BOTTLED OR FILTERED WATER: ANTICIPATING THE FACTORS THAT DETERMINE THE PREFERENCES IN WATER CONSUMPTION BEHAVIOR

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BOTTLED OR FILTERED WATER: ANTICIPATING THE FACTORS THAT DETERMINE THE PREFERENCES IN WATER CONSUMPTION BEHAVIOR

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

This study explores the psychological, emotional, and contextual factors influencing consumer intentions and behaviors toward sustainable water consumption in Türkiye and Saudi Arabia. Grounded in the Theory of Planned Behavior (TPB) and extended to include emotional and external convenience influences, the research examined the motivations behind choosing filtered or tap water over bottled water.

Data were collected through a structured questionnaire and analyzed using correlation analysis, linear regression, and binary logistic regression. The findings revealed that attitudes toward health and safety, taste preferences, perceived behavioral control, and emotional nervousness were among the strongest predictors of intention. Actual behavior was significantly influenced by intention and past behavior, supporting TPB’s core proposition.

Cross-cultural comparisons highlighted that Turkish participants were more driven by rational considerations such as safety and habit, whereas Saudi participants were more influenced by moral emotions and perceived responsibility. The study also revealed nuanced behavior, where consumers use filtered water for daily tasks but prefer bottled water for drinking due to trust concerns.

Keywords: Water Consumption; Intention; Behavior; Emotion; Theory of Planned Behavior

ÖZ

Bu çalışma, Türkiye ve Suudi Arabistan'da sürdürülebilir su tüketimine yönelik tüketici niyetlerini ve davranışlarını etkileyen psikolojik, duygusal ve bağlamsal faktörleri incelemektedir. Araştırma, Planlı Davranış Teorisi (TPB) çerçevesine dayanmakta ve modele duygusal etkiler ile dışsal faktörler eklenerek, tüketicilerin şişelenmiş su yerine filtrelenmiş suyu veya musluk suyunu tercih etme nedenlerini ortaya koymayı amaçlamaktadır.

Veriler yapılandırılmış bir anket aracılığıyla toplanmış ve korelasyon analizi, doğrusal regresyon ve ikili lojistik regresyon yöntemleriyle analiz edilmiştir. Bulgular, sağlık ve güvenlik algıları, tat tercihleri, algılanan davranışsal kontrol ve duygusal gerginlik gibi değişkenlerin niyet üzerinde en güçlü etkileri gösterdiğini ortaya koymuştur. Ayrıca, tüketici tercihleri hem niyet hem de önceki davranış tarafından anlamlı bir şekilde etkilenmiştir; bu da TPB'nin temel varsayımını desteklemektedir.

Kültürlerarası karşılaştırmalar, Türk tüketicilerin güvenlik ve alışkanlık gibi rasyonel faktörlerden daha fazla etkilendiğini, buna karşılık Suudi tüketicilerin daha çok ahlaki duygular ve sorumluluk hissi ile hareket ettiğini ortaya koymuştur. Ayrıca, birçok katılımcının günlük işler için filtrelenmiş su kullandığı, ancak içme suyu olarak şişelenmiş suyu tercih ettiği gözlemlenmiştir. Bu davranış büyük ölçüde güven endişelerine dayanmaktadır.

Anahtar Kelimeler: Su Tüketimi; Niyet; Davranış; Duygu; Planlı Davranış Teorisi

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COVID:	Coronavirus Disease of 2019
EFA:	Exploratory Factor Analysis
EPA:	Environmental Protection Agency
Exp(b):	Exponentiation of the Regression Coefficient (Odds Ratio)
FDA:	Food and Drug Administration
GCC:	Gulf Cooperation Council
HBM:	Health Belief Model
KMO:	Kaiser-Meyer-Olkin
NAM:	Norm Activation Model
NTP:	National Toxicology Program
PCA:	Principal Component Analysis
PET:	Polyethylene Terephthalate
RO:	Reverse Osmosis
RWPC:	Recycled Water Plastic Containers
SDWA:	Safe Drinking Water Act
SPSS:	Statistical Package for the Social Sciences
SSL:	Secure Sockets Layer
TPB:	Theory of Planned Behavior
US:	United States
USA:	United States of America
UV:	Ultraviolet
VBN:	Value Belief Norm
WCB:	Water Consumption Behavior

INTRODUCTION

Access to clean and pure water is not only essential for survival but also for maintaining optimal health (Tortajada and Biswas, 2018). Water serves a significant portion of the human body, with major organs containing approximately 70% water, highlighting its critical role in physiological functions (Institute of Medicine, 2004). Adequate hydration supports various bodily processes, including oxygen transport, metabolism, digestion, nutrient absorption, detoxification, and temperature regulation (Krecar et al., 2014).

Water consumption among users can be categorized in many ways, but the most common classifications fall into five categories. The first category comprises individuals who consume water directly from natural sources such as springs, wells, or rivers. The second category is tap water consumption, where users rely on water treated and supplied by municipal authorities. Bottled water is the third category, which refers to commercially packaged water treated and distributed by private companies or public entities. The fourth category is purified water, where users use devices to purify municipal water further. Finally, the fifth category involves simple purification, where users perform basic purification methods on municipal or naturally sourced water before consumption.

Among the various sources of drinking water, bottled water consumption has a significant reputation, shaped mainly by intensive marketing campaigns and evolving consumer perceptions (Whitman, 2016). Graydon et al. (2019) highlight that individuals often choose bottled water due to its perceived health benefits, improved taste, and convenience. Bottled water has been positioned as a symbol of health, convenience, and modernity. Parag et al. (2023) suggest that bottled water has been culturally framed as a marker of personal success, cleanliness, and a safe, modern lifestyle, contributing to its strong presence and dominance in the beverage market.

