

Determinants of Demand for the Packaged Drinking Water

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1. Introduction

Research is a systematic study of the available facts and sources, reaching new conclusions and contributing to current knowledge. Research is conducted to solve a problem and find an apt solution for it. Scientific study is the method by which one can find better results. This research conveys “what are the determinants of demand of the packaged drinking water”. The word demand means to make an enquiry. Willingness of a consumer to buy the product and their ability to pay backed by their income for a commodity is called as demand. Consumer demand theory puts forth that demand of a commodity depends on tastes of the consumer, price of the related goods such as substitute and complementary goods. 1622 was the year when first bottling water plant was established in the United Kingdom. The reason behind the establishment of bottle water industry was to solve the problem of transportation of the water to far distance. This industry is a booming one. In India there are around 150 domestic water bottling companies. USA tops the list of the countries which generate more revenue from selling water bottles. In India Bisleri is the market leader in this industry which captures 60% of the market share. Drinking water from the water bottle has become a high standard of living in both developed and developing countries. The factors which influence the demand of this industry are due to increasing health awareness among the population, good taste of water, uptrend in the population, transportation

and tourism etc. Water bottle industry is very useful for the economy because water is a necessity and everyone needs to buy it. But this industry is also harmful for the human life and the surrounding environment if good quality material is not used and if properly not recycle as well as disposed. Many people in across the world do not have access to safe drinking water. Tap water in most of the place gets contaminated and water bottle in such cases can be used to solve the problem as they are less priced and everyone can consume it.

1.1. Research Questions

In due course of the research, the following questions will be addressed.

- 1 What are the various factors influencing the demand of packaged drinking water?
- 2 What are the reasons why packaged drinking water was introduced?
- 3 To find how packaged drinking water can solve the problem of unhealthy drinking water?

1.2. Objectives of the Study

The research aims to identify the determinants of demand and other factors of packaged drinking water industry and affective matters to the consumers' decision making ability. Henceforth, the following are the research objectives.

1. To understand the determinants of packaged drinking water.
2. To identify whether the packaged drinking water industry is harmful to the environment.
3. To identify the positive and negative aspects of the determinants of demands for the packaged drinking water.

1.3. Scope and Limitations of the Study

This research aims to study the determinants of the demand for the packaged drinking water. This study also gives suggestions to increase the demand of the bottle water which are critically analysed by scientific study and other authenticated sources. This research is primarily focused on studying what are the factors which influence the demand of the packaged drinking water. The scope of the research is mostly within the Indian context but for better analysis and better understanding foreign nations have been included in the research. This research studies what are the factors in India which influences the Indian population on its decision making power to buy the packaged drinking water.

1.4. Research Methodology

The current research is based on analytical, comparative and empirical research methodologies. Where analytical research uses facts and information to make a critical evaluation. Comparative research uses statistical information from different countries and foreign sources with that of India. Empirical research coming up with the results and verifying it on the basis of observations. The researcher adopts these methods because these are apt for this study as these helps to find the factors which are behind the determinants of demand for the packaged drinking water industry. To understand what might be the positive and negative aspects of the determinants of demand on the consumers. By not restricting to only the methodologies mentioned above, the researcher uses secondary materials such as books, articles and websites. Since these also help analyse the determinants and ultimately help to compare the factors influencing the consumer behaviour. Hence the researcher finds these methodologies apt for the current research.

1.5. Formulation of Hypothesis

After considering the background of the current topic, hypothesis can be framed as follows:

“Plastic packaged drinking water industry’s demand determinants are somewhat harmful to the human life”.

