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Why Buy Free? Exploring Perceptions of Bottled Water Consumption and Its Environmental Consequences

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Abstract: This exploratory study examines the consumption motivations of those consumers who choose to buy bottled water, while at the same time exploring the perceptions they hold about the potential environmental consequences of their actions. Based upon a sample of sixteen participants aged from 19 to 56, our findings revealed five main themes as to why people purchase bottled water, including: (1) Health, comprising the two subthemes of personal health and cleanliness, (2) the bottle, (3) convenience, (4) taste, and (5) self-image. Our findings also highlighted the perceptions held about the environmental consequences of bottled water consumption and the considerable challenges marketers have to address if they are to persuade consumers to consider alternatives to this consumption practice.

Keywords: bottled water; sustainability; sustainable consumption; consumer behaviour; pro-environmental behaviour

1. Introduction

The global bottled water market was valued at $US198.50 billion in 2017 across the four main categories of still water, carbonated water, flavoured water, and functional water, with more than three-quarters of sales being within the still water category [1]. From being virtually non-existent in the early 1990s, bottled water is now the second biggest market in the beverage industry, second only to carbonated drinks [2].

A recent report found that a million plastic bottles are purchased every minute around the world, with that figure likely to increase another 20% by 2021 [3]. This growth is driven by an insatiable desire for bottled water and the spread of a western, urbanised convenience-orientated culture to China and the Asia-Pacific region [3]. With the increase in consumption of bottled water come tremendous environmental impacts. Plastic bottles are commonly made from polyethylene terephthalate (PET), which takes 400 years to naturally decompose yet is highly recyclable [3]. However, fewer than half the bottles sold are collected for recycling and only around 7% are actually being recycled [3]. It is estimated that at least 8 million tonnes of plastics, including bottles, leak into the ocean each year [4], impacting fisheries, the marine ecosystem, and potentially human health [5,6]. Plastics also leak into and degrade other natural systems, such as forests and waterways, and induce direct economic costs by clogging sewers and other urban infrastructure [4]. In terms of other consequences, it is estimated that it takes three times as much water to make plastic bottles than to fill them [7]. In addition, manufacturing the nearly 28 billion plastic bottles used each year to package water in the United

States alone requires the equivalent of 17 million barrels of oil [8]. In terms of impact on human health, researchers have found that water stored in PET bottles was contaminated with harmful chemicals such as antimony from these containers [9].

However, with this increase in consumption is an undercurrent of anticonsumption and an increasing number of groups expounding the negative environmental and social impacts of the bottled water industry and the plastic packaging used in production. Some authors have gone as far as to suggest that bottled water is "one of America's unsustainable consumption pariahs" [10] (p. 244), while others have commented that bottled water producers will soon need to confront the resource-intensiveness of the products that they sell [11]. This study explores the consumption motivations of those consumers who choose to buy bottled water, while at the same time exploring the perceptions they hold about the potential environmental consequences of their actions.

2. Literature Review

Wilk explored the success of the bottled water industry, stating that convincing consumers to pay for things that they already have in abundance around them (and for which they have no manifest need) has become commonplace [2]. Several authors have asked the same question; why do we pay for something we can access free of charge? It is internationally agreed that water is a public good and that access to clean drinking water is a human right, further suggesting that bottled water poses a moral contradiction when considering the thriving trade in the privatisation of drinking water [2].

A key concern prominent in the literature surrounding the bottled water industry is that of the industry's damaging ecological impact [12]. There are concerns about these impacts at each of the production, storage, transportation, and disposal stages. In terms of production, millions of barrels of oil are used in the production of plastic water bottles in the United States each year [13]. Bottled water is then stored and transported around the world, while tap water is distributed through energy-efficient infrastructure [12]. Each year, approximately 25% of the bottled water produced is traded internationally, and some trade is even reciprocal [2]. Further, the transportation of bottled water contributes to increased greenhouse gas emissions, as well as other pollutants, all of which have a negative impact on the natural environment. The disposal of plastic water bottles is also problematic, with only a fifth of them being recycled [13] and the remainder ending up in landfills, incinerators, and as trash on land and in streams, rivers, and oceans.