On the other hand, filtered water has emerged as a sustainable alternative to bottled water, appealing to environmentally conscious consumers. With growing awareness of the environmental impact of plastic waste, there is a global move toward opting for sustainable water sources (Pahl-Wostl et al., 2013). Filtered water systems help reduce reliance on single-use plastic bottles and provide a cost-effective, long-term solution for safe drinking water (Qian, 2018).

This research will focus on anticipating consumer preferences among the first three categories: tap water, bottled water, and purified water. By examining these preferences, the study aims to understand the factors influencing consumers' intention and actual behavior in water consumption and how these choices reflect broader consumer beliefs, risk perceptions, and expectations related to health awareness, environmental concerns, and economic considerations. The research is grounded in the Theory of Planned Behavior (TPB) (Ajzen, 1991), which suggests that attitudes, subjective norms, and perceived behavioral control shape individuals’ behavioral intentions.

1.1. Research Purpose and Importance

This study analyzes local consumer preferences for water consumption options and compares the findings from Türkiye and Saudi Arabia. By reviewing relevant literature and examining the collected survey data, the research provides a deeper understanding of the factors influencing consumers’ intentions and behaviors regarding sustainable water usage.

While most research is conducted in America (e.g., Allaire et al., 2019; Onufrak et al., 2014; Saylor et al., 2011), Europe (e.g., Doria, 2006; Ferrier, 2001; van der Linden, 2015), India (e.g., Sharma & Bhaduri, 2013), and other Western countries (e.g., Gleick & Cooley, 2009; Johnstone & Serret, 2012), a noticeable gap in the literature concerning Türkiye and Saudi Arabia. Specifically, limited academic attention has been given to consumer preferences and behaviors related to water consumption. This study addresses that gap by offering nationally collected data that reflects the consumers' tendencies toward water consumption.

Understanding consumer preferences in water consumption is crucial for marketers because it provides insight into the underlying perceptions that shape consumer decisions—such as health concerns, taste expectations, trust in water sources, environmental responsibility, emotional influence and economic considerations. By identifying which factors influence preference for bottled, filtered, or tap water, marketers can tailor branding, communication, and promotional efforts to resonate with these priorities. For example, if safety and convenience drive bottled water choices, messaging can emphasize purity and accessibility; if environmental concern motivates filter use, marketing can highlight sustainability. The data will also be valuable in guiding the water sector, helping policymakers, companies, entrepreneurs, and health organizations align with consumers' needs. Therefore, this research is important in exploring the various aspects of consumer behavior in water consumption.

1.2. Target of Research Locations

In this research, Türkiye and Saudi Arabia were chosen as primary locations for conducting survey research due to their unique characteristics in consumption behavior, social influence, and growing environmental awareness (Almulhim, 2022; Efimova et al., 2019). Both countries face significant challenges regarding water sources, though in different ways, which has prompted both to encourage shifts in consumer attitudes toward sustainable practices (Al-Saidi & Saliba, 2019; Demirbas, 2011). These shifts are driven by increased awareness of environmental issues and government initiatives promoting responsible resource use. Additionally, unique economic and environmental factors make these countries valuable case studies for understanding diverse perspectives on water consumption, especially in comparison with studies conducted in Western Countries.

In Saudi Arabia, natural water sources are minimal, resulting in severe water scarcity that leads to a high dependence on desalinated water as the main source of water with 60% dependency among all other water sources (Mir & Ashraf, 2023). The scarcity of natural, pure water has made bottled water a necessity, driven by concerns over safety and accessibility (Alhidari & Almeshal, 2018).

Türkiye, on the other hand, has more abundant freshwater resources, but it faces challenges due to rapid urbanization and increasing demand for pure water (Akyıldız et al., 2025). There is a growing emphasis on environmental responsibility, with both the government and private sectors promoting awareness of the impacts of plastic waste. This trend has brought alternative water sources, such as filtered water, into greater focus as an environmentally friendly option (Alhamad et al., 2023).

By selecting Saudi Arabia and Türkiye, this study aims to capture a wide range of factors influencing water consumption behavior, from necessity-driven choices shaped by environmental limitations in Saudi Arabia to preference-based decisions rooted in environmental awareness in Türkiye. This comparative approach enables a more comprehensive understanding of how economic, environmental, and social influences shape consumer attitudes and behaviors around drinking water across different regional contexts.

1.3. Research Questions

The research questions are formulated to investigate the role of attitudes, subjective norms, perceived behavioral control, personal norms, external influences and emotional influences on consumption intention and water consumption behavior.

1. How do attitudes, specifically health and safety perceptions, taste preferences, and trust in water providers, influence consumer intention toward sustainable drinking water sources?
2. In what ways do subjective norms, including environmental concerns and social influence, shape consumer intention to adopt sustainable drinking water sources?
3. How does perceived behavioral control (e.g., affordability, accessibility, ease of use) impact consumers' intention to use sustainable water sources?
4. What is the effect of personal norms (sense of moral responsibility or self-expectation) on intention toward sustainable drinking water consumption?

