

A Study on Bottled Water Industry of North-East India

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Abstract—Water is the major ingredient of human body and this very fact makes it essential for consumption. The consumer market today is occupied with liquid intake products. But still the plain and fresh water is considered to be the fundamental liquid drink for good health. This very fact has attracted many companies to supply bottled water into the consumer market. Further, the assurance of the quality of the bottled water is also considered to be very exigent. As the need of safe drinking water is increasing day by day, more and more companies are stepping in the bottled water industry throughout India. This drift is also being experienced in the North-Eastern market of India recently. This phenomenon is leading to a sharp competition among the manufacturers to acquire more and more consumers and hence more market share. It is becoming a challenging task to maintain the market leadership by some of the leading giants such as Parle, Coca-Cola, PepsiCo, Nestle etc. Bisleri and Bailley, of Parle, in together enjoys the major market share of the Indian Bottled Water Industry. This research paper therefore, tries to discuss the various marketing strategies of the selected companies of Bottled Water Industry of North-East India to acquire and maintain the market competitive position. Further, the research paper examines the customer preferences for buying bottled water for their consumption. In addition, the research paper also tries to put light on the view points of consumers and retailers towards the product, brand and the industry.

A random sampling has been used for selecting the companies from Bottled Water Industry of North-East India under the study. Questionnaires were prepared for collecting the primary data and various Industry reports and statistical resources were used as secondary data sources for analysis. Different retailers and consumers were selected on random basis for collection of primary data and analysis. The results were concluded with hypothesis generation and were tested by Chi-Square test for accuracy.

Keywords: Safe Drinking Water, Bottled Water Industry, Marketing, Branding, North-East Region of India.

1. INTRODUCTION

The history of bottled water industry dates back to 1965 when the brand 'Bisleri' was introduced in Mumbai by Bisleri Ltd., a company of Italian origin. Then bottled water was sold as mineral water in India. In 1969, Parle India bought over Bisleri (India) Ltd and started bottling Mineral water in glass

bottles under the brand name 'Bisleri'. Earlier, bottled water were packed in glass bottle but in the early- to mid-1980s with the growth of PVC packaging companies started selling their packaged water in PET bottles. Till 1990 very few brands were marketing their product in Indian Market. But after 1990, several industrial groups like Coca cola, Pepsi, Nestle and noticeable presence of national players like Mount Everest, Manikchand, Kingfisher, etc. has started operating in the market and since then this industry has been multiplied manifold. With over a thousand bottled water producers, the Indian bottled water industry India is the tenth largest bottled water consumer in the world.

Rising awareness of safety and hygiene following incidents of water borne diseases in major cities across India has seen the consumption of packaged water bottled in India grow fivefold since the late nineties.

2. RESEARCH METHODOLOGY

2.1 Data Source

Primary Data: Primary data source are the consumers, retailers and company officials.

Secondary Data: For secondary data, sources such as vision documents of North Eastern Region, Government of India publications etc. were used.

2.2 Data Collection Methods

For Primary data questionnaire was prepared and interactions were done with retailers and company officials. Filled up questionnaire were collected from the consumers for analysis.

The secondary data were available in a readymade format over the internet and in the reports. Exhaustive desk research was undertaken based on published information such as state profiles, research reports, publications of government officials and other sources.

2.3 Sampling Technique

Sample Size- 200 consumers were selected.

Sampling Type- Random Sampling

Target- Packaged drinking water consumers and sellers.

2.4 Hypothesis Testing

Chi-square test has been used to support the hypothesis derived from the data analysis.

3. LITERATURE REVIEW

The National Agency for Food and Drug Administration Control (NAFDAC) is the sole regulator established and empowered to enforce compliance with the drinking water qualities as recommended by the World Health Organization (WHO, 1996). Suggestions have been made that if packaged water is improved upon, it can be an alternative water provisions that could allow contributions from local initiatives in the drive towards achieving the water target of the Millennium Development Goals (Dada,2009,Towards A Successful Packaged Water Regulation In Nigeria) ^[1].

