

FACTORS INFLUENCING THE CONSUMPTION AND STANDARDS OF BOTTLED DRINKING WATER IN NAIROBI-KENYA

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ABSTRACT

In the wake of several major infections involving food and water, there is a growing concern for the safety and quality of drinking water. Thus, a number of companies and industries in Kenya and other developed countries have come up with bottled/package drinking water for sale to a wide range of consumers particularly those in urban areas. The objectives of this study were to determine the extent of consumption, brand choice, perceived reasons for consumption, standards and average monthly expenditure on bottled/package water among Nairobi residents. The study was guided by Aaker's model of perceived quality.

Using a cross-sectional study design, information was collected from a random sample of 120 consumers visiting key supermarkets in Nairobi city center and its suburbs and ten water-bottling companies. Data were analyzed using SPSS and descriptive statistics were used in establishing relationships between variables.

Findings indicate that bottled/package water is consumed by 87.5% of those visiting major supermarkets. For majority (65%) of the consumers, taste, convenience, fashion/status, safety and potential health benefits are important considerations. Dasani, Keringet, Kilimanjaro and Aquamist were the most popular brands. The brand choices were influenced by price, availability and media advertisements. More than half (61.5%) of the consumers indicated spending (approximately 9.6%) of their monthly income on bottled water. Nearly all the surveyed companies had no standardized drinking water quality guidelines.

Majority of Nairobi residents consume bottled water which may be an indication that accessing safe drinking water is a major challenge for many consumers, particularly those in the urban areas. There is need for nutrition education for the consumers and local guidelines/standards should be set to govern the bottling and marketing of drinking water in Nairobi and other urban towns in the country. However, improving and expanding existing water treatment systems may be sustainable in the long term.

KEY WORDS: Packaged water, drinking water, perceived reason for consumption, brand choice, standards

INTRODUCTION

Outbreaks of gastro-intestinal illness traced to contaminated drinking water supplies by pesticides, heavy metals and other potentially health threatening contaminants in some municipal systems have raised concern about the safety and quality of tap water in many cities and urban areas. Increasingly people see bottled water as an easy safe and better tasting alternative (Arnaiz, 1998; World Health Organization (WHO), 2000; Esipisu, 2006).

Water for consumption can be categorized under drinking water, natural mineral water, mineral water, natural spring water and carbonated and decarbonated mineral water (Daily Nation, 2007). The differences among the various categories depend on the source and method of treatment.

For the United States and other European countries, water is classified as "bottled water" or "drinking water" when it meets all applicable Federal and State Standards (Arnaiz, 1998). The water should not contain any chemicals and must be calories/sugar-free, sealed in sanitary containers and sold for human consumption (Arnaiz, 1998; Bullers, 2002; International Bottled Water Association, 2004).

The bottled water industry is one of the fastest growing and least regulated industries in the world expanding at an annual rate of 20% (Leith, 2003). In 1981 in the U.S

alone, bottled water consumption jumped from 1.8% to 10%. In 2004, close to 90 billion litres of water were sold round the world (Leith, 2003). The global bottled water market advanced by 8.3% in 2005 with bottled water volumes reaching 173 billion litres in a year. This increase may be due to the ever-increasing public awareness of the problem with drinking water supplies, the need to stay hydrated and the greater accessibility of bottled water in emerging economies. Bottled water remains a soft drink force to be reckoned with (Zenith International, 2006). Bottled water companies such as Dasani, Nestle, Coca-Cola and Pepsi are engaged in constant search for new water supplies to feed the insatiable appetite of this business.

The bottled/package water industry is fairly new in Africa, the products being developed first and foremost for the upper class markets. Most of the companies that are involved in bottled water production in Africa are copying what is happening in the western world (Bullers, 2002). The Kenyan market has not been spared this bottled water fad and the craze for bottled water in Nairobi and other urban areas is not totally unfounded (Esipisu, 2006). Everybody walks around with a bottle of bottled water. For example, "it became fashionable for Linus Njoroge, a street boy at the 7th World Social Forum (WSF) in Nairobi Kenya to carry one bottle of water in his hip pocket, another in his hand" (Lutheran World Relief, 2007). In hotels, conferences and

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workshops bottled water is either sold or offered free of charge to customers/ participants. The water is available in supermarkets, shops and some kiosks.