5. How do external contextual factors, such as the economic and convenience suitability of bottled water and treatment devices, affect consumer intention toward sustainable water sources?
6. To what extent do emotional factors like guilt, nervousness, and disgust influence intention to use sustainable drinking water sources?
7. How does intention predict actual behavior in the usage of sustainable water sources?
8. How do emotional factors (guilt, nervousness, and disgust) affect the actual behavior of using filtered water as a sustainable water source?

1.4. Research Objectives

1. Examine how attitudinal components—including health and safety perceptions, taste preferences, and trust in water providers—affect consumer intention to use sustainable water sources.
2. Assess the impact of subjective norms, specifically environmental concerns and social (family/friends) influence, on consumer intention.
3. Determine how perceived behavioral control, such as affordability, accessibility, and knowledge, influences the intention to adopt sustainable water consumption practices.
4. Explore the influence of personal norms—reflecting moral obligation and personal responsibility—on intention toward sustainable water behavior.
5. Evaluate the effect of external factors, including the economic and convenience suitability of water treatment devices and bottled water, on consumer intention.
6. Investigate the role of emotional influences, including guilt, nervousness, and disgust, in shaping both intention and actual behavior toward sustainable water consumption.
7. Analyze the relationship between intention and actual behavior in adopting sustainable water sources.

8. Identify how emotional variables impact actual behavior, specifically in the context of filtered water use.

1.5. Structure of the Thesis

This thesis is organized into chapters, starting with an introduction, literature review, research model and hypothesis, discussion, conclusion and future research recommendation, and lastly, references. This research will address key aspects of water consumption behavior and the factors influencing consumer choices among previous studies and relate them to our study.

Chapter 1 provides an overview of the importance of water consumption. It also introduces the purpose, importance, targeted location, research questions, and objectives of the study

Chapter 2 highlights historical development from ancient purification methods to modern-day water supply systems and sheds light on the existing literature on consumer behavior in water consumption to explore factors such as health and safety perceptions, environmental impacts, and economic considerations. It also discusses cultural and social influences on water preferences and ends with the limitations and gaps that interest my research so I can build the foundation for this research to cover the limitations and research gaps.

Followed by chapter 3, this chapter outlines the conceptual framework and research model guiding the study, integrating the Theory of Planned Behavior (TPB) with additional constructs such as emotional influences and personal norms to explore consumer preferences for water consumption. Hypotheses are developed based on gaps identified in the literature, with a detailed explanation of the relationships between variables.

Chapter 4 presents the findings derived from the analysis of the collected data. It explains the statistical results in detail and interprets them in the context of the research questions and hypotheses.

Chapter 5 provides a discussion of the findings considering the literature reviewed. It also outlines the study's conclusions, practical implications, limitations, and suggestions for future research.

LITERATURE REVIEW

2.1. Historical Evolution of Water Purification and Consumption Practices

Throughout history, humans have explored and invented countless methods to ensure access to pure water. In ancient times, simple techniques were employed, such as filtering water with sand, heating water with sunlight, and using charcoal (Nelson, 1949). Nowadays, water purification methods have evolved to advanced systems like reverse osmosis, UV treatment, and nanotechnology, dramatically improving access to clean and safe drinking water.

In the 8th century, the Arabian scholar Geber (Jabir ibn Hayyan) significantly advanced water purification by introducing techniques for purifying water through distillation—heating water to produce steam, which is then condensed into liquid form. This process effectively removes impurities, making the water suitable for consumption and medical use. Following this, Avicenna (Ibn Sina) in the 11th century recommended that travelers strain water through a cloth as a filtration method (Baker, 1981).

Francis Bacon experimented with methods for treating seawater, highlighting early attempts to address water purification beyond freshwater sources (Edzwald, 2011). Followed by the 18th century, filtration was recognized as an effective means of clarifying water, although the degree of purification was not yet scientifically measurable. With the rise of public health awareness and the need to combat diseases such as cholera and typhoid, laws and more systematic approaches to water filtration were developed in the 19th century (Edzwald, 2011).

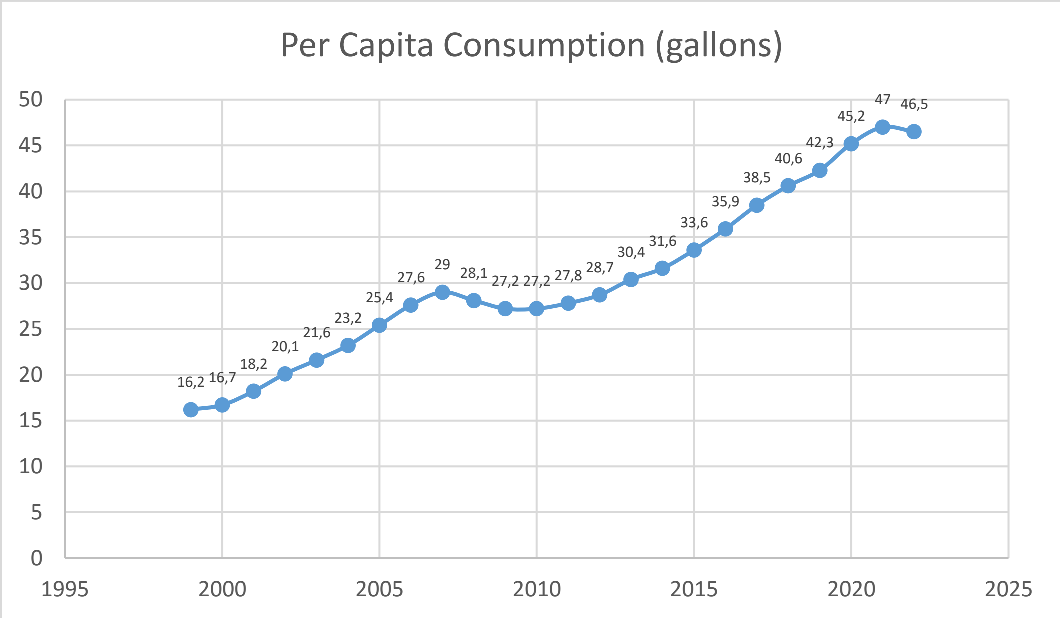
The real revolution in water treatment began with the application of disinfection methods in the early 20th century, where Jersey City, New Jersey, marked a turning point in 1908 by being the first US city to apply chlorine on a full-scale, continuous basis to ensure microbial safety (McGuire, 2006). The United States adopted the first water standards in

