

# International Journal of Research in Marketing Management and Sales



E-ISSN: 2663-3337

P-ISSN: 2663-3329

[www.marketingjournal.net](http://www.marketingjournal.net)

IJRMMS 2024; 6(2): 160-166

Received: 06-10-2024

Accepted: 10-11-2024

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## Marketing strategy for low cost gravity-based water purifier in the West Bengal market

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DOI: <https://doi.org/10.33545/26633329.2024.v6.i2b.188>

### Abstract

Water contamination is the biggest problem in the world because of the rapid growth of industry and people. In industrial effluents, hazardous substances such as radioactive elements and heavy metals are found in high concentrations, which have an adverse effect on human health. Now-a-days various waste water technology available in the West Bengal as well as Indian market, but they have high. As a result, the world is searching for low-cost water purification technologies. The West Bengal and Indian water purifier market is diverse, with numerous technologies catering to varied consumer needs. This paper aims to develop a marketing strategy for a low-cost gravity-based water purifier, tailored for price-sensitive segments. Through an in-depth analysis of market conditions, consumer behaviour, and competitive factors, the paper presents a strategy for effectively positioning a low-cost gravity-based water purifier in India. In proposed article, will be made gravity-based water purifier and excellent water purification capability that that can help to establish a cost-effective wastewater treatment technique to reduce water pollution from various sources.

**Keywords:** Water pollution, gravity-based purifier, reverse osmosis, ultra violet

### Introduction

Global water pollution must be combated by maintaining a continuous evaluation of water resource policies. Urbanization and agriculture both impact water quality. Only 0.002% of the Earth's surface is usable by humans, despite the fact that 70% of its surface is covered with water <sup>[1]</sup>. Drinking water accessibility is one of the most important indicators of a society's standard of living. Water shortages might occur by 2020 if there are 7.9 billion people on the planet <sup>[2]</sup>. Ensuring access to clean drinking water remains a critical issue in India, where water quality varies significantly across regions. 76 million Indians do not have access to improved drinking water. 76 million people are at greater risk of water-borne illnesses if they lack access to clean drinking water. The contamination of water causes the death of nearly 14,000 people every day. The three types of contaminants in water are biological, inorganic, and organic. Heavy metals are well-known water contaminants with high toxicity. A deadly substance since ancient times, arsenic has long been recognized as one of the most harmful. Additionally, mercury, cadmium, chromium, lead, zinc, nickel, and copper are extremely harmful heavy metal contaminants in water. The toxic effects of nitrates, sulfates, phosphates, fluorides, chlorides, selenides, chromates, and oxalates are evident at high concentrations <sup>[2]</sup>.

However, various numerous procedures, such as ozonation, ultraviolet (UV) irradiation, and chlorination, are being employed to eliminate bacterial contamination, heavy metal and other toxic substances from wastewater <sup>[2-4]</sup>. Gravity-based water purifiers offer an economical and practical solution, particularly in areas with limited infrastructure. Unlike more advanced systems such as Reverse Osmosis (RO), gravity-based purifiers are affordable and do not require electricity, making them ideal for low-income households <sup>[4-5]</sup>. Additionally, the efficacy of the treatment plants declines as pollutants are removed from water, but this method used today in the generation of drinkable water are not 100% efficient <sup>[2]</sup>. Thus, enhanced water filtration technologies are essential. This paper aims to develop a strategic marketing approach for a low-cost gravity-based water purifier, focusing on market segmentation, competitive positioning, and effective promotional strategies.

## Sources of water in West Bengal and India

### Water is an integral part of Indian culture

Despite receiving the most rainfall globally, Mousinram, which is near Cherrapunji, suffers a water shortage nearly every year during the non-rainy season despite receiving the most rain in the world. In nature, there are many different kinds of water, and they can be classified according to how much salt they contain. When measuring total dissolved solids (TDS), in water, salt is one of the ingredients used. Water is essential to many industries, including agriculture, forestry, fishing, navigation, hydropower, cattle production, and leisure activities. Groundwater and surface water supplies are important sources of drinking water, as well as the numerous rivers within the nation [7, 9]. India has rivers, lakes, ponds, canals, tube wells, open wells, and springs as its water resources. India has 16% of the world's population, but only 4% of its water resources [11]. In addition to monsoon rains, India has a large population, a large irrigated farming region, large herbal medicinal sector and a large industrial sector, all of which contribute to high water demands [11, 12].

