

BOTTLED MINERAL WATER AND ITS VALIDITY FOR THE CONSUMER THROUGH THE BOTTLING SYSTEM AND WATER QUALITY

Maarb S. Al-Maoula¹, Rand Haider Ali², Dr. Reyam Naji Ajmi³, Estabraq Mohammed Ali*⁴

^{1,2,3,4}Department of Biology Science, Mustansiriyah University, POX 46079, Iraq-Baghdad.

Article Received: 12 June 2023 || *Article Revised: 31 July 2023* || *Article Accepted: 21 August 2023*

Corresponding Author: Estabraq Mohammed Ali

Department of Biology Science, Mustansiriyah University, POX 46079, Iraq-Baghdad.

ABSTRACT

One of the most important features that prompt us to study the water filling project is that it is not affected by any negative factors. On the contrary, these factors may be a major reason for preserving the health of the user. As millions of people around the world buy mineral water bottles of various sizes every day; this means that this heavy turnout enhances the maintenance of health. In light of the successive health developments, millions around the world choose to spend more on things that can help them stay healthy, and they are also, willing to spend extra money for bottled mineral water instead of getting dehydrated and water borne diseases such as typhoid and cholera. Perhaps the consumption of bottled mineral water in the first place is due to the lack of potable water due to the huge increase in the population; therefore, this article deals with the definition of bottled mineral water and its validity for the consumer.

KEYWORDS: Water treatment unit, bottling system, water quality.

1- INTRODUCTION

Recently, water has become one of the biggest problems facing the world in terms of both water shortage and the quality of water that people consume. According to the statistics of the World Health Organization, every day nearly 10,000 people die due to the consumption of unsafe drinking water, in addition to that 55% of all Health facilities(Sharma *et al* ., 2005). Worldwide, people suffer from waterborne diseases, and more than half of them are children under the age of five (WHO, 2007).

In addition, the World Health Organization always advises people all over the world to use clean water, although most people. In many countries they have access to clean water, but millions prefer to use mineral water packaged in different sizes of bottles due to its potential health benefits (APHA, 1998).

Most of the time, mineral water of all kinds comes from natural underground reservoirs and mineral springs. This gives it a higher mineral content than regular water, mineral water must contain at least 250 ppm total dissolved solids and

FDA approved, also prohibits these manufacturers from adding metals to their products. Most European research indicates that mineral water is a good source of calcium. It showed that the human body can effectively absorb calcium from mineral water, and research also found that those who regularly drink calcium-rich mineral water have significantly higher bone density. Significantly more than those who drank water that contained lower levels of calcium (Aneja, 2008).

1-2 Why the water filling project?

With the increase in the number of people who have become more aware of health and realize the importance of using clean water for drinking and for daily health uses, the demand for bottled mineral water increases day after day, and it is logical that the increase in demand leads to a high rate of sales in the project, and in light of the successive health developments, millions around the world choose spending more on things that can help them stay healthy, and they are also willing to spend extra money for bottled mineral water instead of getting dehydrated and waterborne diseases like typhoid and cholera. Moreover, the areas where potable water is very limited are seeing a heavy demand for bottled mineral water, and regardless of whether you get the raw materials from a local supplier or a well, the fact remains that the water is not as expensive as the raw materials used for any other types (NDWQS in 2062). From the beverage production business, in addition to the fact that containers and other packaging materials are relatively cheap, it goes without saying that the water bottling business offers a very high profit margin (WHO, 2007).

Perhaps the consumption of bottled mineral water in the first place is due to the lack of potable water due to the huge increase in the population; As the demand of foreign employees, students and tourists to buy mineral water bottles of various sizes is constantly , the global bottled mineral water market is witnessing promising growth due to the increasing consumer awareness regarding the importance of consuming clean drinking water, the booming tourism sector plays an important role in the growth of the market as well, and the easy availability of bottled mineral water in stores and supermarkets is expected to drive the global bottled water market during the forecast period (Diwakar *et al.*, 2008).