A widely held view on the bottled water industry is based upon the "huge cost in wasted resources that bottled water represents, compared to the very high quality water sitting in our taps at a fraction of the price to the planet and our wallets" [12] (p. 1). However, this issue, like much environmentally harmful consumption, is invisible, suggesting that the average consumer is unaware of the environmental impacts resulting from their consumption behaviour relating to bottled water [14].

What might the literature tell us regarding why consumers may behave in a more environmentally responsible manner? Some authors suggest that consumers who hold positive environmental attitudes are aware of the environmental consequences of their behaviour, have knowledge of action-strategies, believe their actions will bring about change, and take personal responsibility for the environmental problem are more likely to behave responsibly [15]. Other approaches suggest that altruism supports pro-environmental behaviour or that in order to act pro-environmentally, individuals focus beyond themselves [16]. Blake identifies three barriers to pro-environmental behaviour, which include individual barriers, lack of a sense of responsibility, and practicable barriers [17]. More expansive models suggest that pro-environmental behaviour is most likely when internal factors (e.g., environmental consciousness) and external factors (e.g., infrastructure) act synergistically, and that old habits form a very strong barrier that is often overlooked in the literature on pro-environmental behaviour [18].

Despite their environmental concerns, many consumers often participate in acquisition or disposition behaviours that are not environmentally friendly. For instance, although they may not regularly purchase bottled water, there may be situations where the purchase of bottled water is more

convenient for the individual. Or there may be situations where recycling facilities are not available, so the consumer disposes of a plastic bottle in the rubbish. In these situations, consumers may find ways to justify their norm-violating behaviour. The techniques of neutralisation provide a means of explaining how individuals eliminate or minimise the negative impact that their norm-violating behaviour would otherwise have on their self-concept [19]. There are five strategies that consumers may use to insulate themselves from self-blame [19]. These include denial of responsibility, denial of injury, denial of victim, condemning the condemners, and appeal to higher authority. Denial of responsibility is an attempt to argue that the individual is not responsible. Denial of injury attempts to minimise the harm of the behaviour. The appeal to higher authority is "a circumstance in which one argues that norm-violating behavior is the result of an attempt to actualize some higher order ideal or value" [19] (p. 254).

In this research, we also explored the environmental consequences of the purchase of bottled water. One way to mitigate that impact is through the post-use recycling of plastic bottles. Given the small number of plastic water bottles that are recycled, what might the literature suggest to increase the recycling of plastic bottles post-use? A significant amount of literature has explored how to increase recycling, and some literature has examined how to encourage consumers to reduce their waste. Researchers have examined both external mechanisms [20,21] and intrinsic means to motivate recycling. For instance, incentives have been found to motivate the initiation of recycling but not the maintenance of the behaviour [20]. Intrinsically, those who are involved in their community [22] and sensitive to social norms [23] exhibit greater levels of participation in recycling. Other studies have found that consumers do not recycle because they perceive it to be inconvenient [24]. Other work has found that recyclers have greater knowledge about what and how to recycle [25,26]. In terms of encouraging consumers to reduce their waste, less is known. Consumers purchase products made of recycled materials and recyclable products as the most common approaches to reducing household waste [27]. The same authors also found that consumers who were intrinsically motivated to protect the environment and were oriented toward the future were more likely to avoid single-use items and avoid products that were not recyclable [27].

Given evidence which suggests there is little benefit in purchasing bottled water, several authors have attempted to investigate the reasons why people do. Taste is not a likely motivation; which concurs with blind taste tests which show that most consumers are unable to taste the difference between tap and bottled water [2]. Similarly, when presented with no chlorine, tap water is globally perceived to be the same as bottled water [28]. However, it was found that consumers believe bottled water is safer or tastes better if they have had negative experiences with tap water or if they live in locations where water quality standards have been violated [29]. Other authors suggest that consumers perceive bottled water as a pure and healthy alternative and link this to the current health trend in consumerism [30]. Similarly, discourses of purity, nature, and health were posited to explain historical increases in bottled water consumption in France [11]. However, beyond this, little other academic research exists as to why people purchase bottled water. Given the critical importance which is now being placed upon sustainable consumption, this study seeks to explore the perceptions that consumers hold about their decision to purchase bottled water and its consequent environmental outcomes.

