A CASE STUDY ON ISSUES AND PUBLIC PERCEPTION OF BEVERAGE INDUSTRY: COCA COLA

Dr. Amiya Bhaumik*,Sun JiaYang, Geng XiaoRan. Zhang Rui, Hou LinZe, Wang Chen

*Corresponding Author, Lincoln University College, Malaysia
amiya@lincoln.edu.my

ABSTRACT

Water is now available to one-third of the global population. A combination of current water use, population growth, and climate change has resulted in severe water scarcity for two-thirds of the world's population. This scarcity has led to conflict and violence in Africa, South Asia, and the Middle East. Water demand is expected to double by 2050, with most of the increase occurring in Asia and Africa. Food production must increase by 70% to feed a population of 10 billion people. Only 2.5% of the planet's water supply is found outside of glaciers and ice caps. Currently, only 0.007% of the world's water can be used to feed its 7.7 billion people.

An environmental pressure group has named Coke the world's most polluting company for the second year. The decision to boycott Coca-Cola and Pepsi comes after two Indian trade associations accused foreign companies of water abuse.

Keywords: Water Scarcity, Water Management, Coca Cola, Pepsi

CONTEXT

Water management, also known as water resource management, is the practice of minimizing harm to people and property while increasing beneficial use of water resources. Dams and levees can reduce flood damage if built and maintained properly. Irrigated agriculture maximizes the use of limited water supplies.

Water budgeting and drainage system analysis are part of drainage management. Water management may require adjusting groundwater extraction rates or allocating water to different uses.

A 60% increase in agricultural output and a 15% increase in water withdrawals will feed 90 billion people by 2050. Despite rising demand, this particular resource is already scarce globally. Water scarcity affects 40% of the world's population and 14% of its GDP. The UN estimates that by 2025, 1.8 billion people will live in water-scarce areas or countries.

STRATEGY

The SDGs provide a framework for the World Bank to assist countries (SDGs). Although SDG 6.5 explicitly addresses water management, many other SDGs and objectives rely on it. The World Bank wants to help countries achieve water security, which requires effective water resource management.

Water security is the goal of water resource management. Water security will change as the world's population grows and urbanizes. Water security requires future planning and management capacity, flexibility, and resilience.

RESULTS AND INITIATIVE

To maximize the impact of water projects, new and innovative ideas must be implemented. The World Bank and its partners' expertise is helping to fill knowledge gaps and improve the design of water investment projects. Long-term programmatic initiatives in key sectors will benefit many of the world's poorest.

The Water Security Diagnostic Tool can assess water resources, services, water-related hazards (including climate change) and transboundary waters. The tool allows nations to assess how water-related issues affect people, economies, and the environment, as well as opportunities for growth and progress. This is a big plus (Water Resources Management, 2017).

MANAGING WATER RESOURCES IS CRITICAL TO THE FOOD AND BEVERAGE INDUSTRY'S SOCIALLY RESPONSIBLE PRACTICES.

Water is required to make food and beverages. Depletion of freshwater resources can negatively impact both productivity and production costs. Water scarcity may lead to higher water and wastewater treatment costs, process and supply chain disruptions, and slowed or halted growth. Food demand is expected to rise in water-scarce countries and regions in the coming decades. Water management is critical in the food and beverage industry.

The Food and Beverage Industry's Water Conservation Measures.

The food and beverage industry uses a lot of water. Procedures must be in place to carry out a water reduction programme. A one-time effort is possible.

Management frequently supports water conservation initiatives due to potential long-term savings. So it's critical that processing plant employees understand the total cost of water.

Water management in food and beverage manufacturing facilities is divided into eight steps.

Water Scarcity, Climate Change, and Urban Responses.

Climate change causes longer and more intense droughts, as well as unsafe drinking water. That is, they don't have enough water for the day.

Cities contribute significantly to climate change by emitting large amounts of greenhouse gases. More than two-thirds of global CO2 emissions come from cities, primarily from transportation and buildings.

Increased flooding and droughts, as well as rising temperatures, are all contributing to a decrease in water supplies.

Population growth, increased water use, and pollution all contribute to a lack of freshwater. Every year, around 2.7 billion people face water shortages due to this phenomenon.

UN Water Scarcity Initiatives

Several UN initiatives have been launched to help the world deal with the global water crisis. To begin, UN-Water is a UN initiative to achieve the Millennium Declaration's freshwater agenda. The Millennium Declaration requires that all water be drained and treated. The full Millennium Declaration is available on the UN website. UN-Water has a role in the UN by partnering with other UN agencies. Climate change requires collaboration among UN agencies and "other stakeholders from the public and private sectors, civil society, and labour," according to a CNN document.

The UN has also worked to raise awareness of the issue. The first of many World Water Days has arrived. World Water Day, on March 22nd, this year's theme is "coping with water scarcity." Global water scarcity requires increased international and local cooperation to ensure sustainable, efficient, and equitable use of finite water resources. The UN's 2013 World Day to Combat Desertification was another example of raising awareness. "We are all accountable for the protection and sustainable use of water and land," it says(Rajendran, 2016).