## Market Analysis

### Market Overview

According to the 2001 census, 68.2% of Indian households have clean drinking water, which is a major issue [11]. In this time day by day water pollution increases. These problems face both rural and urban people [10]. Additional, The World Bank estimates that 21% of India's communicable diseases are caused by contaminated water [11]. That's why today Indian market demand, various types of water purifiers like UV, RO, and gravity-based purifiers with different brands are available. Since 1876, when a semipermeable membrane was invented, RO technology has taken off, but it wasn't until the early 1960s that a special membrane was developed that RO could become a commercial process [7, 10]. Generally, UV water purifiers are used in India because UV rays are capable of permanently altering the cell structure of all microbes, rendering them inactive. DNA and proteins in microbial cells absorb UV light, causing the microorganism to be inactivated [11, 10]. Gravity-based ceramic water filters show promising results in lowering chemical, physical, and microbiological pollution [13]. Although UV, RO water purifier technology is inexpensive, it uses a lot of energy [10]. Gravity-based purifiers are particularly relevant for low-income and rural areas due to their affordability and simplicity.

### Market Size and Growth

The global problem of water pollution demands a constant evaluation of water resource policies. Several countries in the Middle East, South East Asia, and North Africa are categorized as water-stressed, demonstrating how widespread the problem of water scarcity has grown. Today, several water purification technologies have been developed over time, including ultraviolet (UV), reverse osmosis (RO), ultrafiltration (UF), forward osmosis (FO), microfiltration (MF), and nano-filtration (NF) [14]. This water technology uses a lot of energy but is reasonably priced. However, these methods are typically unable to remove water contaminants adequately [15]. India lacks large power plants in rural areas, making it impossible to provide steady power for water purification and distillation. Additionally Due to the high price of RO filters and operating costs, the RO market in India is primarily targeted at middle- and high-income

groups [16, 17]. In this view of this concern, the demand for gravity-based purifiers is increasing due to rising awareness of water safety and the need for cost-effective solutions. Globally Bgravity-based purifiers also achieved water purification by the different types of membranes. Using this technique, the permeate is filtered solely by gravity based on the difference in water height pressure between the feed tank and output tank. Government initiatives and expanding infrastructure in rural areas are also driving this growth [10, 18].

## Consumer Segmentation

### Socio-Economic Segmentation

- **Low-Income Households:** India has long been plagued by housing problems, especially for those in low-income urban areas. A majority of these individuals are from developing nations, particularly from rural areas and low-income families. Predominantly located in rural and semi-urban areas, where affordability is a critical factor [19]. A lack of purified water managers poses the greatest challenge to small communities in maintaining and improving their water supply infrastructure [20, 21].
- **Small Business Owners:** The government can reduce unemployment by stimulating new business creation. Small and medium-sized businesses (SMEs) comprise a wide range of industries that support the socioeconomic advancement of both developed and developing nations. The majority of small firms only make one type of product (20 litres). Twenty-litre containers fall into one of two categories. They are containers made of polypropylene (PP) and polyethylene (PE). The three qualities of polyethylene-flexibility, durability, and resistance to tearing-are crucial for containing heavy objects. Polyethylene is used by the majority of businesses to purify drinking water. Additional features of PP include its excellent vapor and moisture barrier that satisfies FDA requirements, its stiff and hard plastic rough surface that can cause scratches, and its crystal clear appearance for excellent product presentation. Therefore, Local businesses needing economical water solutions [21].

### Geographic Segmentation

According to Kotler and Keller (2016), geographical segmentation increases marketing's efficiency by focusing on specific customer needs.

- **Rural Areas:** Lack of electricity also severely impairs the socioeconomic status of the rural population. A major impact of energy access improvement on water purification technology is access to electricity. As a result characterized by limited access to advanced water purification infrastructure [22].
- **Semi-Urban Areas:** Semi-Urban areas called small towns. According to the Indian Census, a settlement is considered urban if: a) its population exceeds 5000; b) its population density exceeds 400 people per hectare; and c) 75% of its male population works in non-agricultural occupations. Some rural areas lack basic infrastructure services like roads, water, sanitation, and electricity. Developing nations like India lack enough big power plants to produce enough electricity for distillation and purification of water. Emerging markets with developing infrastructure but still sensitive to price [23, 24].