3. Methodology

Data were collected for this study through the use of semistructured in-depth interviews. This approach was considered ideal, as it allowed for a rich set of data to be collected and was a powerful means of gaining an in-depth understanding of an individual's experiences [31]. The interviews were conducted in two cities in New Zealand: Christchurch and Whakatane. These locations allowed for a geographical spread and provided an ability for any differences to be observed. Some participants were identified using an intercept method, with potential participants being approached by a researcher involved with this study after they had made the decision to purchase bottled water in a retail location. Other participants were recruited using a snowball approach [32], where participants who had been recruited using the intercept method were

asked for the contact details of other people who satisfied the selection criteria for inclusion in this study (i.e., that they purchased bottled water). In total, sixteen participants were recruited for this study (eight from each city). There were ten female and six male participants, with ages ranging from 19 to 56.

Participants were asked to describe how often they bought bottled water; they were subsequently classified as heavy, average or light users of bottled water. These distinctions were classified by daily (heavy), weekly (average), and fortnightly or monthly (light) purchase behaviour. Most participants were classified as average (seven participants) or light users (seven participants); there were only two participants who could be described as heavy users. There was no notable difference in consumption patterns between the two sample locations.

The interviews had a phenomenological focus (i.e., they were from the perspective of the participants). This approach allowed participants to provide thick descriptions, where they were able to articulate their experiences as they perceived them. Further, to analyse the reasons as to why participants bought bottled water and their perceptions of its environmental consequences, a within-case analysis [32] was used to gain insight and was undertaken in the form of coding and sorting, which is described as decontextualising, as the data are separated from their original cases [33]. The data were then recontextualised through identifying the themes present across cases. Themes were constructed from reoccurring statements or concepts described by the participants [34]. Given the potential for multiple interpretations to arise from the same data, two independent judges were used to authenticate the findings, and a high degree (i.e., greater than 90%) of agreement was found.

4. Findings

Five main themes emerged from the interviews as to why people purchase bottled water, including: (1) Health, comprising the two subthemes of personal health and cleanliness, (2) the bottle, (3) convenience, (4) taste, and (5) self-image. Participants also discussed the perceptions they held about the environmental consequences of bottled water consumption, a summary of which is presented at the end of this section.

4.1. Health

Health was found to consist of two main subthemes: Personal health and cleanliness. In terms of personal health, the participants talked about their need to keep up fluid levels in order to avoid dehydration. Several participants commented that bottled water makes it easier to drink more water, which they saw as important for their own health. Alice (aged 56) typified this when she said "I do know that I get dehydrated so I know that I need to consciously drink . . . I can get so engrossed in my work . . . so to have something there that I can just grab while I'm doing something, it works". Another common motivator was that bottled water has less sugar than other drinks and is a healthy option. The literature suggests that consumers are often concerned about their health, with bottled water allowing people to feel well and lose weight [30], a viewpoint reflected by participants.

Beyond personal health, many participants also focused on the perceived cleanliness of bottled water. Participants who exhibited this motivation were generally concerned about germs and hygiene factors, and avoiding germs was a key reason for buying bottled water. Participants frequently said they trusted bottled water to be clean, and in some cases, cleaner than tap water. For example, Hunter (aged 19) said "well you always have it in your mind that bottled water is completely fresh and clean and will always be cleaner than tap water". Other participants used the word "pure" when describing bottled water and their reasons for purchasing it. Key word searches have shown that some of the most common words used to market and label bottled water are "pure", "pristine", and "natural" [2]. In this regard, bottled water producers effectively convince consumers that their product is purer than any water which comes out of a tap.

4.2. The Bottle

Participants often purchased bottled water not only for the water, but for the bottle the water came in. Many participants reused their bottles, with participants also commenting that they bought bottled water primarily for a bottle that could be used more than once. For example, Sarah (aged 23) commented "I've bought Evian water and things like that in the past because the bottle looks cool". When their current water bottle started to show signs of wear-and-tear, participants would often base their repurchase decision on the aesthetics of the bottle, with Hunter (aged 19) surmising that the marketing of bottled water focuses on the "whole product" and it "gets you to buy the bottle".