It has been found that choice of consumption of packaged drinking water is highly dependent on the economic condition and imported water on their quality and availability (Mananga, Modestine, Sop, Nguidjol, Gouado, 2014, Quality of Packaged Drinking Water Marketed in Douala–Cameroon). In the microbiological analysis, it's been found that the packaged drinking water were not up to their standard (particularly the locally produced ones) because of the lack of facilities and maintenance ^[2].

Bulk usage of Polyethylene Terephthalate (PET) Bottles has enabled the manufacture of light, unbreakable and highly transparent containers (ILSI, 2000). Due to its chemical inertness temperature and oxygen in the PET melt process can promote thermo-mechanical and thermo-oxidative reactions and physical properties (Bach, Dauchy, Chagnon, Etienne,2012 Chemical Migration In Drinking Water Stored In Polyethylene Terephthalate (Pet) Bottles: A Source Of Controversy).Further, recycled PET can be a source of unknown chemical compounds found in water. There are chances that all these substances may potentially migrate from the PET bottle wall to bottled water ^[3].

In the water market, there are two types of human needs to be satisfied ;essential or primary needs which relates to drinking in order to survive and cope with the external conditions set by the climate and secondary or unnecessary needs which can be further broken down into social needs, communicative needs and protection needs (Giacosa & Giovando, 2012,Bottled Water Consumption :The Case Of Italy) ^[4] .

4. FINDINGS AND DATA ANALYSIS

4.1 Questionnaire Survey of Consumers (Sample size=200)

Table 1: Frequency of Use of Bottled Water

QUESTION	1. How Often Do You Use Bottled Water?				
ANSWERS	Always	Often	Sometimes	Never	Very Often
RESPONDENTS	9	35	147	0	9
%	4	17	74	0	5

Interpretation

It is found that consumers use the bottled water for their consumption as and when needed. So, the hypothesis that the people do not always use bottled water is taken and is tested as follows:

Hypothesis Testing:

Chi-square (χ^2) Test

H_0 (Null Hypothesis) = People always use bottled water.

H_1 (Alternative Hypothesis) = People do not always use bottled water.

QUESTION	How Often Do You Use Bottled Water?				
ANSWERS	Always	Often	Sometimes	Never	Very Often
RESPONDENTS (O)	9	35	147	0	9
EXPECTED (E)	40	40	40	40	40
O-E	-31	-5	107	-40	-31
(O-E) ²	961	25	11449	1600	961
(O-E) ² /E	24.025	0.625	286.225	40	24.025

$$\chi^2 = \sum (O-E)^2/E = 374.9 \text{ (Calculated value)}$$

At 5% significance level and degree of freedom = 4, $\chi^2 = 9.488$ (Tabulated value)

Since, Calculated value > Tabulated value

H_1 (Alternative Hypothesis) is accepted.

Therefore, people do not always use bottled water.

Table 2: Number of Brands Known by People

QUESTION	2. How Many Brands Of Bottled Water Do You Know?			
ANSWERS	0-2	3-5	6-10	10 & ABOVE
RESPONDENTS	46	134	13	7
%	23	67	6	4

Interpretation

It is found that on average 3-5 brands of bottled water is known to the consumers. This means consumers are not aware of all the brands present in the market.

Hypothesis Testing:

Chi-square (χ^2) Test

H_0 (Null Hypothesis) = Consumers are aware of all brands of bottled water.

H₁ (Alternative Hypothesis) = Consumers are not aware of all brands of bottled water.

QUESTION	How Many Brands Of Bottled Water Do You Know?			
ANSWERS	0-2	3--5	6--10	10 & ABOVE
RESPONDENTS (O)	46	134	13	7
EXPECTED (E)	50	50	50	50
O-E	-4	84	-37	-43
(O-E) ²	16	7056	1369	1849
(O-E) ² /E	0.32	141.12	27.38	36.98

$$\chi^2 = \sum (O-E)^2/E = 205.8 \text{ (Calculated value)}$$

At 5% significance level and degree of freedom = 3, $\chi^2 = 7.815$ (Tabulated value)

Since, Calculated value > Tabulated value

H₁ (Alternative Hypothesis) is accepted.

Therefore it is concluded that all the consumers are not aware of all the brands of bottled water.