1914. These standards were primarily focused on bacteriological safety (Letterman, 1999). This initial step laid the groundwork for more comprehensive regulation, which culminated in the Safe Drinking Water Act (SDWA) of 1974. According to Pontius (2003), the SDWA empowered the US Environmental Protection Agency (EPA) to establish enforceable national standards covering microbial and chemical contaminants for all public water systems. This act marked a pivotal moment in ensuring municipal water systems provide homes with highly purified and safe water.

2.2. Introduction of Consumer Behavior in Drinking Water

The consumption of drinking water can be formed and seen in many shapes. Drinking pure water preferences depend on geographic region, cultural habits, resource availability, and socioeconomic situation (Harvey, 2015). It comes first as the fastest-growing sector in the latest year, and it is bottled water. Recent studies show that consumers change their water preferences from tap to bottled water due to safety issues and dissatisfaction with tap water (Parag et al., 2023; Prasetiawan et al., 2017). Demand for bottled water has risen since the early 1990s, but that may vary from country to country (Cohen & Ray, 2018). For example, according to Olanipekun et al. (2024), in New Zealand, bottled water consumption increased yearly by 20% from 1997 to 2004. In the USA and Western Europe, between 1997 and 2004, the rate increment was close to 6%. However, in the US, the increment kept rising steadily until it peaked in 2021 at 47 gallons (180 liters) per capita, as shown in Figure 2.1 (Ridder, 2023). In the 21st century, for the first time, the drinking water sector has reached a level to compete with other beverage sectors. (Wilk, 2006). Today, bottled water has the highest share of the beverage segment, with 27.6% (Rodwan, 2024).

Figure 2.1. US Per Capita Consumption of Bottled Water Over the Years



(Source: M. Ridder (2023))

Along with the increasing demand for bottled water, possible environmental harms have also become a serious concern for consumers. Various studies show the negative impacts of excessive bottled water consumption on the environment (Bouhlel et al., 2023). Studies also show that environmental concerns influence consumers' intentions to reduce single-use bottled water consumption. However, bottled water is still the preferred option among consumers in several countries. According to a survey conducted by the International Bottled Water Association (Culora, 2019), 37% of participants drink bottled water and tap or purified water equally, 37% (21% primarily bottled water and 16% only bottled water) of participants drinks mostly or only bottled water (raised of 7 % of previous year), while only approximately 26% (16% of participants drink mostly tap/or purified water and 10% drink only tap water) of participants mainly/or only drink tap or purified water while this percentage has dropped 10% from previous year.

Consequently, there is a move toward safer water options such as bottled water. The FDA has regulated bottled water depending on the source of the water used to be labeled (Gleick & Cooley, 2009). There are many sources, but the most popular sources are ‘spring water’ and ‘purified water’. ‘Spring bottled water’ is sourced from natural water forms, such as underground formations, and naturally flows to the surface and then collects. ‘Purified bottled water’ refers to municipal water with a purifying process such as RO, distillation, or other purifying methods (Ikem, 2010). Surprisingly, 44% of bottled water originates from purified water sources, while spring water sources comprise 56% (Gleick & Cooley, 2009). We notice that 44% of bottled water consumers are purified tap water consumers.

2.3. Consumer Behavior Models in Previous Water Consumption Studies

Several models have been proposed to study consumer behavior, including the Health Belief Model (Rosenstock, 1974), the Norm Activation Model (Schwartz, 1977), the Value-Belief-Norm Theory (Stern et al., 1999). Each offers valuable contributions to understanding consumer motivation, but none alone provides a comprehensive framework for analyzing water consumption behavior.

The Health Belief Model (HBM) primarily focuses on individual health-related actions, positing that perceived susceptibility, severity, benefits, and barriers determine behavior. While helpful in explaining health-driven choices (Rosenstock, 1974). For instance, in the research by Tajeri moghadam et al. (2020), The health-belief model was used along with health beliefs to predict the demand for water consumption by farmers in Iran. TPB is considered superior in predicting the intention compared to Health Belief Model (Bish et al., 2000)

The Norm Activation Model explains altruistic behavior as being triggered by personal norms and awareness of consequences. (Schwartz, 1977). For instance, Van der Linden (2015) used The Norm Activation Model to explore the intention of plastic bottle users to reduce their consumption of bottles by analyzing social psychology responses. Although the Norm Activation Model is often applied in environmental contexts, its focus is moral obligation-centered. It does not account for individual confidence in performing the behavior (i.e., perceived behavioral control), which is critical for explaining intention and actual behavior in sustainable practices (Klöckner, 2013).