Few papers discuss the importance of the bottle in consumer motivations to buy bottled water, although some authors have begun to address its importance, suggesting that the packaging of bottled water, like any other product, sells the product experience, and that producers rely heavily on packaging to differentiate one brand from another [35]. For example, it has been found that some French consumers perceive glass bottles as being more refined than plastic ones [11]. Consumer researchers have also found that information obtained through physical touch plays a central role in the evaluation of consumer products [36–38]. Thus, it may be that the haptic cues or touch-related characteristics provided by the bottle transfer to the products contained within them through consumer inferences and evaluations [39]. Evidence of this was found in the interviews, with many participants commenting on the ergonomics and bottle design features of the bottled water brands they preferred to purchase.

4.3. Convenience

Convenience was a theme frequently mentioned by participants, although convenience was a multifaceted term. Specifically, while bottled water's convenience may seem apparent, there were several ways in which participants viewed it as being convenient. Several participants commented that their use of bottled water was based around situations where they were "on the go" or travelling. Many participants also felt that accessing bottled water was easier and more convenient than buying a distinct drink bottle. This was highlighted by comments such as that provided by Sarah (aged 23), who stated: "you think, I need water, and the first option you then think of is shop-water". Convenience can also encompass an element of time consideration. Some participants commented that bottled water is easier to drink out of and saved them from filling up a glass as often, with others noting that not having to wash out a bottle, as they would a glass, was something they liked about bottled water. Participants also discussed the idea that it is convenient to have a source of water that is always available, and that bottled water provides this, reflecting the earlier findings related to personal health.

4.4. Perceptions of Taste

While some participants indicated that they preferred the taste of bottled water to the taste of tap, other participants indicated that taste was not a predominant factor. Instead, associated with taste was the preference of many participants for cold water, in that many preferred their water to be "icy" cold. Bottled water that has been chilled in the fridge was perceived as being colder than what comes out of the tap, and this led many participants to buy bottled water. For example, Tania (aged 39) stated "I put it [bottled water] in the refrigerator so it's super cold. But tap water straight out of the tap, maybe it's because it's not so cold, it just seems like it doesn't taste as good".

The literature provides some insight into participants' difficulty in explaining their taste preference for bottled water over tap water. Some research suggests that taste is a complex sensation that is difficult to accurately judge, partly because it relies on the input from every other sense, including smell, vision, sound, and touch [40]. Temperature sensations on the tongue are directly related to taste [41], with other research finding that an extrinsic cue, such as advertising copy for a food product, can affect resulting cognitions during consumption and taste perceptions [40]. This may be especially true given the ambiguity of a taste experience leading to more susceptibility to and increased use

of external influences [42,43], which may help explain why the temperature of bottled water was inextricably linked to perceptions of taste in this study.

4.5. Self-Image

As noted under the theme of health, some participants often used the word pure when describing bottled water. For example, Brooke (aged 41) said she bought bottled water because "I guess I just try and go for the purest. If I'm going to drink water I want it to be the purest". This perception of purity highlights the superiority of bottled water to several participants. Some participants transferred the superiority of bottled water to themselves through its consumption. Sophie (aged 22) exemplified this stating "[I] think that I'll be good and get water", suggesting that buying bottled water allowed her to describe herself more positively. Taken together with the notion of purity, this finding shares commonalities with research, which has found that an individual's sanctification of their body was associated with an increase in healthy eating practices [44].

As with most consumer goods, the interviews suggested that bottled water has social meaning attached to it. Brooke (aged 41) was one of many participants who exhibited this, by stating that if she was going out to a friend's house and wanted to take something nice that was non-alcoholic, a more upmarket brand of bottled water would be her choice. Another indication of the social meaning attached to bottled water is the self-image factors participants had relating to where they would fill up the bottle (if they were to reuse it). Many participants stated that there were places they would not fill up the bottle, and these were predominantly public areas. Tania (aged 39) articulated that filling her bottle up in these situations would make her "feel like a real cheapskate, and it would be embarrassing, and I wouldn't fill it up". Instead, she indicated she would rather buy a new bottle. Such a finding suggests that participants viewed elements of frugality when consuming bottled water as being undesirable in certain social contexts [45]. Moreover, this finding suggests a potential impediment to the reuse of water bottles, with permanent disposition after a single use being perceived as a more desirable alternative.

