



A STUDY ON IMPORTANCE OF LOGISTICS IN DISTRIBUTION OF AMUL BEVERAGES AND ITS DEMAND LEVEL WITH SPECIAL REFERENCE TO COIMBATORE CITY

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Abstract

This research study investigates the significance of logistics in the distribution of Amul beverages and analyzes the demand level for these beverages, focusing on Coimbatore city. The study employs a descriptive research design to assess the efficiency of Amul's distribution channel and understand consumer preferences. Data was collected from 150 respondents using a structured questionnaire, and both primary and secondary data sources were utilized. The findings reveal that brand image, quality, and demand are the top-ranked features offered by Amul beverages, according to retailers in Coimbatore city. Additionally, a chi-square analysis was conducted to examine the influence of taste, price, flavors, quality, and availability on the demand level of Amul beverages. The results suggest significant relationships between price, flavors, and age groups, while taste, quality, and availability showed no significant relationship with age. Overall, this study sheds light on the importance of logistics in the distribution of Amul beverages and provides insights into consumer preferences and demand patterns in Coimbatore city.

Key words: Amul Beverages, Logistics, Distribution, Demand Analysis, Consumer Preferences, Brand Image, Quality, Pricing Strategies, Distribution Efficiency, Customer Satisfaction, Market Trends, Chi-Square Analysis, Beverage Industry, Supply Chain Management.

JEL CLASSIFICATION CODE: D30, D31, J23

INTRODUCTION OF THE STUDY

The food processing industry in India has a total turnover of around USD 65 billion which includes value added products of around USD 20.6 billion. Coca cola, Pepsi, and Nestle are the leading beverage brands that have been ruling the Indian beverage market since past few decades. Among all the beverages, tea and coffee are manufactured as well as exported heavily in the international markets succumbing to the individual demands around the world.

The beverage industry in India constitutes of around USD 230 billion among the USD 65 billion food processing industry. The major sectors in beverage industry in India are tea and coffee which are not only sold heavily in the domestic market but are also exported to a range of leading overseas markets. Half of the tea and coffee products are available in unpacked or loose form. Among the hot beverages manufactured in India, tea is the most dominant beverage that is ruling both the domestic and international market even today. The supply of tea and coffee is insurmountable in the Indian beverage industry.

The taste factor in tea varies according to the taste of individuals in different countries and the beverage companies in India manufacture the products in accordance with the taste of the individuals. For example, the inhabitants in the southern parts of India prefer dust tea whereas the inhabitants in the western part of India prefer loose tea. The Southern India also prefers coffee a lot. The production capacity of the total packaged coffee market is 19,600 tonnes which is approximately a USD 87 million market.

REVIEWS OF LITERATURE

Ahila D and Dr. C. Boopathi (2015) found out that generally, the consumers change their behavior frequently on the basis of new trend and fashion. They well know their needs and wants, so gather information about products and also compare its price, quality, taste and other attributes. If the consumers are not satisfied they shift to other brands. However the data shows the consumers buy the Aavin milk for its quality and taste. It has to be pointed out that milk consumers prefer taste over than the price. Many respondents feel the price of Aavin products is too high than other brands. If the Aavin take necessary steps to satisfy their consumers, it creates invariant place in mind of consumers.

Mohit Jamwal, Dr. Akhilesh Chandra Pandey (2014), “Consumer behaviour towards cooperative milk societies: A Study on measuring the customer satisfaction of ‘Ananchal’ milk (A Member milk union of UDFC Ltd)”. The study on Consumer behaviour is the study of how individual make decision to spend their available resources (time, money, effort) on consumption related items. Customer satisfaction was measured across different attributes of the Ananchal milk and the customer’s preference was checked across different parameters. This survey on the sale of Ananchal milk, it can be concluded that to evolve their production, marketing and pricing strategies effectively.

“An Empirical Study of the Financial Performance of Amul Dairy and Panchamrut Dairy”, Ms. Sangita Sharma, April – 2012. The research has imparted an empirical study for better performance on

financial aspects. The study is concluded with the fact that AMUL had registered tremendous profit and profitability performance in relation to Panchamrut as from the 2006-07 to 2010-11, even though they had merger resources in terms of income, deposits, assets and with the help of little manpower.