1.6. Literature Review

The literature review enunciates that there are no direct sources for the existing research topic. The researcher has performed all the background checks of the authorities relating to the topic. The books, articles, journals etc cited do not directly explain the topic, but the researcher had to analyse all things cited and form a conclusion on them. The researcher relied on an article titled “Factors influencing water drinking behaviour” (Yao, 2011) by which the researcher was able to study the consumer behaviour behind decision making of the consumer while buying the packaged drinking water one of the reason was that consumers think bottle water is of safer quality rather than the tap water and this is due to the advertisement of the water bottle industry. “Bottled Water: Pure drink or pure hype?” (Olson, 1999) explains how marketing is done performed by the water bottle industries in order to increase the sales which drives the demand for the product in the market. By this the researcher was able to find out what are the determinants identified by these industries in order to increase the demand for the product. “Current scenario of water bottling industries in India” (Singh & Shiva, 2019) describes how the bottle water market emerged in India and what is the scenario or position of this industry in India. It also explains what are the regulations, rules, standards to be met, permission from the authorities in India. “Bottled Water: Understanding a social phenomenon” (Ferrier, Bottled Water: Understanding a Social Phenomenon, 2001) establishes why people consumer water bottles instead of tap water and what are the effects of this consumer behaviour. It also includes the types of packaged drinking water available in the market and their determinants in the market and what type of quality is used to manufacture those bottles and this is also a factor behind demand because if low quality bottles are made and if it affects the human life then their establishes a direct relationship between the taste of the consumer and this causes a shift in the demand for different product. “History of Bottled water” (History of Bottled Water, 2018) article explains how the history of bottle water was and what was the force which droved it and made it as an industry. No person would have thought that water which is freely available, it would be sold in bottles and through this billion dollar industries would be set up.

2. Demand

The word *demand* comes from a French word *demander* which means to *make an enquiry* (Demand, Vocabulary.com). Willingness of a consumer to buy the product and their ability to pay backed by their income for a commodity is called as demand (Salvatore & Rastogi, 2018). $Q_{dx} = f(P_x, I, P_Y, T)$ is a functional form of the consumer demand theory. This theory put forwards that the demand for a commodity depends on price of the commodity, consumer’s income, taste of the consumer, price of related substitute and complementary goods, price per unit of the commodity (Salvatore & Rastogi, Managerial Economics Principles & Worldwide Applications, 2018). Expectation of the future prices, size of the market as well as some special circumstances affects the quantity demanded for a commodity in the market and these are called the determinants of demand. Tastes of the consumer don’t refer to the quality of the product like what it tastes but with the demand in the market. For example if Good X is more popular in the market this implies that there is more demand for this product and vice versa. Advertising is also done to increase the demand for the products.

3. Water Bottle Industry: History & Comparison

Holy well bottling water plant in UK in the year 1622 was the first bottling water plant in the world. 1767 was the year when 1st commercial water bottle was made available in America by Jackson's Spa. In 1947 plastic water bottles came into existence and the price was expensive for this. From the mid 1970's packaged drinking water industry started to see boom in it because it was popularized by show casing it has healthy (History of Bottled Water, 2018). 1969 was the year when Bisleri started its water bottle business in India (And this is how Parle began, 2005). Introduction of PVC (Polyvinyl Chloride) water bottles in the year 1980 by Bisleri further increased the demand for Bisleri in India. Currently in India there are 150 domestic packaged water bottle brands in the market (Singh & Shiva, 2019). The global water bottle industry's market size for the year 2021 was estimated at \$349 billion dollars and 623 billion litres in terms of volume (Global bottled water market, 2018). The statistical data shows that 41.01% of High income class, 33.1% of medium income class and 25.91% of low income class in the year 2021 consumed bottled water (Bottled Water > India > Demographics, statista.com). In the year 2022 from the month of January to June 23,968.5 million litres of packaged water has been consumed in India (Bottled Water > India > Volume, statista.com). USA, China, Germany, Mexico and Indonesia are the top 5 countries which generate major revenue from bottle water (Bottled Water > India > Global Comparison, statista.com). In Indonesia, bottle water business has stood up as a big business there because people before access to bottle water did not have safe drinking water, the water was contaminated by pollution, urbanization, mixing of sewage water with the ground water etc provided an opportunity for packaged water bottle industry to flourish the business there and is highly consumed by middle income class people (Warburton, 2011). The average volume per person in Indonesia is 92.91 litres (Bottled Water > Indonesia, statista.com) in the year 2022, whereas in India, it is 17.36 litres (Bottled Water > India).

