asia, South Korea, and Japan are expected to benefit the market growth.

According to the "India Carbonated Drinks Market Overview", "carbonated or aerated drinks constitute for more than 40 percent of the total non-alcoholic beverages market in India" [5]. "In terms of end users, urban segment dominates the Indian carbonated non-alcoholic market with a significant market share. But gradually, rural segment is expected to take back on the market. Region-wise, majority of the consumers hail from the West of India followed by the South where people experience the maximum heat" [5]. The harmful chemicals and the preservatives added have proven harmful to the people which are responsible for the manufacturers in bringing new flavours and low-sugar diet drinks into the market that will help grab the declining growth. However, the carbonated drinks market in India is still expected to showcase a double digit growth in India in the coming five years.

"The Indian carbonated soft drinks market had total revenue of $8,315.7million in 2018, representing a compound annual growth rate (CAGR) of 6.2 percent between 2014 and 2018" [6]. "The market consumption volume reached to a total of 6,216.2 million liters in 2018" [7]. "Large base of population, rising disposable income and rapid urbanization are majorly driving Indian carbonated soft drinks market. Carbonates market in India registered a positive compound annual growth rate of 7.58 percent during the period 2013 to 2018 with a sales value of INR 568,867.24 Million in 2018, an increase of 9.87 percent over 2017" [8].

"Whey protein ingredients are rich in protein and possess high nutritional value, which increase their use in various food and beverage applications" [9]. "The most consumed whey protein ingredient end-products in India are chocolate protein powder, protein supplements, protein smoothies, gym supplements, protein bars, electrolyte supplements, and fitness supplements. The Indian whey protein market is expected to register a CAGR of 11 percent, during the forecasted period (2019 - 2024)" [10]. "The rise in an active lifestyle and increased health consciousness have increased the consumption of high nutrient food and beverages" [11-12]. "The most consumed whey protein ingredient end-products in India are chocolate protein powder, protein supplements, protein smoothies, gym supplements, protein bars, electrolyte supplements, and fitness supplements" [13].

"Companies are introducing innovative and healthy beverage product, which is a blend of fruit juice, dairy and fizz in the market. This product contains fizz, real fruit juices, goodness of dairy and has the sugar content 3 percent less compared to the other brand soft drinks. The current Prime Minister of India, Mr. Narendra Modi, proposed the big players like Coca Cola, Pepsi to add 2 percent of fruit content in the aerated drinks which will thereby help the farmers to cultivate more in fruits and can generate profit" [14]. This kind of initiatives will promote the inclusion of real fruits in the carbonated drinks available in the market. This study helps to understand the market of carbonated dairy drink product and suggest ways in improving the sales of this healthy carbonated beverage.

2. MATERIALS AND METHODS

The primary data was collected from the consumers with the help of structured schedule. The sampling method used was non-probability sampling method under which convenience sampling method was used to collect the information from the consumers. To satisfy the objective, the data was collected from 100 consumers of Anand city. Out of 100 consumers, information of 20 consumers were collected from Winner traders (near bus stand), information of 25 consumers were collected from Santram traders (near Kunj Market), information of 30 consumers were collected from Chandini traders (near Ganesh chokdi) and the information of the remaining 25 consumers were collected from Shakti traders (Anand-Vidyanagar road).

The secondary data regarding the study was collected from different magazines, literature reviews, govt. and private publications, research papers and books, government websites like Directorate of Animal Husbandry, Govt. of Gujarat, National Dairy Development Board (NDDB), United Nations FAO, Agriculture and Processed Food Products Export Development Authority. The sampling method used was non-probability sampling method under which convenience sampling method was used.

2.1 Chi-square Test

"A chi-square ($\chi 2$) statistic is a measure of the difference between the observed and expected frequencies of the outcomes of a set of events or variables. $\chi 2$ can be used to test whether two variables are related or independent from one another or to test the goodness-of-fit between an observed distribution and a theoretical distribution of frequencies" (Karl Pearson, 1900).

The Formula for Chi-Square Is

$$\chi 2 = \Sigma \left((O-E)^2/E \right)$$

2.2 Karl Pearson Correlation Coefficient

It is used for measuring the degree of linear relationship between two variables x and y. I t is usually denoted as r_{xy} or r (Karl Pearson, 1844).

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

3. RESULTS AND DISCUSSION

From the above table, it was found that out of the total respondents surveyed, 10 percent of them are students, 42 percent are the employees, 16 percent are the professionals, 27 percent are the business men and the remaining 5 percent are the house wives.

From the above Table 2, the study unveiled that 45 percent of the respondents are between 21 to 30 years age group and 26 percent of the respondents are between 31 to 40 years age group.

Table 1. Type of consumers Surveyed for the carbonated beverage

Type of Customers	Number of Respondents	Percentage
Students	10	10
Employees	42	42
Professionals	16	16
Businessmen	27	27
House-wives	5	5
Total	**100**	**100**

(Source: Primary data)

Table 2. Age of the respondents

Age	Number of Respondents	Percentage
Below 20 years	15	15
21 years - 30 years	45	45
31 years - 40 years	26	26
41 years - 50 years	10	10
> 50 years	4	4
Total	**100**	**100**

(Source: Primary data)

Table 3. Educational qualification of the respondents

Educational Qualification	Number of Respondents	Percentage (%)
Illiterate	8	8
School Level	10	10
Graduation	36	36
Post-graduation	18	18
Skilled and Semi-skilled	28	28
Total	**100**	**100**

(Source: Primary data)

The Educational background of the respondents is varied from illiterate to post graduation and technical level. From the above table it was revealed that out of total 100 respondents surveyed, 8 percent of them are illiterates, 10 percent studied up to school level, 36 percent finished their graduation, 18 percent of them finished their post-graduation and the remaining 28 percent of the respondents are technically skilled and semi-skilled.