The Value-Belief-Norm Theory extends Norm Activation Model by linking personal values to beliefs about environmental threats and moral norms (Stern et al., 1999). Researchers who view environmental behavior as driven by moral obligation often adopt the Norm Activation Model or the Value-Belief-Norm theory. In contrast, studies emphasizing rational evaluation alongside social and behavioral control factors commonly apply models such as the Theory of Reasoned Action or the more comprehensive Theory of Planned Behavior (Han, 2015).

In this study, we explain the antecedents of water consumption preferences by utilizing and extending the Theory of Planned Behavior of Fishbein & Ajzen (1975). The Theory of Planned Behavior (TPB) stands out because of its ability to integrate internal factors (attitudes), external factors (subjective norms), and perceived ease or difficulty of performing a behavior (perceived behavioral control), **as** these variables explore how consumers shape their intention and behavior (Ajzen, 1991). These components make TPB an applicable framework for analyzing complex consumer decisions, such as choosing between bottled or filtered water, where health, convenience, and environmental concerns intersect. Additionally, TPB's flexibility allows for extensions, including emotional influences (Borusiak et al., 2021) or past behavior (Raimondo et al., 2022), which provides a more comprehensive analysis of consumer intentions and actions.

Studies like Qian (2018) compare consumer preferences between bottled, tap, and filtered water in exploring water consumption behavior. These works identify critical variables like convenience, safety, and environmental concerns, demonstrating their significant impact on water consumption behaviors. Similarly, Raimondo et al. (2022) investigated millennials' behaviors toward reducing plastic bottle use, highlighting the role of perceived behavioral control and past behavior in shaping intentions. Furthermore, extensions of the TPB framework, as in Borusiak et al. (2021) and Sun & He (2023), have integrated additional factors, such as emotional influences and environmental concerns, to provide a more comprehensive understanding of consumer behavior. These extensions elaborate on understanding the relationship between psychological constructs and water consumption practices.

Table 2.1 highlights selected studies that have applied the TPB or its extensions to understand consumer behavior in the context of water consumption.

Table 2.1. Comparison of Selected Research Using the TPB Model

Title of Study	Authors and Year	Objective	Key Findings	Model
The Impact of Environmental Concern on Intention to Reduce Consumption of Single-Use Bottled Water	(Borusiak et al., 2021)	Examine how environmental concern influences intention and behavior regarding bottled water.	Environmental concern indirectly impacts consumers' intentions and behavior regarding bottled water consumption.	Extended Theory Planned Behavior
Theory of Planned Behavior to Analyze Students' Intentions in Consuming Tap Water	(Saefi et al., 2023)	Examine the factors influencing tap water perceptions among students using TPB.	Students' safety and environmental concern affect their intention to consume tap water.	Theory Planned Behavior
Bottled Water or Tap Water? A Comparative Study of Drinking Water Choices on University Campuses	(Qian, 2018)	Compare bottled and tap-filtered water preferences among university students.	Safety, convenience, trust, and environmental concerns significantly affect water choice.	Extended Theory Planned Behavior
Understanding consumers' purchase intentions of single-use plastic products	(Sun & He, 2023)	Understand the intention of consumers to buy single-use plastic products.	Attitude, perceived behavioral control, social influences, and positive anticipated emotion enhance the intention to purchase single-use plastic products. Positive anticipated emotion strengthens normative social influence's impact but weakens informational social influence's effect on purchase intention.	Theory Planned Behavior

Plastic-free behavior of millennials: An application of the theory of planned behavior on drinking choices	(Raimondo et al., 2022)	To investigate the factors influencing millennials' intentions and behavior toward reducing plastic consumption.	Perceived behavioral control, social norms, and attitudes significantly influence millennials' intention to reduce plastic bottle use, with perceived control being the strongest predictor. Past behavior positively impacts attitude, intention, and stated behavior. Intention also predicts stated behavior.	Extended Theory Planned Behavior
Exploring preference and willingness for rural water pollution control: A choice experiment approach incorporating extended theory of planned behavior	(Mu et al., 2023)	To analyze farmers' preferences and willingness to participate in rural water pollution control (RWPC).	Farmers value water quality improvements. Using TPB and additional constructions, their behaviors have been explained.	Extended Theory Planned Behavior
Residents' acceptance of using desalinated water in China based on the theory of planned behavior (TPB)	(Lili et al., 2021)	To examine residents' acceptance of desalinated water in China's coastal regions	Attitude, subjective norm, and perceived behavioral control positively influence residents' intention and use of desalinated water. Subjective norms also impact attitude, providing insights for policymakers.	Theory Planned Behavior

2.4. Factors Influencing Consumers’ Intention

2.4.1. Health and Safety Perceptions

Health and safety concerns are critical determinants in a consumer’s decision-making journey. Consumers are expected to be concerned about whether the water they drink is healthy and safe, particularly related to essential bodily needs like thirst. Therefore, we can see such practices of boiling water before drinking, as in the case of developing countries (Liu et al., 2022). Such as Jakarta, which spends more than $50 million yearly boiling water just to be safe (McConnell & Rosado, 2000). Furthermore, in Brazil, there are practices such as using filters to reduce the amount of fluoride in tap water(Drummond et al., 2014). Many people still use untreated water even if there are different methods of water treatment (McConnell & Rosado, 2000).

Saefi et al. (2023) have discussed the drinking water consumption habits among students in Jakarta, Indonesia, and found that the students who consume two or fewer bottles of water weekly most likely believe that the tap water is safe and has a similar taste, color, and smell to bottled water. On the other hand, Doria (2006) has discussed why consumers choose bottled water, although tap water is cheaper and more convenient. According to them, two of the many concerns are health and safety. Besides, important campaigns and labels such as “pure” and “healthy” have important roles in consumers' preference for bottled water (Doria, 2006).