4.6. Perceived Environmental Consequences

Many participants exhibited a limited understanding of the environmental consequences of purchasing bottled water, with a small number also indicating that they had never thought of the environment with regard to this behaviour. Perceptions about the environmental implications of bottled water consumption were varied. Many participants suggested that a range of resources are used to manufacture and transport bottled water, which leads to greater oil consumption and pollution. James (aged 32), who considered himself to be more aware of the production process involved, stated: "I do understand that it does have an impact on the environment just because all plastic polymers do". When thinking of the environmental impacts of bottled water, Tania (aged 39) suggested a positive societal effect, stating "on the other hand, it's creating jobs". Here Tania uses the "appeal to higher loyalties" neutralisation technique to rationalise her behaviour [19] (p. 254).

Recycling was seen as the main way to mitigate the environmental effects of bottled water consumption, and Libby (aged 23) was consistent with many participants in this study, stating "the main implication would be if they [the bottles] weren't recycled" and that "as long as they're recycled properly, then I think it's alright". Despite some participants saying they tried to recycle their own bottles, many also commented that they would put empty plastic bottles in the trash for reasons such as convenience and travelling (and not being close to home). Tania (aged 39) summarised this behaviour, stating "generally I'm a bit slack and I just think oh well, my bit is not going to have much of an impact". Here, Tania uses the "denial of injury" neutralisation technique to rationalise her behaviour [19] (p. 254). Participants also perceived that most other people did not recycle their empty bottles when reflecting on their own behaviour.

Many participants felt the environmental implications of bottled water were not well understood, with Justine (aged 20) stating "you see recycling bins everywhere but they don't actually tell you what

the implications are", further articulating that the convenience of being able to buy bottled water (as a source of hydration) overrode any environmental concerns. Here, Justine uses the "denial of responsibility" neutralisation technique to rationalise her behaviour [19] (p. 254). In some instances, a level of resistance was shown by several participants towards environmental messages, with Shanti (aged 32) stating "I'm experiencing psychological reactance [*sic*] against all the environmental messages right now. I just get irritated by all the messages, bombarded . . . and I figure I do my part by recycling almost every bottle that we buy". Tracey (aged 55) noted how a small personal environmental issue can detract from a larger one, observing that some people may "feel good because I don't buy bottled water but I drive a large SUV or something like that". Here, Tracey uses the "appeal to higher loyalties" neutralisation technique to rationalise her behaviour [19] (p. 254).

5. Discussion

This study sought to understand the perceptions consumers hold about their decision to purchase bottled water and its environmental effects. As some authors have observed, a critical first step to stopping unnecessary or wasteful behaviour is to understand why consumers engage in such practices [46].

Consumer researchers have long acknowledged that consumers regard possessions as part of their extended self [47], and it has also been discussed how some possessions are considered a more intrinsic part of the self than others. In this vein, it is often considered that more disposable possessions are less personally relevant than other possessions. Assuming this, bottled water could be considered a more disposable possession (and by extension, one that is less personally relevant). However, the results of this study suggest that this is not the case, as for many participants, bottled water was a reflection of their sense of self. An explanation for the status of bottled water may lie in the symbolic nature of water, in that it is "like air, an absolute necessity for survival" [2] (p. 305). Beyond the importance of water, the participants in this study articulated a number of reasons why they preferred to consume bottled water compared to lower cost and/or alternative sources. Specifically, for the participants in this study, bottled water was perceived to be healthy, hygienic, attractively packaged, convenient, superior tasting, and consistent with their self-image of healthiness and purity. In short, it possessed a high level of desirability.

Our results are similar to other research that found consumers prefer bottled water over tap as they perceive it to have greater taste, clarity, purity, and safety [48]. However, new aspects also emerged from our findings—in particular, the importance of the bottle, the convenience of bottled water over tap, and the social meaning attached to bottled water.