Mineral water industry in China

China has one of the world's largest bottled water markets.

From 2010 to 2015, sales of bottled water increased from 19 billion to 37 billion litres. According to current projections, 49 million metric tonnes will be consumed annually by 2020. Population is a little different. China consumes less bottled water than the rest of the world. With over a billion people, China's population consumes less than the US. As a result, the market for this product will likely expand (Beverage market research: Mineral water industry in China | Daxue Consulting, 2019).

Top Beverage Brands In The World In Global Beverage Industry

- **Coca Cola:**

Every day, 863 bottling plants transport nearly 300 billion litres of water to serve an average of 1.9 billion people. After all, the Coca-Cola Company is concerned about long-term water sustainability and the financial implications, as 2.8 billion people may face water shortages in the next ten years. Despite the fact that climate change threatens global water security, Coca-Cola has made a big effort to position itself as an eco-friendly manufacturer.

- **Coca-Cola in Cape Town.**

Residents of Cape Town fearing water cuts are protesting water use by businesses using millions of gallons per day.

The coalition ordered South African Breweries to return some of the 2 million litres of water it uses to make beer from a natural spring in Cape Town's Newlands neighbourhood to the municipal supply (Commentary & Browdie, 2018).

- **Belgium Case**

400 Belgians called the National Poison Center after getting sick from Coca-Cola. Experts say the epidemic has a wide range of symptoms, most of which affect young people (Watson, 1999)."

Coca-Cola cleans up record on water usage

The Coca-Cola Company recently announced that it had "refilled" all water used in its products globally. In 2015, Coca-Cola and its bottling partners returned more clean water to communities and the environment.

With "replenish" programmes, Coca-Cola returned 191 billion litres of water to nature and communities, addressing important water issues like safe water access and watershed

preservation. The remaining 146 billion were discharged as wastewater treatment waste. An American company has surpassed its water replenishment goal five years early (Hawa, 2016).

Case of Mexico

San Cristbal de las Casas residents only have access to running water once or twice a week when it rains heavily. The water is too chlorinated to drink. Many families in San Cristóbal de las Casas, a water-stressed mountain town in southern Chiapas, must buy water from tanker trucks.

That's why Coca-Cola is so popular here; it's cheaper and easier to obtain than bottled water.

Chiapas is a champion in a country dominated by sugary drinks. The average daily soda consumption in San Cristóbal and the surrounding mountains is over two litres.

As a result, public health suffers greatly. Diabetes, which is the second leading cause of death in Chiapas, has increased by 30% since 2013(Lopez, 2018).

Literature Review

The article provided a synthesis of literature to analyze that how beverage industries impact the water management and misuses the natural resources on earth with the intention of highlighting retention issues and recommending solutions.

As environmental worries cut into sales from traditionally lucrative bottled water, beverage companies such as Coca-Cola, PepsiCo, Nestle and SABMiller are becoming more attuned to the risks of negative consumer environmental perceptions. Water is becoming scarcer, raising a fear that so-far manageable price increases could spike and leading drink companies to take action to maintain access to water and fight their image as water hogs. SABMiller is one of a few companies, including Coke and Pepsi, calculating “water footprints.” It found that water used throughout its supply chain, such as to grow barley and hops, can be 34 times more than its use alone (Gellar, 2009).

The massive quantities of water poured into the production of sodas, beers, juices and other drinks make beverage companies a high-visibility example of a thirsty industry, as worries about water use move up the global agenda.

The vast majority of the water the sector consumes, though, is used not in its factories or bottling plants, but in the fields where ingredients like sugar, barley and tea are grown.

For instance, it takes 170 to 310 liters of water, or 45 to 82 gallons, to produce a half liter of soda, 300 liters to make a liter of beer, and 140 liters to produce the ingredients that go into one cup of coffee, according to the Water Footprint Network, a scientific group that works with many big food and drink companies on water issues.

Because its end product is liquid, the beverage industry has symbolic importance as a water user, although it is just one of many water-intensive sectors. Agriculture is the single biggest consumer of water, so any industry that depends on it has a large water footprint (Gardiner, 2011).