Table 3: Circumstances Influencing Purchase of Bottled Water

QUESTION	3. Under What Circumstances You Buy Bottled Water?			
ANSWERS	Travelling	During Parties, Meetings etc.	When Normal Water Is Not Available	During Illness
RESPONDENTS	114	35	47	4
%	57	17	24	2

Interpretation

It is evident that bottled water has not become the preferred choice for drinking water and it is perceived as an alternate source of drinking water and is purchased if no other source of drinking water is available.

Hypothesis Testing

Chi-square (χ^2) Test

H₀ (Null Hypothesis) = People use bottled water under normal circumstances.

H₁ (Alternative Hypothesis) = People do not use bottled water under normal circumstances.

QUESTION	Under What Circumstances You Buy Bottled Water?			
ANSWERS	Travelling	During Parties, Meetings etc.	When Normal Water Is Not Available	During Illness
RESPONDENTS (O)	114	35	47	4
EXPECTED (E)	50	50	50	50
O-E	64	-15	-3	-46
(O-E) ²	4096	225	9	2116
(O-E) ² /E	81.92	4.5	0.18	42.32

$$\chi^2 = \sum (O-E)^2/E = 128.92 \text{ (Calculated value)}$$

At 5% significance level and degree of freedom = 3, $\chi^2 = 7.815$ (Tabulated value)

Since, Calculated value > Tabulated value

H₁ (Alternative Hypothesis) is accepted.

Therefore, people do not use bottled water under normal circumstances.

Table 4: Brand Mostly Preferred by Consumers

QUESTION	4. Which Brand Do You Prefer While Buying Bottled Water?			
ANSWERS	Bisleri	Kinley	Aquafina	Others
RESPONDENTS	160	13	7	20
%	80	6	4	10

Interpretation

Even though the bottled water is purchased in lack of availability of other drinking water sources, then also while buying the bottle of water, consumers do have a choice of preference of brands.

Hypothesis Testing

Chi-square (χ^2) Test

H₀ (Null Hypothesis) = People always prefer branded bottled water.

H₁ (Alternative Hypothesis) = People do not always prefer branded bottled water.

QUESTION	Which Brand Do You Prefer While Buying Bottled Water?			
ANSWERS	Bisleri	Kinley	Aquafina	Others
RESPONDENTS (O)	160	13	7	20
EXPECTED (E)	50	50	50	50
O-E	110	-37	-43	-30
(O-E) ²	12100	1369	1849	900
(O-E) ² /E	242	27.38	36.98	18

$$\chi^2 = \sum (O-E)^2/E = 324.36 \text{ (Calculated value)}$$

At 5% significance level and degree of freedom = 3, $\chi^2 = 7.815$ (Tabulated value)

Since, Calculated value > Tabulated value

H₁ (Alternative Hypothesis) is accepted.

Therefore, people do not always prefer branded bottled water.

Table 5: Reasons for Preference of Bottled Water

QUESTION	5. What Is Your Reason For Preference Of This Particular Brand ?			
ANSWERS	Taste & Quality	Affordable Price	Brand Image	Availability
RESPONDENTS	69	16	53	62
%	34	8	27	31

Interpretation

Since the need of having drinking water is basic need and it cannot be replaced so the price sensitivity is not seen among the consumers. On the other hand quality and availability was the major concern.

Hypothesis Testing

Chi-square (χ^2) Test

H_0 (Null Hypothesis) = There is significant difference between the attributes - brand image, taste & quality, affordable price, availability etc.

H_1 (Alternative Hypothesis) = There is no significant difference between the attributes - brand image, taste & quality, affordable price, availability etc.

QUESTION	What Is Your Reason For Preference Of This Particular Brand?			
ANSWERS	Taste & Quality	Affordable Price	Brand Image	Availability
RESPONDENTS (O)	69	16	53	62
EXPECTED (E)	50	50	50	50
O-E	19	-34	3	12
(O-E) ²	361	1156	9	144
(O-E) ² /E	7.22	23.12	0.18	2.88

$\chi^2 = \sum (O-E)^2/E = 33.4$ (Calculated value)

At 5% significance level and degree of freedom = 3, $\chi^2 = 7.815$ (Tabulated value)

Since, Calculated value > Tabulated value

H_1 (Alternative Hypothesis) is accepted.