**Competitive Landscape**

Gravity Water Filters were invented in London in 1800. Gravity water filters are used to filter water that is tainted or polluted using gravity. There are two chambers in this device: the top chamber and the bottom chamber. As contaminated water passes through the lower chamber, it becomes filtered water. Fill the upper chamber with your contaminated water. Depending on the filtering technique, this can be reverse osmosis, distilled water, or charcoal-filtered gravity filtered water. The gravity-based purifier market is populated by both well-established brands and local manufacturers. Key factors influencing competition include pricing, brand reputation, product features, and distribution channels. In India, there are many companies that provide the best services, including Tata Swach Smart, Hindustan Unilever Purelt Classic, Prestige LifeStraw, Eureka Forbes Aquasure Kitanu Magnet, Everpure Unbreakable [25].

**Tata Swach Smart:** In India, Tata manufactures the Swach Cristella Plus model and it have tow component, upper and lower part. Its central filter is a Tata Swach bulb. Storage capacity of the Tata Swach Smart is 7.5 litres [25].

**Hindustan Unilever Purelt Classic:** In India, Hindustan Unilever Limited (HUL) is the biggest fast-moving consumer goods company with a 75-year history. In this filter Activated carbon is used next after passing through a microfiber pre-filter. The tiny holes that are found in activated carbon enable it to be a very effective adsorbent or catalyst. In the glass safe storage chamber, you can store five litres and in the top chamber, you can store five litres [25].

**Prestige Life Straw:** The Prestige Life Straw is made by Prestige, and have three stages treatment process. A microfiber pre-filter is used in the first step to remove relatively large particles. After passing through a carbon block, the water is filtered to remove sediment, chlorine, volatile organic compounds, taste, and odour. The third stage uses ultrafiltration membranes; the main technology. This ultrafiltration system purifies 4500 litres of water before the membrane needs to be changed, according to the manufacturer [25].

**Eureka Forbes Aquasure Kitanu Magnet:** Eureka Forbes manufactures the Aquasure Kitanu Magnet water filter (see Figure 3-15). Manufacturers claim that the system contains three stages of purification: a microfiber prefilter that removes particles; a sediment filter that features a high surface area microfiber mesh for removing impurities invisible to the human eye; and a post-purification filter that removes the invisible impurities, and the core Kitanu Magnet with "Positive Charge Technology" TM (PCT), which is said to have nanofibers to "attract and pull out bacteria and viruses" that purify water without the need for chemicals. There is a recommendation that the Kitanu Magnet be replaced after every 750 litres of water, and the pre-filter microfiber should be washed once every 15 days, according to the instructions [25].

**Everpure Unbreakable:** A dual-filter system containing both micropore ceramic and sediment filters (zeolite, silica stand, granular activated carbon, mineral stones, and sand dish) is included in Everpure's "Unbreakable" water filter. This storage container holds 15 litres [25].

**Table 1:** Special Manufacture of Different brand and model

Model	Manufacture by	Features
Tata Swach Smart	Tata	An auto-shutoff mechanism as well as nanofiltration, Tata Swach Christella+/Tata Pre-filter, Tata Swach Smart Tata Pure [25]
Purelt Classic	Hindustan Unilever	A microfiltration system, activated carbon, and chlorine pre-filter completely protect the water Purelt Classic 14L by Hindustan Unilever [25].
Prestige Life Straw	Prestige	Prefilter for Life Straw Prestige/Vestiguard [25].
Aquasure Kitanu Magnet	Eureka Forbes	Filtration by nanotechnology with a natural shutoff prefilter [25].
Unbreakable	Everpure	Carbon Activated [25].

**Swot Analysis**

**Strength:** Indian families rely heavily on water purifiers to maintain their health and well-being, so it's important to understand the special benefits gravity-based water purifiers provide. Water purifiers that are non-electric are notable for combining user-centred design with filtration technology to provide efficiency and utility [25-29].

- **Simple design and minimal maintenance:** Due to the simplicity of their operation and lack of complicated processes, gravity-based water purifiers are easy to operate and require little maintenance. The simplicity of this water purifier technology makes it easy to use and does not require any technical knowledge or experience. Furthermore, their filtration system requires little maintenance, so you don't have to worry about it constantly [25, 26].
- **Cost-effectiveness and no requirement for electricity:** As energy conservation becomes increasingly important, gravity-based purifying systems have a significant advantage over electricity-based systems. Electricity is limited in these places or there

are frequent power outages, so these purifiers are ideal. They are a good energy-efficient alternative to other purifiers because they rely on gravity rather than power for the filtration process [25, 27, 28].