The Kenyan market is flooded with many bottled drinking water brands. Until recently, there were no local standards or quality requirements in place to govern the bottling and labelling of bottled/packaged water. In 2005, Kenya was to establish district laboratories to screen water and other food products countrywide (Kariuki, 2005). The move was aimed at protecting the multi-million shilling bottled water industry, which is increasingly coming under threat from counterfeits, packaged under popular brand names and posing serious health risks to users (Zenith International, 2006). By the end of (2005) only six bottled water processors, e.g Crown Foods, which produces Keringet, Kilimanjaro (Kilimanjaro), Kevean (Mt. Kenya), Beverage Services Kenya (Dasani), Aquamist (Aquamist) and Grange Park (Grange Park) had sought and received their Diamond Mark of Quality. To-date, there are 166 water-bottling companies in Kenya whose quality is monitored by the Kenya Bureau of Standards (KEBS). Only thirty brands have acquired the Diamond Mark of Excellence (Daily Nation, 2007). Besides the illegal use of brand names, companies selling genuine safe water complain that counterfeiting poses a risk of unfair litigation of genuine bottlers. The use of bottles collected from waste dumps complicates the health issues in that besides the quality of the water, the safety of bottles collected from such filthy places doubles the risk (Kariuki, 2005). Additionally, the disposal of used bottles remains an environmental health hazard, as ways of recycling the bottles have not been established.

The World Health Organization (WHO) publishes guidelines for drinking water quality which many countries use as a basis to establish their own national standards (WHO, 2000). However, the development of standards for drinking water requires significant resources and expertise, which many countries are unable to afford. The flocking of many bottled water brands in the Kenyan market has made the buyer's capacity to choose what to go for difficult. Consumers may have various reasons for purchasing bottled drinking water such as taste, convenience or fashion, but for many consumers, safety and potential health benefits are important considerations (WHO, 2000). Since such considerations are often not founded on facts, this study specifically addressed the extent of consumption, perceived reasons for consumption, type of brands chosen and standards governing the bottling, marketing and sale of packaged/bottled water in Nairobi-Kenya. The study was guided by the following research questions: To what extent do urban residents consume bottled/packaged water? What are the perceived reasons for consumption? Which are the most popular brands? What is the average monthly expenditure on bottled water and is the manufacturing of the water regulated?

Research design and methodology

The target population of this study comprised of customers of bottled drinking water and bottling water companies in Nairobi and its suburbs. Nairobi was chosen due to its high number of supermarkets, and population besides being cosmopolitan in nature. The study was based on a cross-sectional study design. Self

administered questionnaires and interview schedules using structured questionnaires were used to collect the required data. According to Aaker & Jacobson (1995) perceived quality is believed to contribute to brand equity and brand equity generates value for the firm and the customers.

Sample size and sampling procedures

A random sample of 120 customers visiting twelve supermarkets was selected for the study. The sample of supermarkets used was obtained from a list of major supermarkets within Nairobi. According to the Nairobi Business Directory (2005), there are about 250 supermarkets in Nairobi. This list of supermarkets was adopted with updating from Nairobi city council statistics. The population of supermarkets was classified into three categories: large sized supermarkets, medium sized supermarkets and small sized supermarkets giving a total of 20, 100 and 130 supermarkets respectively. The classification was based on sales volume obtained from Brookside, Procter and Allan both of which sell fast-moving consumer goods and supermarkets are their major retail outlets (Mburu, 2001). Stratified random sampling was used so that all the major divisions of Nairobi were covered. These included North, South and Eastern parts of Nairobi. One supermarket was drawn from each category of supermarkets to represent each division of Nairobi. Therefore, using this classification four (4) supermarkets were randomly chosen from each of three categories of large, medium and small sized supermarkets. A total of 12 supermarkets, which formed a third of the 250 supermarkets, were used in this study. Ten respondents were drawn from each of the twelve supermarkets within Nairobi making a total sample of 120 consumers. The questionnaires were distributed to every 10th customer in each supermarket until 10 customers were obtained. Additionally, from the 166 bottling drinking water companies in the country, ten 10 companies were systematically sampled for the study. Pre-testing was done in one of the supermarkets and company not included in the study and the questionnaires were revised accordingly. Before conducting the study, authority was sought from the Ministry of Education Science and Technology and the university.