According to global statistics, the global bottled mineral water market size is estimated at \$318.42 billion in 2021, and it is expected that the total size of this market will reach \$458.65 billion by 2025, at a compound annual growth rate of 3.6% during the period from 2021 to 2025. The increasing concerns about various health problems, such as: gastrointestinal diseases resulting from the consumption of polluted water, leads to an increase in the demand for clean and healthy bottled mineral water, and the scarcity of drinking water in many areas necessitates the demand for safe drinking water; This leads to an increase in product sales, and thus an increase in market growth (ICIMOD, 2006).

In addition, consumers are placing increasing priority on their health and wellness, which increases the demand for mineral water bottled with high purity; Consumers choose these bottles on the go; Because it is a healthy option for high calorie, carbonated, and sugary drinks, packaging also plays an important role in the growing popularity of bottled water products. Most of the leading brands are introducing new plastic bottle packaging and the product is available in 1 liter, 23.7 oz and 16.9 oz (Venter, 2000; Trivedy and Goel, 1986).

The market for bottled mineral water is frequently divided into segments based on type and geography. Still, water, carbonated water, flavored water, and functional water fall under this category. The still water market category, which makes up three-fifths of the entire market share, had the most outstanding market share in 2008. The Asia Pacific area

topped the market in terms of geographic analysis in 2019; it held a share of 35.6%, followed by Europe at 27.1%. The market is examined geographically throughout North America, Europe, and Asia Pacific. To enhance competition, the major players in the market are investing huge capital in R&D activities to develop bottled mineral water products and meet the current ever-increasing demand (Jayana *etal.*, 2009; Aryal *etal.*, 2010).

1-3 Water filling project

The idea of the project is to build a specialized factory for the production and bottling of mineral water with a capacity of: “0.33 liters, 0.36 liters, 1 liter, 1.5 liters, and 18.9 liters.” Increased access to mineral water throughout the year, and contribute to reducing unemployment by providing more job opportunities, in addition to earning profits. The feasibility study for the water bottling project includes a market study, operating plans, building the brand, determining the required capital, appropriate marketing strategies, and others to the elements of the study according (Prasai *etal.*, 2007; Ministry of Health and Population, 2008).

First: market research, competitors and demand increase that will provide growth for your mineral water business. Market analysis includes: a review of the economic, political and market factors that affect the way the mineral water bottling industry develops. Where you can rely on springs, protected wells, or modern refining and processing technologies to provide bottled mineral water according to health standards.

Second: Determine the target audience, according to statistics, more than 67% of the population of the Middle East and North Africa region drinks bottled mineral water, and although the income of most households from Arab countries is generally below average, these groups are more likely to buy bottled mineral water. Target market analysis is an essential component of a bottled water bottling business's marketing approach; Where the objectives of defining the target market are to collect, analyze and process information about the objects and consumers of mineral water, and when it comes to selling bottled water there is already a wide range of customers available as it is not limited to a group of people only, but also includes coffee shops, cafes, hotels, malls, supermarkets and retailers.

Third: Formulate an action plan, it must be strong and effective and include all the details that define the features of the project, including providing a brief overview of the bottled water industry, the type of commercial bottled water and determining who your direct competitors are, and the target customers as well, in addition to providing a brief overview of the marketing plan, and providing an overview of financial plan.

Fourth: Brand design, starting your own brand name is very important when it comes to starting a bottled water production and manufacturing business, The quality of the product is one of the most crucial elements that need to be handled, and it must be consistent, and if you are starting a bottling facility, everything must be uniform in design and appearance.

Fifth: Establishing a legal entity, the next step in preparing for launching a mineral water bottling project includes establishing a legal entity for your business. In fact, a bottled water manufacturing and production project can easily be started by registering a property or a partnership. If you start alone without any partners, move to an ownership company, but if you start with two partners or more, then register a partnership company.

Sixth: Permits and licenses, before establishing your business, you must complete several registration procedures. Keep in mind that all registrations are necessary; otherwise, your operation will be in violation of the law and subject to

penalties, this project requires the business license issued by the local authority, in cities the municipal authority issues a license Commercial, and in rural areas local units may offer a business license. The procedures also include going to the competent authorities in the state in which the project is held to obtain a certificate after examining your factory, the rules, regulations and standards differ from one country to another and it is also necessary to obtain FSSAI registration from the Food Safety and Standards Authority after examining your factory and the water products it provides.