4. Factors Influencing the Demand for Packaged Drinking Water

4.1. Increasing Health Awareness

This is the major determinant of demand or can also be termed as a driving force which drives the demand for the packaged drinking water not only in India but also in the world. It can be inferred from the above statistical reports from chapter II of this paper that the demand for more packaged drinking water in countries which are not developed but are developing is mainly due to not availability of safe drinking water. There are many beverages available in the market which are harmful to the human life and people are being conscious of their health they shift to sweet water which is actually the normal packaged drinking water and they feel after consuming, healthy as well as people feel they would weigh less after consuming it (Ferrier, 2001).

4.2. Taste of the Water

Tap water is not sweet as compared to packaged drinking water because in most of the bottle water high concentration of minerals such as Magnesium and Calcium causes sweetness in water (Byrd, 2022). Tap water is treated with chlorine to disinfect the water from micro organisms, bacteria and virus which gives bitter and disinfectant like taste. Due to sweetness of water as said earlier there comes a change in the taste of the consumer both in quality and quantity which results in high demand (Ferrier, Bottled Water: Understanding a Social Phenomenon, 2001).

4.3. Increase in the Population

This is the size of the market which means the number of consumers in the market. More consumers

mean more demand and fewer consumers' means less demand. So countries with more population will have more demand for the water consumption. For example India, with more than 1.3 billion of people living (Place Explorer, 2020) and according to UNICEF less than 50% of the population in India has access to safe drinking water while other doesn't have it (Clean Drinking Water, UNICEF). This means that more than 0.7 billion people would be willing to have access to safe drinking water and this can be fulfilled by bottle water. As per the report of National Statistical Office 12.2% of the urban population of India rely on water bottle for their drinking needs and this number is significant (Sharma, 2019).

4.4. Transportation

Transportation is an important contributor in the increasing demand of the packaged drinking water. For example if a person living in India visits such a place where the drinking water quality is not safe and wants to satisfy his/her drinking water needs then the person would have no other option but to drink the unsafe water. Now if bottle water which are safe are introduced in such a market then this would outweigh the negative effects of water and the ill health caused by such unfit water. The person can buy the bottle water and satisfy his/her drinking needs. It is not possible to carry water from home to every place. This was also identified by early Romans. They created the piping system from which the water was transported but there was a disadvantage for this and that was they were not able to transport the water to each and every place, and this opportunity was identified by the Europeans because there was extensive travelling during the 1700's and bottle water was introduced (History of Bottled Water, 2018). In today's times people also use bottle water during the transportation which is very beneficial. 17.9 million tourist visited in India during the year 2019 (Most Visited Countries, 2022) and these tourists prefer packaged drinking water rather than the tap water (Bottled Water Market in India (2018-2023), 2019) so this increases the demand for the bottle water not only in India but in the entire world and this is increase in the size of the market which is a determinant of demand for the packaged drinking water in India.

4.5. Weather

Weather also influences on the demand for the bottle water. It influences the decision making ability of the consumer. Every person across the world needs to keep his/her body hydrated which is required to maintain the temperature of the body, necessary for the working of the cells and tissues, provide lubrication between the joints, disposing the waste products, digestion (Healthera, 2019) etc. In the summer season due to exposure of the body to heat makes the body dehydrated which may cause serious consequence such as heat stroke and to avoid this one needs to keep the body hydrated (India TV, 2022) and this problem can be solved by bottle water. The person when going to such places where there is no water available can use this bottle water and this in turn increases the demand for the packaged drinking water. The Chairman of Bisleri said that the demand for bottle water is in all seasons. Some seasons causes some marginal change in the demand. In summer season due to risk of dehydration there is an increase in the demand, in monsoon due to fear of unhealthy water and the risk being associated with it there is an uptrend in the demand, and in winter as there are many festivals being celebrated during those times this also adds its shares in the increasing demand factor for the packaged drinking water (Malhotra, 2016).

4.6. Advertisement

Advertisement is the driving force for many of the products so is for bottle water. Advertisement show the bottle water as symbol of purity and protected than tap water (Olson, 1999). Goods to be in more

demand advertising is used to increase the demand for the products. For example Bisleri advertises its products as “The Original Water” and says “Samajhdaar Jaante Hain Har Paani Ki Bottle Bisleri Nahin” (Bisleri India, 2018) which means “The wise know that every time a bottle of water is not Bisleri”. Google is the name of the company hence Noun but in present time the word Google has become so popular that whenever a person wants to search anything they just say Google it, which means to search and now Google has changed to verb, the same is with Bisleri in India, whenever people buy the water they just ask “Give me Bisleri” which means a water bottle. Bisleri captures 60% of the market share in India and it is estimated that the market value of Bisleri would be \$60 billion by the year 2023 and advertisement plays a very important role for Bisleri (Tiwari, 2021). The chairman of Bisleri said that they would pump in 50 crores on its marketing campaign to push up the sales (Firstpost, 2011).