According to Huerta-Saenz et al. (2012), bottled water is a preferred option among all age groups, as it is perceived to be safer and purer for drinking and for preparing infant milk formulas. Families believed bottled water was safer for infant formula preparation, although they were unaware of the potential risks associated with fluoride content in the water.

Fluoride additives in drinking water remain a topic of ongoing debate. While fluoride is recognized for its role in preventing tooth decay (Pollick, 2018), concerns have been raised about its potential neurodevelopmental effects, particularly in children (Choi et al., 2012). A systematic review by the National Toxicology Program concluded, with moderate confidence, that higher levels of fluoride exposure (above 1.5 mg/L) are associated with lower IQ in children (National Toxicology Program, 2024). Similarly, a study by Bashash et al. (2018) found that increased prenatal fluoride exposure was linked to reduced cognitive outcomes in children aged 4 and 6–12 years.

The US FDA does not require manufacturers to list the amount of naturally occurring fluoride on bottled water labels. However, if fluoride is added during processing, it must be disclosed (FDA, 2022). While some researchers support the claim that fluoride additives offer dental health benefits, Huerta-Saenz et al. (2012) also note that reliance on bottled water may reduce consumers' fluoride intake, potentially diminishing these benefits.

Public water systems, also referred to as municipal water, are generally expected to provide clean and safe drinking water directly from the tap. However, consumer trust in municipal water quality varies (Brouwer et al., 2020), particularly in regions where past incidents or media reports have heightened awareness of contamination or regulatory violations (Benameur et al., 2022). Allaire et al. (2019) documented that even temporary failures of municipal water systems to meet safety standards can significantly drive public confidence and shift preferences toward bottled water consumption. In many developing countries, such as GCC nations, consumers often avoid tap water altogether, relying instead on bottled water or water treated with reverse osmosis (RO) due to concerns about contamination or undesirable taste (Shomar & Hawari, 2017).

These behavioral shifts are largely rooted in perceptions of bottled water being cleaner, safer, or more consistent in health-related quality than tap water. According to Hu et al. (2011), consumer perceptions of water safety, particularly concerns about groundwater quality, significantly influence behavioral intentions toward bottled water consumption. These perceptions often lead individuals to substitute tap water with bottled alternatives as health-protective behavior.

2.4.2. Environmental Effects and Awareness

Growing environmental awareness, alongside educational campaigns and trends promoting sustainability, consumers are concerned about the environmental impacts of their drinking water choices (Krishen et al., 2023).

The consumption of bottled water is heavily influenced by marketing strategies that highlight the environmental friendliness of packaging materials like PET (polyethylene terephthalate). Despite PET's ability to be 100% recyclable and cost-effective, the real challenge lies in the actual recycling rates and the effectiveness of waste management. Jill (2019) emphasizes that it is the preferred choice for companies, the real challenge lies in the actual recycling rates and the effectiveness of waste management. Parag et al. (2023) briefly discussed bottled water waste. As expected, by 2025, the consumer's plastic waste is predicted to reach 230 million tons a year globally. As mentioned in 2015, 47% of annual waste, representing 60 to 99 million tons, has been mismanaged. That is due to regulations in waste management, as regulations from one country to another differ noticeably. For instance, plastic waste is better managed in developed countries than in developing countries (Mihai et al., 2021). In underdeveloped countries, waste management systems are often poorly established or entirely absent (Mihai et al., 2021). Although PET is technically fully recyclable, only about 47% of water bottles globally are recycled, according to Borusiak et al. (2021), leaving significant environmental footprints. Awareness of the negative influence of plastic bottles is critical, but more important is action taken against plastic consumption and waste. According to Borusiak et al. (2021), plastic bottle consumers are concerned about the environmental harm caused by plastic bottles, and they are willing to reduce their consumption. However, fewer serious actions have been taken.

While the environmental impact of bottled water has been discussed, filtered water is often perceived as a pure and more sustainable option (Oriol & Álvaro, 2022). However, the environmental impact of plastic waste, particularly from single-use plastic bottles, has garnered significant attention in recent years (Gu et al., 2024). Water filters and refill stations have proven to be effective strategies in significantly reducing the use of plastic bottles (Willis et al., 2019).

Moreover, the research by Bruchmann et al. (2021) indicates that social comparison information, which involves comparing one's behavior with that of others, can effectively motivate individuals to reduce their consumption of single-use plastic water bottles. This suggests that social awareness and influence, coupled with the availability of water filters, could enhance public engagement in sustainable practices.

The issue of microplastics, particularly in bottled water, will be related to the storage of bottled water. A study by Zuccarello et al. (2019) was conducted on the presence of microplastics in mineral waters contained in plastic bottles, revealing significant levels of contamination. This finding raises concerns about the health implications of consuming bottled water and further supports the argument for using water filters as a safer and more environmentally friendly alternative.

2.4.3. Economic Considerations

From a marketing perspective, consumer preferences for bottled, filtered, and tap water are influenced not only by perceived quality and convenience but also by price. As highlighted by Jianjun et al. (2016), economic considerations remain an essential part of how individuals evaluate drinking water options. While tap water remains the most economically convenient option due to its direct availability and low cost (Etale et al., 2018), concerns about safety and dissatisfaction with taste often drive consumers toward alternatives such as bottled water or home filtration systems (Saefi et al., 2023).