Shah (2010) examined that the rationalization of milk distribution system in westerns Ahmadabad city, high industrial area, institution, raver front and roads and highways. Clearly establish that the demand for milk of westerns city is in the top gear and expected to reach more than 19 lakh liters per day in next ten year. For that, that there is need for strengthening the milk distribution channel system.

STATEMENT OF THE PROBLEM

Amul (Anand milk produced union limited) formed in 1946, is a dairy cooperative movement in India. The brand name Amul sourced from the Sanskrit word Amoolya means priceless. Amul product has different type such as Milk, Chocolate, Milk powder, Curd, Ice cream, beverages etc., Amul has strong network of over 3 million milk producer. Britannia industry and nestle Ltd. are competitive product for Amul. Amul is a world's largest manufacturer of beverages.

India largest food brand trusted Amul product for its quality and product available at affordable price. Number of popular milk product like beverages, Ice cream, Butter and Curd prefer to use Amul rather than other product. This research is pertaining to find out the present consumer satisfaction of Amul product and importance of logistics in distribution of Amul beverages and its demand level.

OBJECTIVES OF THE STUDY

- To analyze the view point of retailers over the sales of Amul beverages.
- To study the demand of Amul beverages against other beverages in Coimbatore city.

LIMITATIONS OF THE STUDY

- Respondents opinion are dynamics, they keep changing time to time.
- The time taken for this study was also limited and it was the major constraint to complete the work entirely.
- All the respondents of this survey are based from Coimbatore city only.

RESEARCH METHODOLOGY

Research Design

A research design defines the structure or framework within research is carried out. In this study descriptive research design has been used in order to describe the logistics and distribution channel efficiency of Amul beverages.

Primary Data

The primary data has been conducted through the questioner from the customer. The questionnaire is designed in a systematic manner covering adequate and relevant questions which is useful to study.

Secondary Data

The theoretical aspects of the study is collected from various sources which includes books, journals, magazines, websites and other related projects.

Data Collection

In this study the researcher has used the questionnaire method for collecting relevant information. The data has been collected from the respondents using the questionnaire. Data collection is carried out in the month of January 2019.

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the study on the topic, “A STUDY ON IMPORTANCE OF LOGISTICS IN DISTRIBUTION OF AMUL BEVERAGES AND ITS DEMAND LEVEL WITH SPECIAL REFERENCE TO COIMBATORE CITY”, is presented based on a sample of 150 respondents. The collected data are classified and tabulated. The data are analyzed using the following statistical tools.

- ✓ Ranking
- ✓ Chi-square

RANK ANALYSIS

The ranking analysis is performed to rank the responses of the respondents towards the satisfaction level for selling Amul beverages in their shop, The ordinal ranking (ranks 1, 2, 3, 4, 5,6,7,8....) method is been used to find the relationship between a set of items.

FEATURES OFFERED BY AMUL BEVERAGES

Table 4.2.1

Features available in AMUL

S. No	Features	Ranks							TOTAL RESPONDENTS
		I	II	III	IV	V	VI	VII	
1	QUALITY	26	32	22	26	29	6	9	150
2	RETAIL MARGIN	12	19	16	29	18	34	22	150
3	TIMELY DELIVERY	32	21	16	19	22	11	29	150

4	BRAND IMAGE	31	23	36	18	20	12	10	150
5	CREDIT FACILITIES	10	25	18	21	33	23	20	150
6	COMPLAINT HANDLING	15	10	7	11	13	49	45	150
7	DEMAND	24	20	35	26	15	15	15	150

SOURCE: PRIMARY DATA

4.2.1 FEATURES OFFERED BY AMUL BEVERAGES

Table 4.2.(A)