Coca-Cola is a company that consumes vast amounts of water: around 300 billion litres per year. This is not just because water is used as an ingredient in Coca-Cola beverages themselves, but also because the canning, bottling, sterilization, and transportation of Coca-Cola products, including associated processes such as power generation in Coca-Cola factories, all require large amounts of water. In addition, water is needed to irrigate the fields used to grow sugar beet: a major ingredient of Coca-Cola. As a result, a small 500 ml bottle of Coca-Cola takes roughly 1.9 litres of water to make (though Coca-Cola prefers to cite their own average figure from 2013 to the effect that each litre of Coke uses 1.29 litres of water). In 2006, Coca-Cola set itself the goal of 'replenishing' all of the water that it uses by means of a combination of recycling equivalent amounts of water and creating new sustainable sources of freshwater for communities to use. In 2016, the company announced that it had achieved this goal. Coca-Cola sources its water from all over the world. It has water extraction plants as far afield as Russia, Colombia, Guatemala, El Salvador, and India. In 2007, it was reported that Coca-Cola had been draining communities of their own water supply for use in its plants, resulting in water poverty for communities in regions such as Uttar Pradesh which is reliant on seasonal rainfall for their water. Similar stories were reported more recently in 2017, and these reports have been a feature of communities' reactions to Coca-Cola for decades. Though much of Coca-Cola's advertising campaign is taken up by references to their environmental stewardship, this stewardship does not usually occur in the same communities that Coca-Cola draws its water from (Coca-Colas Water Usage Policy Sustainability & Responsibility, 2017).

The first reason that is causing water stress around the world is the growing human population at the same time as the water supply has remained the same. Given that there are almost one billion more inhabitants on Earth every 15-20 years, this has led to a progressive deficit in the global water supply.

The second reason is due to the uneven concentration of the global population. There is not a clear link between the presence of the population in some regions and the presence of water, in other words, water is not where we want it to be every time (Bhardwaj, 2019).

To evaluate water usage, looking at likely suspects is a good place to begin. A recent white paper from Haskell, a design/build firm, identifies three areas that consume the biggest amounts of water in food and beverage processing plants: clean in place (CIP) and heat exchanges such as in cooling towers account for 66 percent of all non-product water used in plants, while the remaining one-third is split between manual cleaning, sanitation and miscellaneous utility

demands. Nalco suggests practices that replace water, such as physically cleaning with vacuum systems and using push systems instead of water brooms or high-pressure hoses that push debris into drains.

Haskell recommends using dry ice for manually washed equipment, such as a tank or kettle, since it evaporates into a gas that cleans the equipment without moisture.

Clean-in-place systems do not require time-consuming teardowns and rebuilds of equipment. However, CIP systems consume higher amounts of water and energy. Thus, optimizing them can make a big difference in reducing water usage.

Some CIP design practices Haskell endorses are locating the systems central to the cleaning loads to reduce pipe runs, having the correct pipe sizes to minimize the volume of water required and investing in a product recover system, such as pig or air blows (Schug, 2016).

India's water crisis is a constant. Although India has 16 per cent of the world's population, the country possesses only four per cent of the world's freshwater resources. India is water-stressed due to changing weather patterns and repeated droughts. And the worst suffers of this crisis are mostly women. This means that getting water in these places has grown more difficult as the water table has dropped. Three-fourths of India's rural families lack access to piped, drinkable water and must rely on unsafe sources. India has become the world's largest extractor of groundwater, accounting for 25 per cent of the total. Some 70 per cent of our water sources are contaminated and our major rivers are dying because of pollution.

Women in India are usually treated as second-class citizens. This crisis of water only puts them at a higher risk of vulnerability. Fetching water in India has been perceived as a woman's job for centuries. Women, especially in the rural areas, walk miles to collect water from the nearest source. Wells, ponds and tanks are drying up as groundwater resources come under increasing pressure due to over-reliance and unsustainable consumption. This has escalated the water crisis and placed an even greater burden of accessing water on women. The water crisis is a women's issue and feminists need to talk about it. A rural woman in Rajasthan walks over 2.5 kilometers to reach a water source, according to a report by the National Commission for Women (Behal, 2021).

Water scarcity is often divided into two categories: physical scarcity, when there is a shortage of water because of local ecological conditions; and economic scarcity, when there is inadequate water infrastructure.

The two frequently come together to cause water stress. For instance, a stressed area can have both a shortage of rainfall as well as a lack of adequate water storage and sanitation facilities. Experts say that even when there are significant natural causes for a region's water stress, human factors are often central to the problem, particularly with regard to access to clean water and safe sanitation.

The Middle East and North Africa (MENA) is the worst off in terms of physical water stress, according to most experts. MENA receives less rainfall than other regions, and its countries tend to have fast-growing, densely populated urban centers that require more water. But many countries in these regions, especially wealthier ones, still meet their water needs. For example, the United Arab Emirates (UAE) imports nearly all of its food, alleviating the need to use water for agriculture. The UAE and other wealthy MENA countries also rely heavily on the desalination of abundant ocean water, albeit this process is an expensive, energy-intensive one.

Meanwhile, places experiencing significant economic scarcity include Central African countries such as the Democratic Republic of Congo, which receives a lot of rain but lacks proper infrastructure and suffers from high levels of mismanagement.

Even high-income countries experience water stress. Factors including outdated infrastructure and rapid population growth have put tremendous stress on some U.S. water systems, causing crises in cities including Flint, Michigan, and Newark, New Jersey. Prolonged water stress can have devastating effects on public health and economic development. More than two billion people worldwide lack access to safe drinking water; and nearly double that number—more than half the world's population—are without adequate sanitation services. These deprivations can spur the transmission of diseases such as cholera, typhoid, polio, hepatitis A, and diarrhea.