**Weaknesses**

- **Limited purification capability compared to advanced technologies:** The filtration restrictions of gravity-based water purification are a major drawback, especially when working with contaminated water. Water filtration systems without sophisticated membranes can allow chemicals, viruses, and heavy metals to bypass the filter. Although dirt and sediment may have been removed from your water, it still may contain molecular pollutants that can cause health problems in the long run [25, 29, 30]
- **Frequent filter replacement is necessary:** Furthermore, the state of the filters has a significant impact on how well gravity-based water filtering works. The regular replacement of filters is crucial to the efficiency of your water purification system. The

activated carbon and membranes of these purifiers may become saturated with impurities, reducing their ability to continuously produce clean water. As a result, maintaining these components vigilantly is more important than optional as failing to do so can jeopardize the process of purification [29, 30-32].

### Opportunities

Today in rural areas suffer purified water due to lack of low cost water purifier technology. In recent years, there has been an increase in demand for non-portable water purifiers. But the gravity-based purifiers, however, provide superior purification capabilities, removing impurities such as heavy metals and microbiological contaminants and providing self-sustaining purification. Additionally, the Indian government has launched an initiative to improve rural access to safe drinking water, called the Jal Jeevan Mission. As a result of this initiative, water purifier adoption has increased in recent years, especially in rural areas. Increasing demand for safe drinking water has prompted a growing need for cutting-edge technologies [10, 16, 24, 30].

### Threats

- **Competition from more advanced purification technologies:** When it comes to removing impurities from water, we wonder whether technology can deliver cleaner, more efficient water. When the water pressure is low and the water is comparatively free of dissolved solids, gravity-based water purifiers are preferred because they can remove a significant amount of contaminants. However, RO purifiers take pride in their superior level of filtration, particularly in regions where tainted water is a major problem. RO systems' small semi-permeable membranes allow them to effectively remove dissolved solids and tiny particles [10, 33, 34]. Gravity-based water purifiers generally have lower initial costs, but the expense of changing the filter can add up over time. On the other hand, RO systems could be more expensive initially, but they usually feature filters that last longer, which could result in long-term savings [35].
- **Pricing pressures from both local and international competitors:** A company can reap more profit by adjusting prices for local consumers with different preferences and socioeconomic characteristics, as long as those prices are aligned with local consumers' willingness to pay [36]. Differentiating competitors for analysis is more difficult than it may appear. There are two possible complementary strategies. Business meets the same client demands on demand-side. The second strategy, supply-side, focuses on finding companies with characteristics similar to those of the target firm, such as its operations, technology, and resources [37, 38].

### Marketing Strategy

Marketing strategy is at the foundation of strategic marketing and is fundamental to its practice. A marketing strategy must be developed and executed in order to be successful. The marketing strategy should aim to satisfy every customer's needs while maintaining a moral and social responsibility [38, 40, 41].

### Product Strategy

- **Design and Features:** Emphasize durability, ease of use, and minimal maintenance. Ensure the design is

simple and cost-effective to produce. Additionally, It is assumed that people are rational agents who weigh the benefits and costs of each option before choosing the one that best meets their needs [41].

- **Quality Assurance:** Maintain high standards in materials and construction to ensure reliability. Products and services from this company are consistently high-quality and affordable, and are safe for use. There are numerous purifiers on the market to raise the water's quality. However, the current methods used to seek cleaner water compromise the presence of useful ions, resulting in improved water quality but at the expense of a reduced level of ions that humans need for health [42, 43].

### Pricing Strategy

- **Cost Leadership:** Price competitively to attract cost-sensitive consumers. Additionally, the cost of this system was compared to those of other household water treatment systems. Implement cost-saving measures in manufacturing and distribution [39, 40].
- **Value Proposition:** Highlight the affordability and practical benefits of the purifier. Several factors contribute to the decision to purchase a water purifier, including the desire for safer drinking water, clean cooking water, and a decline in the incidence of waterborne illnesses [38].

### Distribution Strategy

- **Channels:** Use a combination of online and offline channels to reach various consumer segments. Partner with local retailers and distributors in target regions. Over the past 20 years, online marketplaces have undoubtedly been one of the internet's biggest success stories. People take online markets for granted today, and it's difficult to imagine a world without them. Online Marketplaces like Amazon, Flip kart, and eBay [39].
- **Logistics:** Develop a cost-effective logistics strategy to ensure timely and efficient distribution.

### Promotion Strategy

It is important to include a promotion strategy as part of your broader marketing strategy, which is your long-term plan to sell and market your goods.