Features available in AMUL

S. No	Features	Ranks							TOTAL	RANK
		I	II	III	IV	V	VI	VII		
1	QUALITY	26	64	66	104	145	36	63	504	2
2	RETAILMARGIN	12	38	48	116	90	204	154	662	6
3	TIMELY DELIVERY	32	42	48	76	110	66	203	577	4
4	BRAND IMAGE	31	46	108	72	100	72	70	499	1
5	CREDIT FACILITIES	10	50	54	84	165	138	140	641	5
6	COMPLAINT HANDLING	15	20	21	44	65	294	315	774	7
7	DEMAND	24	40	105	104	75	90	105	543	3

SOURCE: COMPUTED DATA

FEATURES OFFERED BY AMUL BEVERAGES

Table 4.2.1 (B) Rank Analysis

Rank	1	2	3	4	5	6	7
Total	4.99	5.04	5.43	5.77	6.41	6.62	7.74
Features	Brand Image	Quality	Demand	Timely Delivery	Credit Facilities	Retail Margin	Complaint Handling

SOURCE: PRIMARY DATA

The table 4.2.1 (b) refers features provided by Amul beverages. It states that, brand image are ranked 1st with 4.99, followed by quality ranked 2nd with 5.04, demand ranked 3rd with 5.43, timely delivery ranked 4th with 5.77, credit facility ranked 5th with 6.41, retail margin ranked 6th with 6.62 and complaint handling ranked 7th with 7.74.

CHI SQUARE ANALYSIS

The Chi-Square Analysis is used mainly test the independence of the attribute factors. In others words chi-square test is used to the whether one factor has significant influence overthe other. The relationships between the two factors are calculated at 5% (0.05) level of significance. The formula for calculating the Chi-square test is:

Chi – square test

$$X^2 = \sum \frac{(O - E)^2}{E}$$

Where:

X^2 is the value for chi square

\sum is the sum

O is the observed frequency

E is the expected frequency

Degree of freedom is calculated as follows

$$\text{Degree of freedom} = (r-1) (c-1)$$

Where,

R = number of rows;

C = number of columns

FACTORS INFLUENCING DEMAND LEVEL OF AMUL BEVERAGES

1. INFLUENCE OF TASTE IN DEMAND LEVEL OF AMUL BEVERAGES

OBSERVED FREQUENCY

AGE	HIGHLY SATISFIED	SATISFIED	DISSATISFIED	AVERAGE	POOR	TOTAL
20-30YRS	10	10	7	9	1	37
31-40YRS	12	14	6	6	7	45
41-50 YRS	5	19	9	12	3	48
51-60YRS	6	8	0	3	3	20
TOTAL	33	51	22	30	14	150

DEGREE OF FREEDOM

$$DF = (r-1)*(c-1)$$

$$= (4-1)*(5-1)$$

$$= (3) * (4)$$

$$= 12$$

CALCULATON OF X²

O	E	O - E	(O - E) ²	£(O-E)2/E
10	8.14	1.86	3.46	0.43
12	9.9	2.10	4.41	0.45
5	10.56	-5.56	30.91	2.93
6	4.4	1.60	2.56	0.58
10	12.58	-2.58	6.66	0.53
14	15.3	-1.30	1.69	0.11
19	16.32	2.68	7.18	0.44
8	6.8	1.20	1.44	0.21
7	5.43	1.57	2.46	0.45
6	6.6	-0.60	0.36	0.05
9	7.04	1.96	3.84	0.55
0	2.93	-2.93	8.58	2.93
9	7.4	1.60	2.56	0.35
6	9	-3.00	9.00	1.00
12	9.6	2.40	5.76	0.60
3	4	-1.00	1.00	0.25
1	3.45	-2.45	6.00	1.74
7	4.2	2.80	7.84	1.87
3	4.48	-1.48	2.19	0.49
3	1.87	1.13	1.28	0.68
TOTAL		0.00	109.19	16.63

CALCULATION VALUE OF X² = 16.63

CHI SQUARE VALUE	DEGREE OF FREEDOM	SIGNIFICANT VALUE	TABLE VALUE	SIGNIFICANT / NOT SIGNIFICANT	NULL HYPOTHESIS
16.63	12	0.05	21.02	NOT SIGNIFICANT	ACCEPTED

INTERPRETATION

The result of the chi – square test reveals that the calculated chi – square value(16.63) is less than the table chi – square value (21.02) at 5% level of significance and therefore,there is no relationship between taste and age. Thus, the hypothesis is that the relationship between the two factors does not hold good. Hence, the null hypothesis is accepted.