Therefore, there is no significant difference between the attributes - brand image, taste & quality, affordable price, availability etc.

Table 6: Mostly Preferred Bottled Water Size

QUESTION	6. Which Size Of Bottle Do You Prefer?				
ANSWERS	500ml	1 Litre	2 Litre	5 Litre	20 Litre
RESPONDENTS	79	90	29	2	0
%	39	45	15	1	0

Interpretation

Consumers prefer handy size of bottle so that it can be consumed at regular interval of time. One litre bottles are mostly preferred but the half litre bottle is substantially picking up the preference choice for buying.

Hypothesis Testing

Chi-square (χ^2) Test

H_0 (Null Hypothesis) = Bulk packs of bottled water have easy sales.

H_1 (Alternative Hypothesis) = Bulk packs of bottled water do not have easy sales.

QUESTION	Which Size Of Bottle Do You Prefer?				
ANSWERS	500 ml	1 Litre	2 Litre	5 Litre	20 Litre
RESPONDENTS (O)	79	90	29	2	0
EXPECTED (E)	40	40	40	40	40
O-E	39	50	-11	-38	-40
(O-E) ²	1521	2500	121	1444	1600
(O-E) ² /E	38.025	62.5	3.025	36.1	40

$\chi^2 = \sum (O-E)^2/E = 179.65$ (Calculated value)

At 5% significance level and degree of freedom = 4,

$\chi^2 = 9.488$ (Tabulated value)

Since, Calculated value > Tabulated value

H_1 (Alternative Hypothesis) is accepted.

Therefore, bulk packs of bottled water do not have easy sales.

Table 7: Opinion for Price of Bottled Water

QUESTION	7. Do You Feel Bottled Water Is Costly?	
ANSWERS	No	Yes
RESPONDENTS	111	89
%	55	45

Interpretation

Pricing of the bottled water have a mixed response among the consumers when asked due to urgency of the need and choice.

Hypothesis Testing

Chi-square (χ^2) Test

H_0 (Null Hypothesis) = Price do not influence consumers of bottled water.

H_1 (Alternative Hypothesis) = Price influences consumers of bottled water.

QUESTION	Do You Feel Bottled Water Is Costly?	
ANSWERS	No	Yes
RESPONDENTS (O)	111	89
EXPECTED (E)	100	100
O-E	11	-11
(O-E) ²	121	121
(O-E) ² /E	1.21	1.21

$\chi^2 = \sum (O-E)^2/E = 2.42$ (Calculated value)

At 5% significance level and degree of freedom = 1, $\chi^2 = 3.841$ (Tabulated value)

Since, Calculated value < Tabulated value.

H_0 (Alternative Hypothesis) is accepted.

Therefore, price does not influence consumers of bottled water.

Table 8: Defects in Bottled Water

QUESTION	8. Did You Ever Find Any Defect With Any Of The Bottled Water?	
ANSWERS	Yes	No
RESPONDENTS	45	155
%	22	78

Interpretation

Though being an intake and part of food, bottled water does not go totally free from defects. 22 % of consumers had found defects with bottled water in some day or other .So, this product too suffers from defects in packaging, loose caps etc.

Hypothesis Testing

Chi-square (χ^2) Test

H₀ (Null Hypothesis) = There does not exist any defect in the bottled water.

H₁ (Alternative Hypothesis) = There exist some defects in the bottled water.

QUESTION	Did You Ever Find Any Defect With Any Of The Bottled Water?	
ANSWERS	Yes	No
RESPONDENTS (O)	45	155
EXPECTED (E)	100	100
O-E	-55	55
(O-E) ²	3025	3025
(O-E) ² / E	30.25	30.25

$\chi^2 = \sum (O-E)^2 / E = 60.50$ (Calculated value).

At 5% significance level and degree of freedom = 1, $\chi^2 = 3.841$ (Tabulated value).

Since, Calculated value > Tabulated value.

H₁ (Alternative Hypothesis) is accepted.

Therefore, there exist some defects in the bottled water.