Data collection and analysis

A close-ended questionnaire, which had been pre-tested, was used in the study. The questionnaire was in three parts. Part one helped the researcher capture information about the respondent's profiles while part two was used to gather information on frequency of consumption and reasons for consumption. Part three dealt with perception, factors influencing brand choice and the average monthly household expenditure on bottled water. The respondents were served with an introductory letter after which the questionnaires were administered to customers of bottled drinking water in the supermarkets (at the point of purchase) and filled accordingly. At least 10 questionnaires were made available at each of the selected supermarket outlets. The questionnaires were administered with the help of two research assistants who were of form four level and had been trained by the principal investigator. Apart from the supermarkets, the bottling water companies were visited and information on bottling of water and

marketing solicited from the management using structured interviews.

Data analysis

Data was cleaned and analyzed using the Statistical Package for Social Scientists (SPSS) version 10.0. Descriptive statistics were used in determining the consumption, brand choice, reasons for consumption and monthly average expenditure on bottled water. Chi-square tests were used in establishing relationships between perceived quality factors and brand choice. The results are presented in frequency distribution tables.

RESULTS

General information

Table 1: Response by gender

Gender	Frequency (n=120)	%
Male	69	57.5
Female	51	42.5

Preference, frequency and reasons for consumption

Dasani was the most preferred brand (58.1%) followed by Keringet (16.2%) and Aquamist 10.5%. Slightly more than a third (37.1%) of the consumers took their favourite brand daily while 28.6% took weekly and 26.7% took the water twice in a month. The major reasons for the purchase ranged from the function it serves, psychological/emotional satisfaction, association with success/status and self-expressive benefits. The feelings towards the water brand ranged from friendly (21.5%), respectful (35%), trustworthy (20%) and liking (23.5%). The price and the popularity of the brand also influenced the choice. The perceived reasons for consumption ranged from health benefits (37.5%), fashion (16.6%), convenience (12.5%), quenching thirst (8.3%) and better compared to other soft drinks (8.3%).

Importance of perceived quality and brand choice

Almost all (95.2%) of the consumers agreed that the company's description of quality matched their perception of quality. Only a few (3.8%) did not seem to agree while 1% held other views. The consumer's responses on importance of perceived quality in brand choice ranged from very important to somewhat important. In total, 64.8% of the respondents indicated that the brand choice was important. A third (33.3%) ranked quality as important while 1.9% indicated that this was somehow important.

Perceived quality factors influencing brand choice using the five-factor scale indicated that satisfaction attained from the brand is an important factor in influencing brand choice (58%). Other important perceived factors include: mass media advertising (20%), uniqueness of package (20%), the length of time the brand has been in the market (10%) and information about the brand (12%).

Expenditure and guidelines on bottled/packed water

The price of the packaged water varied according to the sizes, brands and point of purchase. The smallest amount of bottled water is 250mls and the price ranges between Kshs. 27 and 35 (approximately US \$ 0.36-2.14). From the study, most consumers indicated that they did not keep monthly records on the

More than three quarters (87.5%) of those who purchased the bottled water consumed it. Majority (34.3%) of the respondents were aged between 19-24 years while (24.8%) were between 31-34 years respectively. This seems to confirm the view that majority of the consumers of bottled water are young people who happen to fall in these age brackets.

Gender, marital status and water consumption

More male respondents (57.5%) consumed bottled water compared to 42.5% of the women as illustrated in Table 1.1 More single women (52.4%) consumed bottled/packaged water compared to 47.6% of the married men and women.

amount of money spent on packaged /bottled water. However, most (61.5%) consumers estimated spending about 9.6% of their monthly income on bottled water. The consumers agreed that packaged/bottled water is one the main household expenditure items. Nearly all (7) the visited bottling water companies had no standardized guidelines for the processing of bottled water.

DISCUSSION

From the findings, a substantial proportion (87.5%) of the Nairobi residents consume bottled water. This does not seem to be exception as some of the largest increases in bottled water consumption has occurred in developing countries particularly in cities and urban areas (Arnold and Larsen, 2006; Esipisu, 2006). Of the top 15% per capita consumers of bottled water, Lebanon, the United Arab Emirates, and Mexico have the fastest growth rates with consumption per person increasing by 44-50% between 1999 and 2004 (Arnold and Larsen, 2006).