At the same time, because water scarcity makes agriculture much more difficult, it threatens a community's access to food. Food-insecure communities can face both acute and chronic hunger, where children are more at risk of conditions stemming from malnutrition, such as stunting and wasting, and chronic illnesses due to poor diet, such as diabetes. Many freshwater sources transcend international borders, and, for the most part, national governments have been able to manage these resources cooperatively. Roughly three hundred international water agreements have been signed since 1948. Finland and Russia, for example, have long cooperated on water-management challenges, including floods, fisheries, and pollution. Water-sharing agreements have even persisted through cross-border conflicts about other issues, as has been the case with South Asia's Indus River and the Jordan River in the Middle East.

However, there are a handful of hot spots where transboundary waters are a source of tension, either because there is no agreement in place or an existing water regime is disputed. One of these is the Nile Basin, where the White and Blue Nile Rivers flow from lakes in East Africa northward to the Mediterranean Sea. Egypt claims the rights to most of the Nile's water based on several treaties, the first dating back to the colonial era; but other riparian states say they are not bound to the accords because they were never party to them. The dispute has flared in recent years after Ethiopia began construction of a massive hydroelectric dam that Egypt says drastically cuts its share of water. Transboundary water disputes can also fuel intrastate conflict; some observers note this has increased in recent years, particularly in the hot spots where there are fears of cross-border conflict. For example, a new hydropower project could benefit elites but do little to improve the well-being of the communities who rely on those resources.

Moreover, water stress can affect global flows of goods and people. For instance, wildfires and drought in 2010 wiped out Russian crops, which resulted in a spike in commodities prices and food riots in Egypt and Tunisia at the start of the Arab uprisings. Climate stress is also pushing some to migrate across borders. The United Nations predicts that without interventions in climate change, water scarcity in arid and semi-arid regions will displace hundreds of millions of people by 2030 (Felter, 2021).

People want to drink clean water even more than they want to breath clean air. Almost 300,000 children under the age of five die every year from diarrheal diseases caused by dirty water. That's almost 800 children a day, or one child every two minutes. By 2050, global demand for water will increase by as much as 50%, mostly in developing countries in Asia and Africa. At the same time, food production will need to increase by 70% to feed a growing and more prosperous population that will top 10 billion. The latest company to increase their role is also one of the biggest. PepsiCo is expanding its program of global sustainability to provide access to safe drinking water to nearly 16 million people in some of the world's most water-stressed areas, well on its way to meet their goal of 25 million people by 2025 (Conca, 2018).

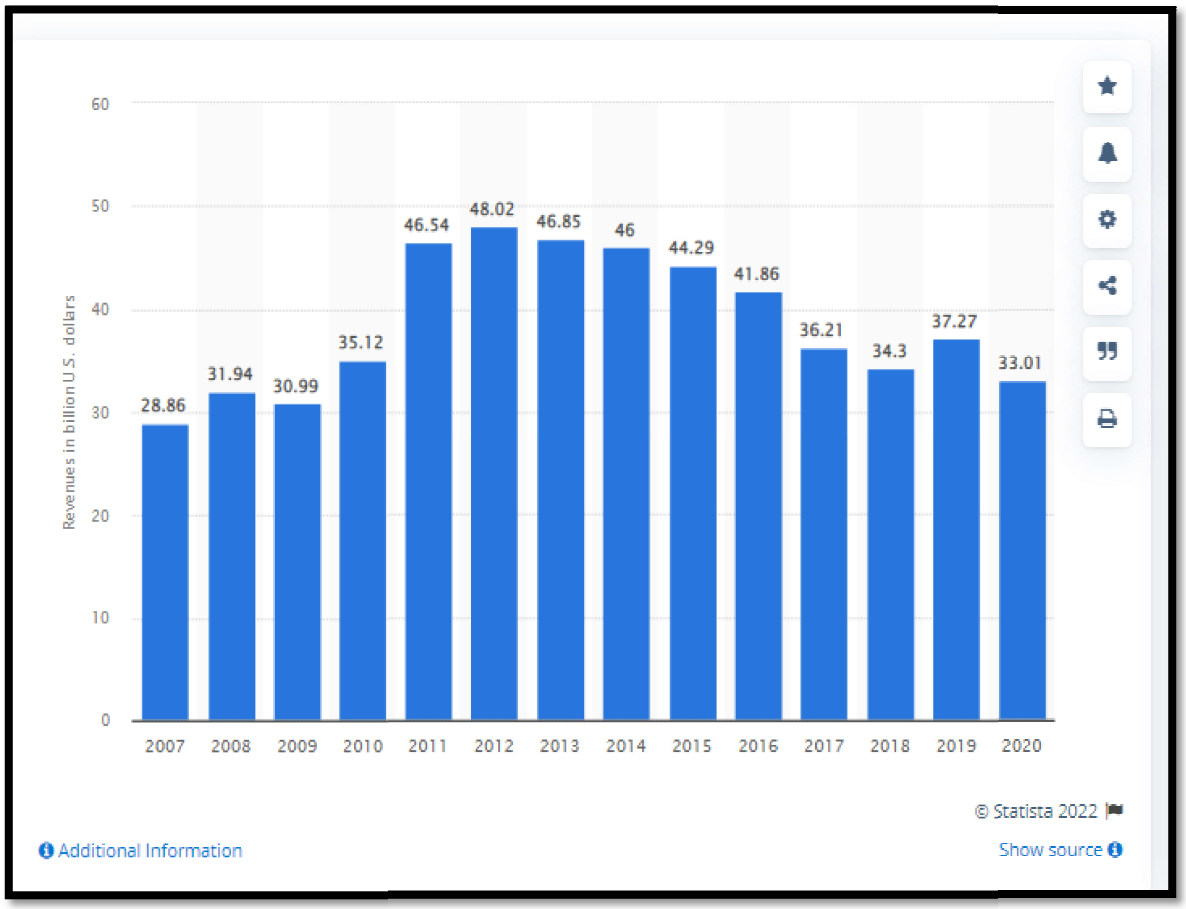
PepsiCo is one of the world's leading food and beverage companies with over $66 billion in net revenue in 2013 and a global portfolio of diverse and beloved brands. Liese Dallbauman is Director of Water Stewardship for PepsiCo's global food and beverage businesses. Her responsibilities include in-plant water conservation training, water use analysis and global water risk assessment and mitigation. These programs have made major contributions to PepsiCo's success in reducing its operational water use ratio by 20 percent from a 2006 baseline – four years ahead of the 2015 schedule. The company was honored to receive the 2012 Stockholm Industry Water Award in recognition of this achievement and its comprehensive approach to water stewardship (Kanani, 2015).