This consumer shift highlights how decisions are shaped by marketing strategies that emphasize health benefits, safety, and lifestyle convenience. However, economic considerations remain critical as consumers decide upon their ability to cover the costs associated with different drinking water sources. Mulhern et al. (2022) mentioned that households with contaminated or unsafe water sources must install home treatment systems. These systems often involve significant upfront investments and ongoing maintenance costs, which may discourage some consumers with low socioeconomic status.

On the other hand, bottled water success pitcher appeals to many consumers because it can be purchased only when needed, without requiring any installation or long-term commitment (March et al., 2020). The bottled water manufacturing process has several steps, as we mentioned earlier. Starting with plastic material, the price fluctuates depending on the global oil price (Statista Research Department, 2023). For countries without domestic oil production, additional costs are incurred through the need to import plastic, which may involve import taxes and logistical expenses. Furthermore, water must be carefully stored and treated before bottling to ensure cleanliness and quality, which adds further cost to the process (Gleick, 2010). These accumulated expenses contribute to thousands of times more expensive bottled water than tap water, as observed in studies comparing the environmental and economic costs of bottled versus tap water (Parag et al., 2023).

On the other hand, setting up an RO home treatment system requires up-payment ahead of time and an investment in its value. The initial setup cost of a price averaged around 183.2$ according to the local prices in Türkiye (Average of the first 20 devices sold on the Hepsiburada website USD price calculated as for 2024/11/01 (Türkiye Cumhuriyet Merkez Bankası, 2024)

2.4.4. Cultural and Social Influences

Cultural and social influences significantly shape drinking water preferences. Qian (2018) found that family habits positively correlated with drinking behavior, demonstrating that subjective norms, such as family influence, modestly affect individual choices between bottled and tap water. This aligns with the Theory of Planned Behavior (TPB), where subjective norms are crucial in guiding consumer decisions.

Cultural norms amplify these effects, shaping perceptions of water safety and purity. Bottled water is regarded as a symbol of wealth and health in some regions, even when tap water quality is acceptable (Parag et al., 2023). This perception is deeply ingrained and often passed down across generations. Bottled water consumption has become a necessity in developing countries with unreliable water systems, driven by health and safety concerns (Parag et al., 2023). Similarly, in the Middle East, desalinated water is a primary source, yet bottled water is preferred due to concerns about tap water's minerals safety (Shomar & Hawari, 2017).

Social norms also influence environmentally conscious purchasing decisions. For example, individuals often adopt the sustainable behaviors of family members or social groups, which could encourage the purchase of water filters as a safer, more economical, and environmentally responsible alternative to bottled water (Sun & Wang, 2020). This dynamic underscore the potential of social influence in promoting green purchasing behaviors, particularly in cultures that emphasize environmental responsibility and sustainable living.

2.5. Trust and Marketing Influences

Trust and marketing influence are critical in consumers' decision-making, specifically in health-related matters such as water drinking. According to Dunn & Hoegg (2014), fear-based marketing can significantly enhance the emotional attraction of the consumer even more than other feelings, such as happiness, sadness, and excitement. As we mentioned earlier, according to Qian (2018), humans tend to be more influenced by the closer ones; it might be one of the encouragement causes for a consumer to switch or try to change one of the critical decision matters which will affect later on their trust for a brand, organization, media or any other source. On the other hand, marketing affects consumer decisions, and consumers tend to seek comfort and security when faced with fear or uncertainty, which leads them to affiliate with brands that offer reassurance (Dunn & Hoegg, 2014). The research highlights that fear can drive consumer decisions by fulfilling psychological needs for safety and protection through the brand association (or, in our case, alternative options). Therefore, we see that in the USA, since the early 1990s, there has been a national movement towards a safer water source option with consumer trust.

Such as the "Bonn Charter for Safe Drinking Water" trend, which is a framework for the operations and arrangements necessary for the basic needs of water. Practically, the growing preference toward bottled water consumption as a safer option was the dominant (Doria, 2006). As a result, according to Huerta-Saenz et al. (2012), the increase in bottled water consumption was not primarily because of bad taste but because it was a result of the advertising and marketing efforts that formed consumer behavior.

2.6. Summary of Existing Research Gaps

Despite increasing attention to water consumption as a public health, environmental, and economic issue, significant gaps remain in the academic literature, particularly with respect to understanding consumer behavior in Türkiye and Saudi Arabia. These gaps manifest in three key dimensions: outdated data, narrow regional and demographic scopes, and the absence of cross-national comparative studies. This section highlights these deficiencies and underscores the rationale for the present study.

In Türkiye, many studies either rely on old data or focus too narrowly on specific water sources or regions. For instance, Cakmak (1997) addressed water system development and access, but his study predates widespread adoption of home water filtration systems and rising environmental awareness. Akpinar & Gul (2014) investigated bottled water consumption preferences based on data collected in 2009, well before the COVID-19 pandemic, increased plastic pollution discourse, or advancements in purification technologies. While more recent efforts, such as Seçer & Bulut (2021) examined demographic factors influencing bottled water use in Adana, they offered no insight into other water sources like filtered or tap water. Similarly, Görenekli & Gülbağ (2025) analyzed COVID-19's influence on water consumption in Kocaeli, but their work was constrained to a pandemic-specific timeframe, limiting long-term generalizability. In addition, studies such as Boylu & Gunay (2017) assessed environmental attitudes but did not explore behavioral predictors for choosing among water types. Most importantly, none of these studies apply robust behavioral theories such as the Theory of Planned

Behavior (Ajzen, 1991) to explain consumer choices based on psychological, emotional, or social factors.