The main reason for consuming bottled water among the Nairobi residents is safety and health benefits. This is not different from studies which show that natural mineral /bottled water consumers associate bottled water with healthy living (Arnold and Larsen 2006; Bullers, 2002). In Europe and certain other countries, many consumers believe that natural mineral water has medicinal properties or offer other health benefits (Schiffman, 2003). Some of the waters are typically of high mineral content and in some cases are significantly above concentrations normally accepted in drinking water. Such waters have a long tradition of use and care often accepted on the basis that they are considered food rather than drinking water per se (Karp, 2006). Although certain mineral waters may be useful in providing essential micro-nutrients such as calcium, WHO is unaware of any convincing evidence to support the beneficial effects of consuming such mineral waters (Fact sheet, 2000). However, bottled water is not guaranteed to be any healthier than tap water (WHO, 2000; Esipisu, 2006). Approximately, 40% of bottled

water begins as tap- water, often the only difference is added minerals that have no marked health benefit (Arnold and Larsen, 2006). The French senate even advises people who drink bottled water to change brands frequently because the added minerals are helpful in small amounts but may be dangerous in higher doses (Fact sheet, 2000; Arnold and Larsen, 2006).

Apart from the health benefits, most consumers in Nairobi and other urban areas believe that municipal and city council waters are contaminated. This seems to be true as studies carried out in Huruma, Kibera, Kayole estates and other peri-urban areas of Nairobi including Kikuyu and Ngong concluded that the quality of water from stand –pipes as well as that stored in food kiosks is contaminated with high levels of disease-causing organisms (Espisu, 2007). All these studies show that apart from bottled water, which is yet to be analyzed, the rest is contaminated thus requiring chemical treatment or boiling before use (Gathura, 2007).

Additionally, in some studies (Lutheran World Relief, 2007) the consumption of bottled/packed water has been associated with the fear of obesity. According to the WHO there are currently more than 300 million obese people in the world (WHO, 2000). The high consumption of sugar, soft drinks has been accused of contributing to this problem. Health issues are already influencing the dynamics of the soft drinks industry and this is likely to become more pronounced as time goes on. Bottled water, has zero calorie therefore remains a likely beneficiary (Zenith International, 2006).

Findings from the companies indicate there are no uniform guidelines or standards for bottling water. This is not unique to Kenya alone. In Europe, bottled water is regulated at the Federal and State levels and by industry to ensure it meets all applicable safe water standards (Arnaiz, 1998). However, studies by the (National Resources Defense Council (NRDC) (2007) showed that most of the water tested appeared to be safe although, 22% of the brands tested contained chemical contaminants at levels above strict state limits. This is likely to pose health risks for people with weakened immune system such as the frail, elderly, some infants, transplants, cancer patients or people with HIV/AIDS. Similarly, reports indicate that if such water is consumed for long periods of time it is likely to cause cancer or other health problems (NRDC, 2007). To some degree, the bottled water industry is self-regulating. The International Bottled Water Association (IBWA) whose members produce about 85% of the bottled water available on the market has developed regulations to complement Federal and State Standards (Arnaiz, 1998).

CONCLUSION AND RECOMMENDATIONS

A substantial population of the Nairobi residents seems to be consuming bottled drinking water. Apart from the expense and sustainability, its safety has not been analyzed (Gathura, 2007). The Kenya Bureau of Standards recently came up with various drinking water standards and quality requirements (Daily Nation, 2007). However, there is need to ensure close monitoring so that the standards are implemented and maintained. Kariuki (2005) agrees that continuous surveillance on the quality and origin of water being sold on Kenyan

market by the Ministry of Health and Kenya Bureau of Standards is important. Zenith report (2006) argues that in the face of growing global crisis, corporations are turning water into profit driven commodity. The companies should reveal the sources and sites of water used for bottling and publicly report breaches in bottled water quality.

There is no doubt that clean affordable drinking water is essential to the health of the global community. However, bottled water is not the answer for developing countries of the world such as Kenya, nor does it solve problems for the 1.1 billion people who lack a secure water supply (WHO, 2000). Improving and expanding existing water treatment and sanitation systems in Nairobi and other urban areas in Kenya is likely to provide safe and sustainable sources of water over the long term. In villages in the rural areas of Kenya, rainwater harvesting, protecting springs and digging new wells can create affordable sources of water. For majority of Kenyans, boiling of drinking water seems ideal for the moment.

Further research

- It may be important to carry out such a study for a longer period (a year) so as to establish the consumption patterns and income spend on bottled water by the different socio-economic groups in Nairobi city and other urban towns in the country.
- A laboratory analysis of the different water brands may be necessary in establishing the water quality and safety.
- A more detailed study would also establish other factors that are likely to influence brand choice and the environmental impact of bottled water.

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