- **Advertising:** Consumers are constantly bombarded with advertising and other forms of communication. Among the most complex elements of marketing communication is the intended response or communication effect. Today, increasing use of social media, radio, regional TV, internet communication, and e-commerce has eliminated geographical boundaries. The first kind of promotion that frequently springs to mind is paid advertising. It's an excellent method of increasing brand recognition and introducing the brand to potential new customers. This simple tactic might draw in your target audience by paying to display an advertisement in a particular location at a given time. It uses Utilize local languages and regional media to connect with target consumers [43, 44, 45].
- **Sales Promotions:** Any company depends on sales to survive. Every business depends on sales. This is why it is essential to maintain a unique set of sales marketing tactics. Selling promotions can include introductory discounts, bundle offers, and referral incentives. Brand

awareness can be raised through sales promotions that introduce new products or services to prospective clients. Furthermore, they might encourage repeat business by reminding current customers about your brand. Promotional offers can encourage new customers to try your products by offering introductory discounts, bundle offers, referral incentives, free samples, or other incentives [43, 44].

- **Public Relations:** The gravity-based and low-cost clean water purifiers can be used as a motivation for collaborating with NGOs and various government agencies to promote the product as part of water safety initiatives in rural areas. NGOs that work to create a cleaner, greener India by highlighting the important role freshwater bodies' play in supporting life. NGOs provide free motivation for the importance of water purifiers for secure health. Share success stories and case studies to demonstrate the product's impact on communities [10, 46, 47].

### Branding Strategy

- **Brand Positioning:** Income influences brand preference for the product. Position the purifier as a reliable and affordable solution for clean drinking water. Identifying the value the brand offers to consumers is crucial to effective brand positioning. Build a brand identity centred on trust, simplicity, and effectiveness [10, 47].
- **Customer Engagement:** Foster a community around the brand through customer feedback and engagement initiatives. Utilize customer testimonials and reviews to enhance credibility and trust [33, 10, 47].

### Market strategy through marketing mix (4p's)

Marketing mix refers to the combination of many factors a company uses to promote its products and services. The marketing mix is four 4P's i.e., Product, Price, Place, Promotion [10, 50].

- **Product:** A product is a tangible good or service that a customer is willing to purchase. It includes material objects that people buy, such as clothing, groceries, and furniture, as well as intangible goods like services. The most important component of any marketing mix is the product [50].
- **Place:** A product's price is the amount that the buyer must pay in order to acquire it. Main aspect of pricing is determining the product's cost, marketing strategy, and distribution and advertising costs [10, 32, 50].
- **Promotion:** One of the most effective components of the marketing mix is promotion. Sales promotion activities include publicity, exhibitions, demonstrations, and public relations. Promotional activities support publicity, advertising, and personal selling [10, 50].
- **Price:** A product's price is the amount that the buyer must pay in order to acquire it. Due to the fact that the price of a product depends on different factors and is therefore likely to change continuously; the pricing should be dynamic to be able to handle these changes over time [50].

### Implementation Plan

#### Market Entry

- **Pilot Launch:** Conduct a pilot launch in selected rural and semi-urban areas to gauge market response. Adjust the strategy based on consumer feedback before a

broader rollout. In business; industry 4.0 ideas are often experimented with through pilot programs [10, 48].

### Scaling Up

**Expansion:** Broaden distribution efforts following initial success and create market demand. An effective marketing plan should be centred on the business's value proposition. Intensify marketing initiatives to connect with a larger audience [48, 50, 51].

### Monitoring and Evaluation

**Performance Tracking:** Track's key performance indicators are sales, market share, and customer satisfaction. Employee performance will increase if they have a clear idea of their responsibilities and expectations. Customer feedback websites are essential for collecting useful data that can improve your goods, services, and overall client experience. As a result, you will be able to develop more focused marketing strategies and improve your marketing efforts [49, 51].

### Conclusion

Purified water is currently major challenges for the world. People continues to suffer from health risks associated with water scarcity and wastewater pollution as civilization advances in the developing world. There are not enough sizable power plants in rural parts of emerging nations like India to supply constant electricity for water distillation. The market for low-cost gravity-based water purifiers in India offers substantial opportunities due to its affordability and suitability for low-income households. By implementing a targeted marketing strategy that addresses product design, competitive pricing, effective distribution, and strong promotion, companies can capture market share and contribute to improving water safety in underserved areas. Addressing market challenges and leveraging emerging opportunities will be crucial for achieving long-term growth and impact. Additionally, there is an urgent need for innovative technology that is quicker, more economical, environmentally friendly, and resource-efficient due to issues with water purification and wastewater treatment [52-56].

### Acknowledgements

The authors of the article are grateful to the Honorable Chancellor Madam of Seacom Skills University for all kind of support to complete the research work.

### Conflict of interest

The author declares no conflict of interest.

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