2. INFLUENCE OF PRICE IN DEMAND LEVEL OF AMUL BEVERAGES

OBSERVED FREQUENCY

AGE	HIGHLY SATISFIED	SATISFIED	DISSATISFIED	AVERAGE	POOR	TOTAL
20-30YRS	8	13	10	4	2	37
31-40YRS	4	8	8	19	6	45
41-50 YRS	13	11	7	17	0	48
51-60YRS	2	0	8	9	1	20
TOTAL	27	32	33	49	9	150

DEGREE OF FREEDOM

$$DF = (r-1)*(c-1)$$

$$= (4-1)*(5-1)$$

$$= (3) * (4)$$

$$= 12$$

CALCULATON OF X²

O	E	O – E	(O – E) ²	£(O-E) ² /E
8	6.66	1.34	1.80	0.27
4	8.1	-4.10	16.81	2.08
13	8.64	4.36	19.01	2.20
2	3.6	-1.60	2.56	0.71
13	7.89	5.11	26.11	3.31
8	9.6	-1.60	2.56	0.27
11	10.24	0.76	0.58	0.06
0	4.27	-4.27	18.23	4.27
10	8.14	1.86	3.46	0.43
8	9.9	-1.90	3.61	0.36
7	10.56	-3.56	12.67	1.20
8	4.4	3.60	12.96	2.95
4	12.09	-8.09	65.45	5.41
19	14.7	4.30	18.49	1.26
17	15.68	1.32	1.74	0.11
9	6.53	2.47	6.10	0.93
2	2.22	-0.22	0.05	0.02
6	2.7	3.30	10.89	4.03
0	2.88	-2.88	8.29	2.88
1	1.2	-0.20	0.04	0.03
TOTAL		0.00	231.42	32.78

CALCULATION VALUE OF X² = 32.78

CHI SQUARE VALUE	DEGREE OF FREEDOM	SIGNIFICANT VALUE	TABLE VALUE	SIGNIFICANT / NOT SIGNIFICANT	NULL HYPOTHESIS
32.78	12	0.05	21.02	SIGNIFICANT	NOT ACCEPTED

INTERPRETATION

The result of the chi – square test reveals that the calculated chi – square value (32.78) is greater than the table chi – square value (21.02) at 5% level of significance and therefore, there is relationship between price and age. Thus, the hypothesis is that the relationship between the two factors does hold good. Hence, the null hypothesis is not accepted.

3. INFLUENCE OF FLAVORES OFFERED IN DEMAND LEVEL OF AMUL BEVERAGES.

OBSERVED FREQUENCY

AGE	HIGHLY SATISFIED	SATISFIED	DISSATISFIED	AVERAGE	POOR	TOTAL
20-30YRS	5	13	9	7	3	37
31-40YRS	11	10	9	9	6	45
41-50 YRS	2	6	6	26	8	48
51-60YRS	3	4	5	3	5	20
TOTAL	21	33	29	45	22	150

DEGREE OF FREEDOM

$$DF = (r-1)*(c-1)$$

$$= (4-1)*(5-1)$$

$$= (3) * (4)$$

$$= 12$$

CALCULATION OF X²

O	E	O – E	(O – E) ²	£(O-E) ² /E
5	5.18	-0.18	0.03	0.01
11	6.3	4.70	22.09	3.51
2	6.72	-4.72	22.28	3.32
3	2.8	0.20	0.04	0.01
13	8.14	4.86	23.62	2.90
10	9.9	0.10	0.01	0.00
6	10.56	-4.56	20.79	1.97
4	4.4	-0.40	0.16	0.04
9	7.15	1.85	3.42	0.48
9	8.7	0.30	0.09	0.01
6	9.28	-3.28	10.76	1.16
5	3.87	1.13	1.28	0.33
7	11.1	-4.10	16.81	1.51
9	13.5	-4.50	20.25	1.50
26	14.4	11.60	134.56	9.34
3	6	-3.00	9.00	1.50
3	5.43	-2.43	5.90	1.09
6	6.6	-0.60	0.36	0.05