Table 9: Opinion about Advertisements

QUESTION	9. Can You Remember Advertisement Of Any Company?	
ANSWERS	Yes	No
RESPONDENTS	50	150
%	25	75

Interpretation

Advertisements in this industry are very rare. Consumers are not much aware of promotions and advertisements of companies. 75% of consumers do not remember any advertisements. At the same time, it can also be said that

advertisements and promotions do not play much important role in this industry.

Hypothesis Testing

Chi-square (χ^2) Test

H₀ (Null Hypothesis) = Advertisements influence consumers of bottled water.

H₁ (Alternative Hypothesis) = Advertisements do not influence consumers of bottled water.

QUESTION	Can You Remember Advertisement Of Any Company?	
ANSWERS	Yes	No
RESPONDENTS (O)	50	150
EXPECTED (E)	100	100
O-E	-50	50
(O-E) ²	2500	2500
(O-E) ² / E	25	25

$\chi^2 = \sum (O-E)^2 / E = 50$ (Calculated value).

At 5% significance level and degree of freedom = 1, $\chi^2 = 3.841$ (Tabulated value).

Since, Calculated value > Tabulated value.

H₁ (Alternative Hypothesis) is accepted.

Therefore, advertisements do not influence consumers of bottled water.

5. OBSERVATIONS

The packaged drinking water is no more a choice only for its quality, purity and availability, but it has emerged out as an executive and a luxury product in the society today. Most of the consumers are not aware of the differences between packaged drinking water and natural mineral water. It is commonly acknowledged as “Mineral Water”. Consumers are familiar to very few brands among the available brands in the market. Due to convenience and portability the smaller sizes of the bottles are now more preferred by the consumers. Bisleri remains the most demanded brand among the competitors for its brand image, quality and availability. Availability and the distribution penetration of the bottled water manufacturers play a greater role in creating brand image and facilitating the preference of purchasing by consumers. Since most of the companies don’t have extensive distribution channels, the local and unorganized players are also exploring these markets for presence. Consumers during travelling are most likely to prefer bottled water for consumption. Also it is to mention that most of the consumers are not much influenced by advertisement campaigns and they are not much influenced by price of the product.

While doing this study some of the retailers were also interacted and their views and experiences were examined to

get a closer understanding of the sector in the region under study. A summary of the interaction can be summarised as below:

Bisleri becomes the preferred brand among the retailers of the market. Retailers do not only stock most demanded brand instead they stock all others which have better distribution systems. They enjoy high profit margin on sales per unit as shown in the Table 10 below. Local players give much better profit margin than the national players. They all have consensus on the fact that customer demand is the main factor which drives this industry. Having knowledge about the industry scenario (rising demand, easy sales, high profit margin etc), retailers are optimistic toward this business and they want to continue in future.

Sl No.	BRANDS	PACK SIZE		
		500 ml (Rs.)	1 litre (Rs.)	2 litre (Rs.)
1	Bisleri	1.5-3	6-9	10-13
2	Kinley	1.5-2	8-9	NA
3	Bailley	NA	12	18
4	Kingfisher	3	8	11
5	Aqua Drops	2	5	10
6	Valley Springs	1-6	3-13	5-18
7	Aqua Amrit	2-4	3-9	12
8	A To Z	2	4-6	7
9	Derby	1-2	2-5	NA
10	Real	2	5	8
11	Livana	1.5	4	NA
12	Aquafina	1.5	7	NA

6. CONCLUSIONS

Packaged drinking water business is a booming sector in India. In this sector both national and regional players have significant contributions toward growth of the sector in global scenario. There exists numbers of competitive players in the sector but still the sector seems to be Bisleri biased. Bisleri has become the synonym for packaged drinking water among the consumers of India. The bottled water industry has shown remarkable growth in last 15 years despite of duplicity. Consumers are less concerned with the actual content of this bottled product. If the water is bottled one, consumers are ready to buy it. With this attitude of the consumers, this

becomes a prime duty and responsibility of the regulatory bodies to protect the consumers from the possible harmful effects if any. Both the players and the distribution partners have the benefit of high profit margins which makes a progressive sectoral prospect in the future.

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