All of Tamil Nadu, from Chennai in the north to this city of 500,000 residents near India's southern tip, has wilted in the state's worst drought in 140 years. The Thamirabarani River, which runs through the city and is famed for its steady flow even in dry years, meandered through a sickly progression of shallow ponds and mudflats (Schneider, 2017).

Global food and beverage major Pepsico on Wednesday said it looks to become 'Net Water Positive' by 2030, aiming to replenish more water than that used in company-owned and third-party manufacturing sites in high water-risk areas. Besides, PepsiCo's 'Net Water Positive' vision also looks to deliver safe water access to 100 million people by 2030 (PTI, 2021).

METHODOLOGY

The Coca-Cola Company's net operating revenues worldwide from 2007 to 2020 (in billion U.S. dollars)



(Source: https://www.statista.com/statistics/233371/net-operating-revenues-of-the-coca-cola-company-worldwide/)

RESEARCH DESIGN

The research design is descriptive, with both qualitative and quantitative consumer perception analysis. We used a descriptive research design to study Coke. This is the design for you if you want something that defies quantitative or qualitative research methodologies. It focuses on describing and solving a problem. A "targeted investigation" is a detailed investigation of a single hypothesis. A variety of sampling techniques were used to determine the study's goal and uncover the causes of the sales decline. This study's design and construction also considered brand consumption and perception. To gather as much information as possible about the brand and problem, the researchers read extensively about it. It was decided to conduct a study using a variety of research techniques to obtain reliable results after carefully considering the target audience. A lengthy questionnaire was prepared for each member of the sample list. The results of the survey were thoroughly examined and reasoned.

Sampling Technique

The researchers used non-probability sampling, which is not a random selection process. Accessibility or personal judgement are usually used to select non-probability samples. Subjects were chosen for the study based on non-probability factors like recruitment ease, judgmental fit, and snowball sampling. Because the population was so small, researchers used the initial subject to find a new potential subject.

Data Collection

The brand's proclivity was studied to determine why sales were declining. Secondary data included past brand performance case studies. Recent studies on the Indian beverage and food industry also provided statistical data for secondary research. The authors drew conclusions from primary and secondary sources.