Income of the people determine the purchasing power and people purchase the products depending up on their affordability. From the above Table 4, monthly income of the respondents is varied between below 10000 INR to above 40000 INR. The results show that 10 percent of the respondents earn less than 10000 INR per month, 25 percent of the respondents earn 10000 and 25000 INR per month, 45 percent of the respondents earn 25001 to 40000 INR per month and the remaining 20 percent of the respondents earn more than 40000 INR per month.

From the data represented above in the Table 5, the study was conducted and out of 100 respondents surveyed, 28 percent of the male and 22 percent of the female did not purchase the product and the remaining 34 percent of the male and 16 percent of the female consumed the product.

Table 4. Income of the respondents

Monthly Income	Number Of Respondents	Percentage
<10000	10	10
10000 – 25000	25	25
25001 – 40000	45	45
> 40000	20	20
Total	**100**	**100**

(Source: Primary data)

Table 5. Respondents who bought carbonated beverage

Respondents who purchased the selected carbonated beverage		Number of respondents	Percentage (%)
No	Male	28	28
	Female	22	22
Yes	Male	34	34
	Female	16	16
Total		100	100

(Source: Primary data)

Table 6. Income and Number of Respondents surveyed for the product

Income	Number of Respondents surveyed		
	Not consumed	Consumed	Total
<10000	9	1	10
10000 – 25000	19	6	25
25001 – 40000	15	30	45
> 40000	7	13	20
Total	**50**	**50**	**100**

(Source: Primary data)

6 (a) Relation between Income and Number of Respondents who consumed carbonated beverage using Chi-square analysis

Inference:

$\chi2 = \Sigma((O-E)^2)/E) = 19.96$
At 5% level of significance and 12 degrees of freedom, $\chi2$ critical = 7.815
$\chi2$ calculated (19.96) > $\chi2$ critical (7.815)
Null hypothesis is rejected.

6 (b) Degree of Linear Relation between Income and Number of Respondents who consumed carbonated beverage using Pearson Correlation Co-efficient

Inference:

r = 0.9299

Table 7. Age group and frequency of consuming the product

Age	Frequency of consuming			
	Regular	Occasional	Irregular	Total
Below 20 years	1	1	1	3
22-30 years	5	12	8	25
31-40 years	3	7	5	15
41-50 years	1	2	2	5
Above 51 years	0	0	2	2
Total	10	22	18	50

(Source: Primary data)

7 (a) Relation between Age group and Frequency of Consuming the product using Chi-Square analysis

Inference:

$\chi2 = \Sigma((O-E)^2)/E = 10.423$
At 5% level of significance and 8 degrees of freedom, $\chi2$ critical = 15.5
$\chi2$ calculated (10.4229) < $\chi2$ critical (15.5)
Null hypothesis is accepted.

Table 8. Education and purchase decision about the product

Education	Purchase Decision				
	Own Accord	Friends	Elders	Collective Decision	Total
Illiterate	1	2	0	0	3
Schooling	1	3	1	1	6
Graduation	5	7	2	1	15
Post- graduate	8	2	1	1	12
Skilled and Semi- skilled	10	2	1	1	14
Total	25	16	5	4	50

(Source: Primary data)

8 (a) Relation between Education and Purchase Decision about the product using Chi-square analysis

Inference:

$\chi2 = \Sigma((O-E)^2)/E = 11.922$
At 5% level of significance and 12 degrees of freedom, $\chi2$ critical = 21.0
$\chi2$ calculated (11.92155) < $\chi2$ critical (21.0)

Null hypothesis is accepted.

Table 9. Shift to other Brand Soft Drinks

Shift to other brands	Number Of Respondents	Percentage (%)
Yes	35	70
No	15	30
Total	50	100

(Source: Primary data)

From the above table, it was inferred that out of the total 40 respondents who consumed the carbonated beverages, 70 percent of the respondents had the tendency to shift to other brand drinks and the remaining 30 percent respondents did not have the tendency to shift to the another brands.

4. DISCUSSION

From the above results, it is interpreted that most of the consumers surveyed are the employees and 45 per cent of the respondents are aged between 21 to 30 years. Majority of the respondents are graduated (36%) and only 50 per cent of the selected carbonated dairy drink is consumed by the respondents due to the lack of awareness and the higher price of the product compared to that of the other normal carbonated beverages. By the analysis of chi-square analysis and correlation co-efficient, it is inferred that there is an association and significant positive correlation between income and consumption of the product. It is also inferred that there is no association between age group and frequency of consuming the product. From the results, it is interpreted and unveiled that the purchase decision is independent of the educational qualification in consuming the selected carbonated dairy beverage. Most of the respondents are likely to shift to the other brands as they are unaware regarding the goodness of real fruits juice, ingredients present and a higher price.

5. CONCLUSION

The consumer preferences change regularly due to the availability of lot of substitutes and the market arrival of new products [15]. Based on the study, awareness among the customers should be created by using suitable marketing and sales promotion strategies [16]. Mass communications and digital communications are to be explored, communicated and delivered effectively to build brand preference, attract new consumers and nurture the existing ones [17]. The company should explore, establish, target and monitor the need and preference of the consumers regularly for further improvement of the product by the creation of value addition and product innovations [18].

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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