Seventh: Choosing the ideal location, the minimum area required building a mineral water production and bottling plant of various sizes is about 1,500 square meters. The area can be divided into machinery, processing, storage and processing mineral bottles; So consider factors such as: source of water, transportation distance to market, affordability of a space large enough to set up huge water tanks, and most importantly provide continuous power supply, and ensure that the selected location has enough space to move water tankers.

Eighth: Equipment, requirements and bottled water production, line The 500-bottle-per-hour bottled water production line includes a group of interconnected machines that convert raw water “tap water, deep ground water, or well water” into pure mineral water that meets the latest international standards. The finished products are produced in bottles by processing units and automatic equipment.

2- CONCLUSIONS AND RECOMMENDATIONS

Important tips for project success, It is necessary to constantly monitor the market and competitors; To keep abreast of developments in the bottled mineral water market. Quality standards must be adhered to in the production and bottling of the mineral water that is offered through the project. Make sure to pay attention to general hygiene inside the mineral water production and bottling plant, and to dispose of waste on a daily basis. It is good to respond to all inquiries from customers and work to solve their problems in the shortest possible time. Make sure to clean and sterilize all equipment and machines that are used in the mineral water manufacturing and production processes. It is important to focus on the quality of raw materials to ensure that water is manufactured and packaged in a way that satisfies consumers. It is necessary to select employees and workers who have sufficient experience in the field of filling and packaging mineral water bottles.

ACKNOWLEDGMENT

The authors would like to thank Mustansiriyah University (www.uomustansiriyah.edu.iq) Baghdad – Iraq for its support in the present work and extremely grateful to National University of Science and Technology / College of Health and Medical Technology and College of Medicine, Ibn Sina University of Medical and Pharmaceutical Sciences, for their cooperation and all the people help us to get our data.

REFERENCES

1. American Public Health Association. Standard Methods for the Examination of Water and Wastewaters. 20th ed. Washington DC; 1998.
2. Aneja KR. Experiments in Microbiology, Plant Pathology and Biotechnology, 4th ed. New Age International (P) limited publishers, Ansari Road, Daryaganj, New Delhi; 2008.
3. Aryal J, Sapkota N and Gautam B. Assessment of drinking water quality at Myagdi district, western Nepal. NHRC (Nepal Health Research Council); 2010.

4. Asian Development Bank and International Centre for Integrated Mountain Development. Environmental Assessment of Nepal, Emerging Issues and Challenges. Kathmandu: ADB/ ICIMOD; 2006: 55-64.
5. Diwakar J, Yami KD, Prasai T. Assessment of Drinking Water quality of Bhaktapur Municipality Area in Pre-monsoon Season. Scientific World. 2008; 6(6): 94-6.
6. Government of Nepal. Ministry of Physical Planning and Works. National Drinking Water Quality Standards-2062. Kathmandu: WHO/DWSS (World Health Organization/Department of Water Supply and Sewerage); 2063.
7. Jayana BL, Prasai T, Singh A Yami KD. Assessment of Drinking Water of Madhyapur Thimi and Study of Antibiotic Sensitivity against Bacterial Isolates. Nepal Journal of Science and Technolog. 2009; 10: 167-72.
8. Ministry of Health and Population. Annual Report, Department of Health Services. MoHP (Ministry of Health and Population); 2008.
9. Prasai T, Joshi DR, Lekhak B, Baral MP. Microbiological analysis of drinking water of Kathmandu valley. Scientific World. 2007: 6: 112-4.
10. Sharma S, Bajracharya R, Sitaula BK, Merg J. Water Quality in the Central Himalaya, Asian Institute of Technology, Thailand, Current Science, 2005; 89(5): 782.
11. Trivedy RK, Goel PK. Chemical and Biological Methods for Water Pollution Studies. Environmental Publication. India; 1986.
12. Venter, SN. Rapid Microbiological Monitoring Methods. The Status Quo. International Water Associations Blue Pages; 2000.
13. World Health Organization. World Health Forum Bulletin. The ten biggest killers in the world, WHO; 2007.
14. World Health Organization. Health through safe drinking water and basic sanitation. Geneva: WHO; 2007.