Data Analysis

We asked 50 people about their Coca-Cola preferences. The study found that 28% of the sample regularly drinks Coca-Cola. Only 12% of the population abstains completely. According to the survey, more than 12% of those polled preferred water and other non-carbonated beverages over sugary sodas like Coca Cola. Researchers wanted to know if the health-conscious sample population preferred diet sodas like Coke Zero or Diet Coke over regular sodas. This shows Coke hasn't reached the health-conscious market and needs to better understand their needs. With 36% of the population preferring healthy drinks over fizzy sodas, the industry was surprised. Even if only half of Americans prefer Coca-Cola, that doesn't mean the other half dislikes or dislikes Diet Coke. Even though people preferred Coca Cola with pizza and as a mixer at parties, 27 people said they exercised. Coca-motto Cola's is "Open Happiness," and the beverage is marketed as a social hub. In our poll, 24% preferred Coca-Cola for social gatherings, while 18% preferred juice. The margin is only 33%. While Coca-unbeatable Cola has a sizable market share and a loyal following, it must adapt to a health-conscious public that is increasingly seeking out alternatives. The second section of the survey examined assumptions about the decline in Coca-Cola sales, focusing on three aspects of the beverage's quality: taste, availability, and variety. Brands were ranked using these criteria. The researchers ranked Coca-Cola 3rd out of 6 drinks, behind Pepsi, Red Bull, Tropicana, and Minute Maid. Available Coke ranks 46th out of 50, clearly outranking competitors. The brand's availability was checked in every store, restaurant, and mall. A majority of respondents say poor distribution isn't hurting sales. The variety of Coca-Cola was ranked 5th, despite Diet Coke and Coke Zero. Pepsi and Red Bull, two products with virtually no variants, should be a major red flag for the company. Most popular were Paper Boat and Tropicana. Outside the US, Coke Vanilla, Coke Cherry, and Coke Lime are available. Researchers understand that more bottling units, more advertising, and more risk means more money spent on the brand. Participants were asked to rate statements from "Strong Agreement" to "Strong Disagreement" on a scale of one to ten. Due to the fierce competition between Coke

and Pepsi, customers frequently switch brands. Six people said it should be available in India, and six more said they'd try it if it was. This could help the company's image. In the next question, juice beats out Coca Cola. It indicates a decline in brand popularity. When Coca-Cola promotes low-sugar beverages but customers ignore them, the brand struggles. More than 40% of people do not believe Diet Coke or Coke Zero are healthy. A recent poll found that new beverages and increased market competition have shifted consumer preferences. Customers were asked to rate their concern about Coca-healthiness Cola's from 0 to 10. The average score was 6.86, indicating that consumers are becoming more health conscious. Most health-conscious customers gave the statement an 8-10, with only a few loyal customers giving it a 4. This shift in consumer mindsets has resulted in increased self-awareness. Three characteristics were used to assess consumer satisfaction with various brands. Researchers looked at a product's taste, advertising, and future to assess a brand's long-term viability. Customer feedback suggested the brand should focus on core products. Taste and Future were used to create perceptual maps for data analysis. A random sample of ten responses was chosen, and an average score was calculated. While a rise in health consciousness may not be directly linked to a decline in Coca Cola sales, the transition can be seen.

Diagram 1. How often did you consume coke?