8	7.04	0.96	0.92	0.13
5	2.93	2.07	4.28	1.46
TOTAL		0.00	296.66	30.32

CALCULATION VALUE OF $X^2 = 30.32$

CHI SQUARE VALUE	DEGREE OF FREEDOM	SIGNIFICANT VALUE	TABLE VALUE	SIGNIFICANT / NOT SIGNIFICANT	NULL HYPOTHESIS
30.32	12	0.05	21.02	SIGNIFICANT	NOT ACCEPTED

INTERPRETATION

The result of the chi – square test reveals that the calculated chi – square value (30.32) is greater than the table chi – square value (26.296) at 5% level of significance and therefore, there is relationship between flavors offered and age. Thus, the hypothesis is that the relationship between the two factors does hold good. Hence, the null hypothesis is not accepted.

4. INFLUENCE OF QUALITY IN DEMAND LEVEL OF AMUL BEVERAGES

OBSERVED FREQUENCY

AGE	HIGHLY SATISFIED	SATISFIED	DISSATISFIED	AVERAGE	POOR	TOTAL
20-30YRS	12	12	7	6	0	37
31-40YRS	12	12	10	11	0	45
41-50 YRS	8	16	4	15	5	48
51-60YRS	5	3	3	8	1	20
TOTAL	37	43	24	40	6	150

DEGREE OF FREEDOM

$$DF = (r-1)*(c-1)$$

$$= (4-1)*(5-1)$$

$$= (3) * (4)$$

$$= 12$$

CALCULATON OF X^2

O	E	O – E	(O – E) ²	£(O-E) ² /E
12	9.13	2.87	8.24	0.90
12	11.1	0.90	0.81	0.07
8	11.84	-3.84	14.75	1.25
5	4.93	0.07	0.00	0.00
12	10.61	1.39	1.93	0.18
12	12.9	-0.90	0.81	0.06
16	13.76	2.24	5.02	0.36
3	5.73	-2.73	7.45	1.30
7	5.92	1.08	1.17	0.20
10	7.2	2.80	7.84	1.09
4	7.68	-3.68	13.54	1.76
3	3.2	-0.20	0.04	0.01

6	9.87	-3.87	14.98	1.52
11	12	-1.00	1.00	0.08
15	12.8	2.20	4.84	0.38
8	5.33	2.67	7.13	1.34
0	1.48	-1.48	2.19	1.48
0	1.8	-1.80	3.24	1.80
5	1.92	3.08	9.49	4.94
1	0.8	0.20	0.04	0.05
TOTAL		0.00	104.50	18.78

CALCULATION VALUE OF $\chi^2 = 18.78$

CHI SQUARE VALUE	DEGREE OF FREEDOM	SIGNIFICANT VALUE	TABLE VALUE	SIGNIFICANT / NOT SIGNIFICANT	NULL HYPOTHESIS
18.78	12	0.05	21.02	NOT SIGNIFICANT	ACCEPTED

INTERPRETATION

The result of the chi – square test reveals that the calculated chi – square value (18.78) is less than the table chi – square value (21.02) at 5% level of significance and therefore, there is no relationship between quality and age. Thus, the hypothesis is that the relationship between the two factors does not hold good. Hence, the null hypothesis is accepted.