In addition to it being a desirable source of hydration, most participants showed limited understanding of the effects of purchasing bottled water. Some viewed recycling as a way to mitigate the negative consequences of bottled water, but consistent with previous research [49], participants in this study divested themselves of water bottles in three key ways: Discarding the empty bottle in the trash, saving it for later use (by electing to refill it), or disposing of it permanently in a way that the bottle could be recycled. Participants also used a number of neutralisation techniques to justify their behaviours. These are "are learned and socially reinforced responses that consumers may use in exchange settings that have an ethical content" [19] (p. 254). The activation of these responses function to make inappropriate behaviour feel more acceptable.

For those seeking to reduce the purchase of bottled water, our results have a number of practical implications. Our respondents were motivated to purchase bottled water to increase their fluid intake and for other health concerns. To encourage consumers to use alternatives to bottled water, NGOs may promote that potential negative implications of chemicals leached from PET bottles on consumer health. Or, to avoid negatively framed messages, policy makers may choose to focus on the cleanliness of municipal water supplies and a frequent level of testing to protect consumer health that exceeds that required for bottled water [50]. For instance, tap water in most US cities must be disinfected, filtered to remove pathogens, and tested for cryptosporidium and giardia viruses [48]. Thus, promoting the

properties of tap water and the ability to rehydrate through the use of reusable bottles may be a useful approach. This may be achieved through the use of awareness campaigns, such as the "ban the bottle campaign" (www.banthebottle.net), media approaches, such as the documentary *Tapped*, or social media campaigns (e.g., Tappening's social media campaign).

Our respondents were also motivated to purchase bottled water because of the bottle itself. Yet there are safer alternatives, such as metal bottles or hard plastic bottles that also provide the convenience of purchased bottled water [51]. To facilitate this approach, policy makers and building owners need to ensure that publicly available sources of water are available to enable consumers to refill bottles and provide the convenience they desire. Respondents also indicated a preference for cold water, perceiving improved taste. Employers may be able to assist with this by providing water coolers/dispensers at places of employment. This would also help to address the perceived stigma of where to refill bottles.

Marketers can also play their part. PET bottles are highly recyclable, and recent technology has improved the appearance of recycled plastic. For instance, Evian has committed to only use 100% recycled plastic in their bottles by 2025 [52]. Similarly, the *Under the Loop* scheme includes a group of consumer goods companies that have begun to provide some online products in refillable and returnable containers [53]. Other organisations may provide branded reusable bottles for free or at low cost, as an advertising medium, and to support a reduction in the purchase of bottled water. Policy makers also have a role to play in encouraging the recycling of plastic bottles post-use. Research suggests that consumers who are sensitive to social norms [23] exhibit greater levels of participation in recycling. Thus, policy makers must ensure they provide consumers with the opportunity to recycle plastic bottles, even away from the home, and may motivate consumers through an appeal that promotes recycling as the correct thing to do.

This exploratory study highlights the considerable challenges that marketers have to address if they are to persuade consumers to consider alternatives to bottled water consumption. If reducing nonsustainable consumption behaviour is a goal, future research should seek to identify how the perceived benefits of bottled water identified in this study could be reframed and mitigated in marketing communications. To date, only van der Linden has undertaken research as to how this might occur, with his research suggesting that the dual effect of activating social norms and providing persuasive information has the most impact on decreasing intentions to purchase bottled water [54].

Future research in this area could also make use of quantitative methods to examine the extent to which the findings of this study are representative of the greater population and to provide further insight into the topic. This study sampled an almost equal number of male and female participants, and a wide range of ages, and found that there were no notable differences in terms of their motivations as to why they purchased bottled water. However, future studies could look at this more closely, in order to uncover what differences exist between different demographic variables, such as gender, age or cultural background. Moreover, future research could examine the reasons people do not purchase bottled water; to explore if consumers simply prefer not to use the product, or if their decision to not do so is based on ethical and/or environmental concerns.

Moving forward, there is an urgent need to determine the marketing activities and messages which might lead to a decrease in actual levels of bottled water consumption. It is only by doing this that we can start to develop effective strategies that highlight more desirable alternatives to those consumption practices, such as the purchasing of bottled water, which are both wasteful and unsustainable.

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