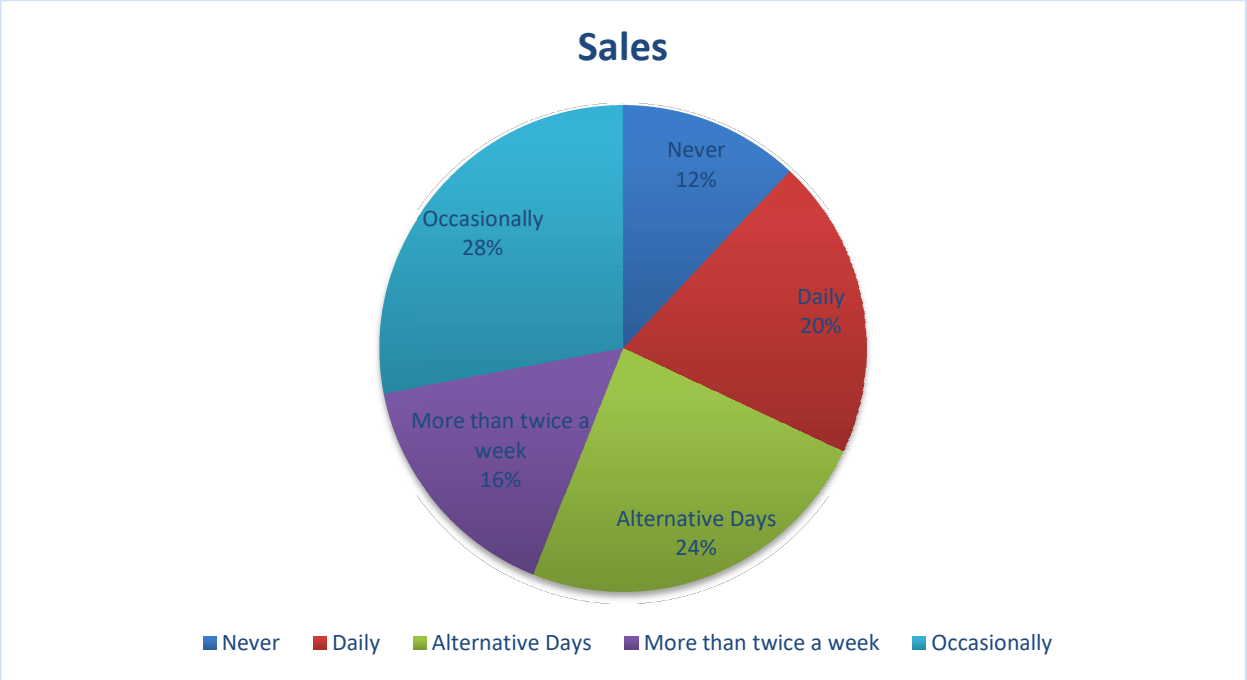


Diagram 2. Taste preferences

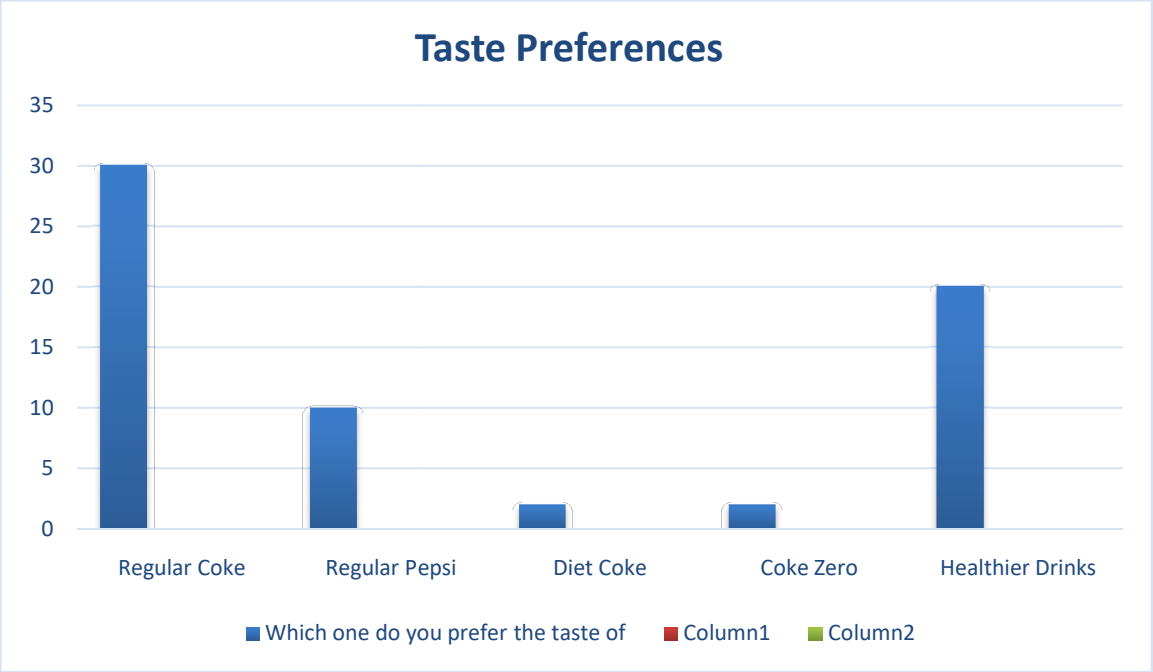


Diagram 3. What do you prefer drinking with friends?