4.7. Income of the Consumers

If consumers' income rises then the demand for the normal good rises and the demand for inferior good decreases, if the income decreases then the demand for normal good decreases and then the demand for inferior good increases. Inferior good has an inverse relationship between consumers' income and demand. Normal goods have a direct relationship between income and demand. Water is a necessity so people would drink it or buy bottle water irrespective of their increase or downfall in their income level. But packaged drinking water companies have premium product lines, for example Bisleri has Vedica water bottle which costs 60 rupees per litre (Vedica - Himalayan Spring Water, Bisleri) while normal 1 litre Bisleri water bottle costs 20 rupees per litre (Bisleri). Aquafina has Flavour splash (FlavourSplash, Aquafina), Aquafina Can - Purified Still Water (Aquafina Can, Aquafina) which costs more than 50 rupees, Now by these product lines and their price it can be inferred that Vedica of Bisleri is not a necessity while normal one can be a necessity. Hence when there will be an increase in the consumers' income people due to their change in the income will purchase the premium water bottle Vedica leaving the normal one and this will indicate that the people who purchase Vedica their standard of living is high. When consumers' income decreases they would no longer desire to buy premium product but to quench their thirst they would go for the normal one which costs 20 rupees per litre.

4.8. Substitute Goods

Tap water is the substitute good for bottle water. To substitute bottle water with tap water filtration process is needed and this need is fulfilled by portable water filters. There are many filter companies which provide portable water filters such as Nirmal's portable water filter which costs 30 rupees (Yadi, 2020) and is very small in size which can be kept in pocket also. When there is no good water available then this portable water filter, filters all the poor water and absolutely makes it fit for drinking through its sedimentation process and this process is also used in big bottle water making factories. If a substitute goods' price falls then the demand for the other product decreases and vice versa. More than 50% of the population of India still has not received water which is fit for drinking and this can be solved by this mini water filter then that part of the population instead of spending 20 rupees on a litre of water bottle would like to invest 30 rupees in the water filter which can filter water up to 100 litres that is equal to 2000 rupees spent on normal water bottle. A person needs to drink 2-3 litres of water daily. 1 litre costs 20 rupees. Suppose a person drinks 2 litres of water daily then the cost incurred would be 40 rupees daily. If the portable water filter is used its life would come to end after 50 days of its purchase. In those 50 days 100 litres of drinking water would be used which will cost 2000 rupees for 50 days. Whereas the tap water costs very less. Hence making a decision on investing in the water filter seems economical for poor people. Hence by this way water filters can substitute tap water for packaged drinking water and capture the market instead of packaged drinking bottle water.

5. Suggestions

Plastic waste is considered as a big hazard to the environment. 2.5 million tonnes of CO₂ is released in the atmosphere polluting it during the water bottling process, 1.1 million creatures are killed due to plastic water bottles being washed out in the water making it extremely dangerous (Why are Disposable Water Bottles Harmful to the Environment?, Office H₂O). As people are being aware of the environment around them plastic waste can act as a deterrent for the water bottling industry hence the industry should consider replacing the water bottles with such good quality materials which are not harmful to the environment and the material used should be biodegradable which will increase the demand further for the packaged drinking water while people start to consider the bottle as safe to their health and the environment. Fake advertisement are being given which showcases the good tap water as bad for health and to increase the sales water bottling industries show their products as safer and healthier than normal water. Hence advertisement should be genuine which would build trust of products in the mind of the consumers which will show an uptrend in the sales and demand of the packaged drinking water. To sell more water bottles the industry should make it more economical because as per the cost analysis done by the researcher in this study tap water is more economical and hence to compete with that the prices should be reduced so that every person would like to buy and quench their thirst with bottle water.

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