5. INFLUENCE OF AVAILABILITY IN DEMAND LEVEL OF AMUL BEVERAGES

OBSERVED FREQUENCY

AGE	HIGHLY SATISFIED	SATISFIED	DISSATISFIED	AVERAGE	POOR	TOTAL
20-30YRS	13	13	2	7	2	37
31-40YRS	6	13	6	18	2	45
41-50 YRS	15	9	2	20	2	48
51-60YRS	9	5	1	3	2	20
TOTAL	43	40	11	48	8	150

DEGREE OF FREEDOM

$$DF = (r-1)*(c-1)$$

$$= (4-1)*(5-1)$$

$$= (3) * (4)$$

$$= 12$$

CALCULATON OF X²

O	E	O – E	(O – E) ²	£(O-E) ² /E
13	10.61	2.39	5.71	0.54
6	12.9	-6.90	47.61	3.69
15	13.76	1.24	1.54	0.11
9	5.73	3.27	10.69	1.87
13	9.87	3.13	9.80	0.99
13	12	1.00	1.00	0.08
9	12.8	-3.80	14.44	1.13
5	5.33	-0.33	0.11	0.02
2	2.71	-0.71	0.50	0.19
6	3.3	2.70	7.29	2.21
2	3.52	-1.52	2.31	0.66
1	1.47	-0.47	0.22	0.15
7	11.84	-4.84	23.43	1.98
18	14.4	3.60	12.96	0.90
20	15.36	4.64	21.53	1.40
3	6.4	-3.40	11.56	1.81
2	1.97	0.03	0.00	0.00
2	2.4	-0.40	0.16	0.07
2	2.56	-0.56	0.31	0.12
2	1.07	0.93	0.86	0.81
TOTAL		0.00	172.04	18.72

CALCULATION VALUE OF X² = 18.72

CHI SQUARE VALUE	DEGREE OF FREEDOM	SIGNIFICANT VALUE	TABLE VALUE	SIGNIFICANT / NOT SIGNIFICANT	HYPOTHESIS
18.72	12	0.05	21.02	NOT SIGNIFICANT	ACCEPTED

INTERPRETATION

The result of the chi – square test reveals that the calculated chi – square value (18.72) is less than the table chi – square value (21.02) at 5% level of significance and therefore, there is no relationship between availability and age. Thus, the hypothesis is that the relationship between the two factors does not hold good. Hence, the null hypothesis is accepted.

FINDINGS OF THE STUDY**1. Rank Analysis of Features offered by Amul Beverages:**

- The ranking analysis indicates that brand image is ranked highest, followed by quality and demand. Timely delivery, credit facilities, retail margin, and complaint handling follow in descending order of ranking.

2. Chi-Square Analysis:

- The Chi-Square analysis was conducted to test the independence of attribute factors such as taste, price, flavors, quality, and availability on the demand level of Amul beverages.
- The results indicate:
 - Taste: There is no significant relationship between taste and age.
 - Price: There is a significant relationship between price and age.
 - Flavors: There is a significant relationship between flavors offered and age.
 - Quality: There is no significant relationship between quality and age.
 - Availability: There is no significant relationship between availability and age.

SUGGESTIONS OF THE STUDY

1. **Strengthen Brand Image and Quality:** Invest in marketing to highlight Amul's brand image and commitment to quality, which were identified as top priorities by consumers.
2. **Address Price Sensitivity:** Offer competitive pricing strategies and promotional offers to attract price-sensitive consumers, particularly in different age groups.
3. **Diversify Flavor Offerings:** Introduce new and diverse flavors to cater to varying consumer preferences across different age groups.
4. **Improve Distribution Efficiency:** Enhance the efficiency of the distribution network to ensure timely delivery and availability of products.
5. **Focus on Customer Satisfaction:** Prioritize customer feedback and promptly address any issues or complaints to maintain high levels of satisfaction.
6. **Offer Attractive Retail Margins and Credit Facilities:** Provide retailers with attractive margins and flexible credit facilities to incentivize them to stock Amul beverages.
7. **Monitor Market Trends:** Continuously monitor market trends, consumer behavior, and competitors' strategies to adapt and stay competitive.

By implementing these suggestions, Amul can further enhance its market position and meet the evolving needs of consumers in Coimbatore city and beyond

CONCLUSION

The study underscores the critical role of logistics in distributing Amul beverages effectively in Coimbatore city. It reveals key factors influencing consumer preferences, including brand image, quality, price, and flavor variety. By addressing these factors and implementing suggested strategies such as strengthening brand image, diversifying flavors, and improving distribution efficiency, Amul can enhance its market position and meet consumer demands more effectively in Coimbatore and beyond.

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