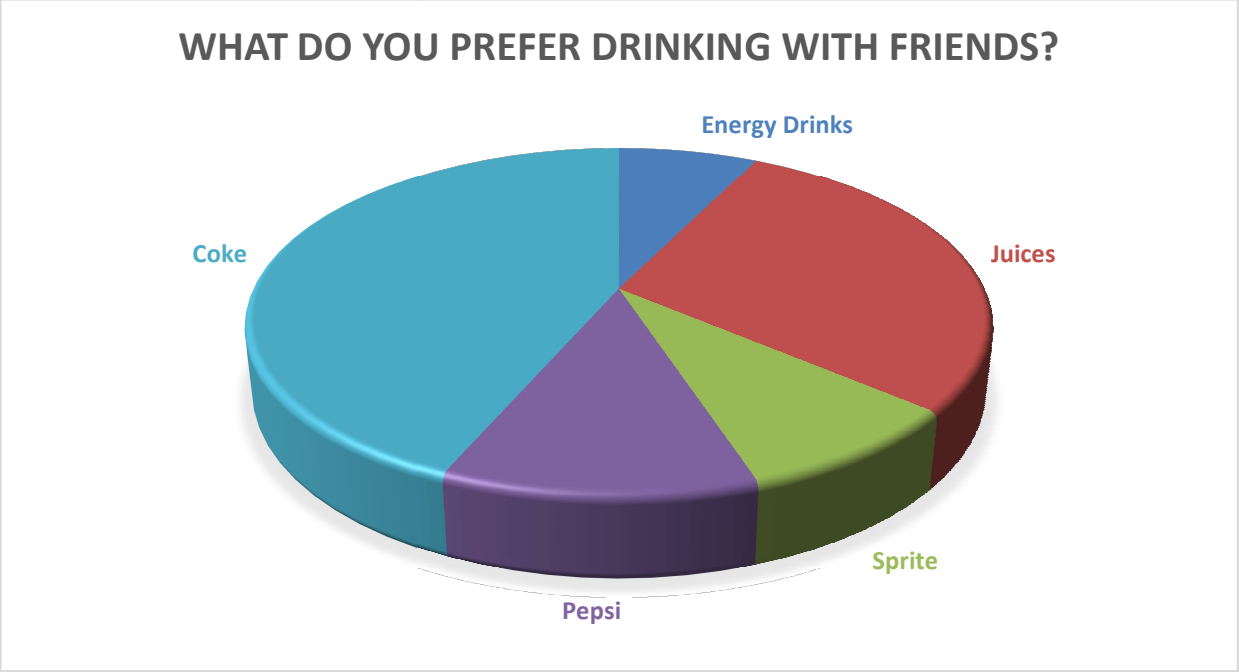
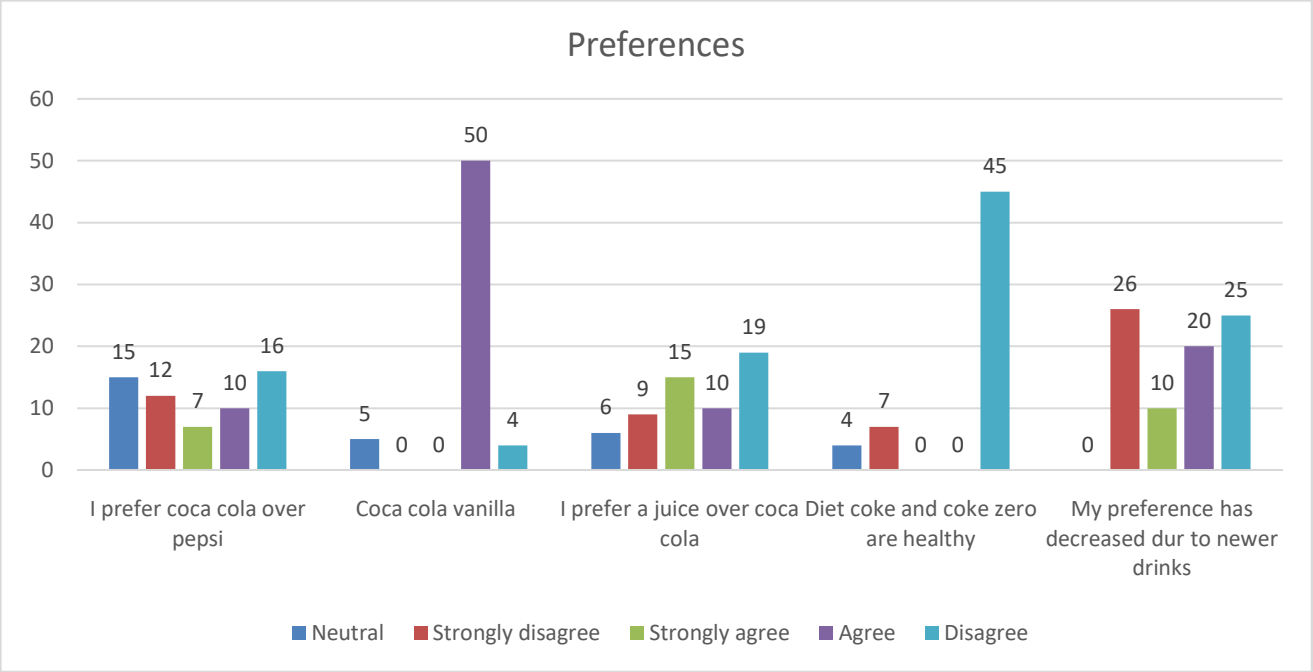


Diagram 4. Preferences of peoples.



RESULTS

Conclusion

The survey results show that consumers are becoming more health-conscious, resulting in lower Coca Cola sales. The other two assumptions, faulty distribution and variety requirement, have been proven false. A new study links declining Coca Cola sales to health concerns.

Discussion

Even a small drop in sales can worry a well-known brand like Coca-Cola, which has the largest market share in India and globally. They must constantly reinvent their brands to keep up with changing market and consumer trends. This can be achieved by better communication that emphasizes emotional aspects and diverts attention from purely functional considerations, or by including more options to accommodate different types of audiences. Because today's consumers are more sophisticated, brands can no longer rely solely on advertising. Customers can easily switch brands without incurring any costs, so Coke must be more than just another fizzy sugary soda on the market. To stay ahead of the competition, brands must gain consumer trust and forecast their own future.

Limitations

Considering Coca-niche Cola's market, a nationwide study would have been more appropriate. It was not possible to conduct exploratory research due to a lack of resources, time, and money. It was common for people to answer questions quickly at the end of a long questionnaire. The authors concluded that respondents disliked customized and varied questionnaires and preferred simple MCQs. The lack of a Coca-Cola internal assessment/audit report was the study's main flaw.

Recommendations

A comprehensive, non-assumptive analysis across India should reveal the most accurate reasons for Coca-decline. Cola's The brand can do more research on their customers and their competitors' customers to better understand what drives them to buy the other product. An in-depth analysis of beverage purchasing behavior can help a brand better understand the Indian market. To succeed in India, Coca-Cola must treat it as seriously as the US market and introduce new products.

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