In Saudi Arabia, the research landscape is even more fragmented. Many studies focus on water quality assessments, environmental management, or infrastructure without exploring consumer behavior. For example, Aleid et al. (2024), Al-Omran et al. (2015), and Riyadh & Peleato, (2024) conducted physical or chemical analyses of drinking water in major cities such as Riyadh. These studies contribute to understanding safety and regulation but do not address how Saudi consumers choose between bottled, filtered, or tap water. Alnasser (2019) explored public perception of water quality, and Mulhern et al. (2022) examined water conservation awareness, but both lacked behavioral modeling or differentiation between types of drinking water. Research on desalinated water usage (e.g., Nair & Kumar, 2013) is primarily technical and policy-oriented, leaving a major gap in knowledge about household-level behaviors and the psychological factors that influence them.

Furthermore, no studies in either country have employed advanced behavioral frameworks to simultaneously investigate multiple sources of drinking water. Emotional variables such as guilt, nervous or disgust, social norms, trust in public infrastructure, and perceived behavioral control remain underexplored, despite their demonstrated importance in studies conducted in other countries (Huerta-Saenz et al., 2012; Qian, 2018). This lack of theoretical grounding weakens the potential of existing findings to support targeted policymaking or marketing strategies that promote sustainable water consumption.

A critical gap also lies in the absence of comparative cross-national research. Türkiye and Saudi Arabia provide an ideal contrast: Türkiye has relatively abundant freshwater resources but inconsistent tap water quality across regions (Ulusoy, 2024), while Saudi Arabia depends heavily on desalination and bottled water imports, with high bottled water consumption rates (Mu'azu et al., 2020). However, both countries are undergoing rapid urbanization, face growing environmental pressures, and exhibit rising consumer interest in water safety, affordability, and sustainability. Despite these parallels and contrasts, no prior study has attempted to compare consumer behavior between the two countries using a shared theoretical model and updated data.

This research fills these gaps by collecting and analyzing recent, cross-national survey data from Türkiye and Saudi Arabia. It applies an extended Theory of Planned Behavior framework to explore attitudes, subjective norms, trust, emotions, and personal norms as predictors of drinking water behavior across three major water sources: bottled, filtered, and tap water. The study also incorporates demographic comparisons and cultural variables to provide a nuanced, theory-driven, and policy-relevant understanding of water consumption preferences in both countries. By doing so, it contributes not only to the academic literature but also to practical efforts in promoting sustainable and informed water choices in the Middle East.

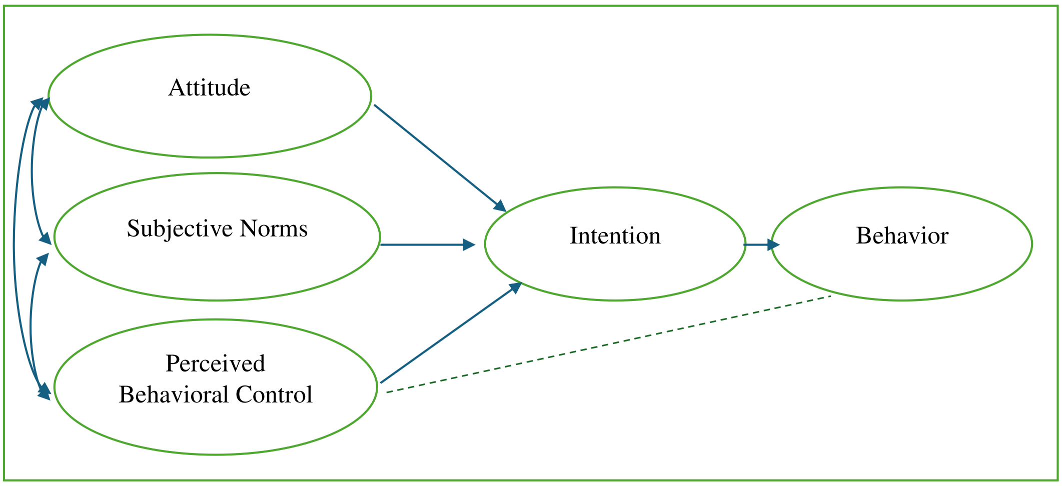
RESEARCH MODEL AND HYPOTHESIS

In the light of water consumption research, in this chapter, we illustrate the research model used in this study, present the hypotheses based on the literature review and provide theoretical background for suggested hypotheses.

3.1. Research Model

In this research, we aim to examine consumer preferences for drinking water consumption by applying the TPB with necessary modifications, such as adding emotional influences, external factors, and personal norms. TPB, established by Fishbein & Ajzen (1975), and Ajzen (1991), identifies attitude, subjective norms, and perceived behavioral control as key determinants of consumers' intention and behavior as shown in Figure 3.1. While the TPB framework has been widely applied in psychology (for example, Liu et al. (2020)) and marketing research (for example, Polat (2025)), recent studies highlight gaps, particularly regarding the role of emotions in influencing behavior during decision-making processes (Ho et al., 2024). This study addresses these gaps by incorporating emotional influences, such as guilt, nervousness, and disgust, as alternative affective processes that affect the relationship between intention and actual behavior. Unlike studies that focus primarily on emotions that target environmental issues (e.g., concern for the planet), this research emphasizes immediate, situational emotions, which are often more impactful in guiding consumer actions at the point of decision.

Figure 3.1. Basic Construct of TPB By Ajzen

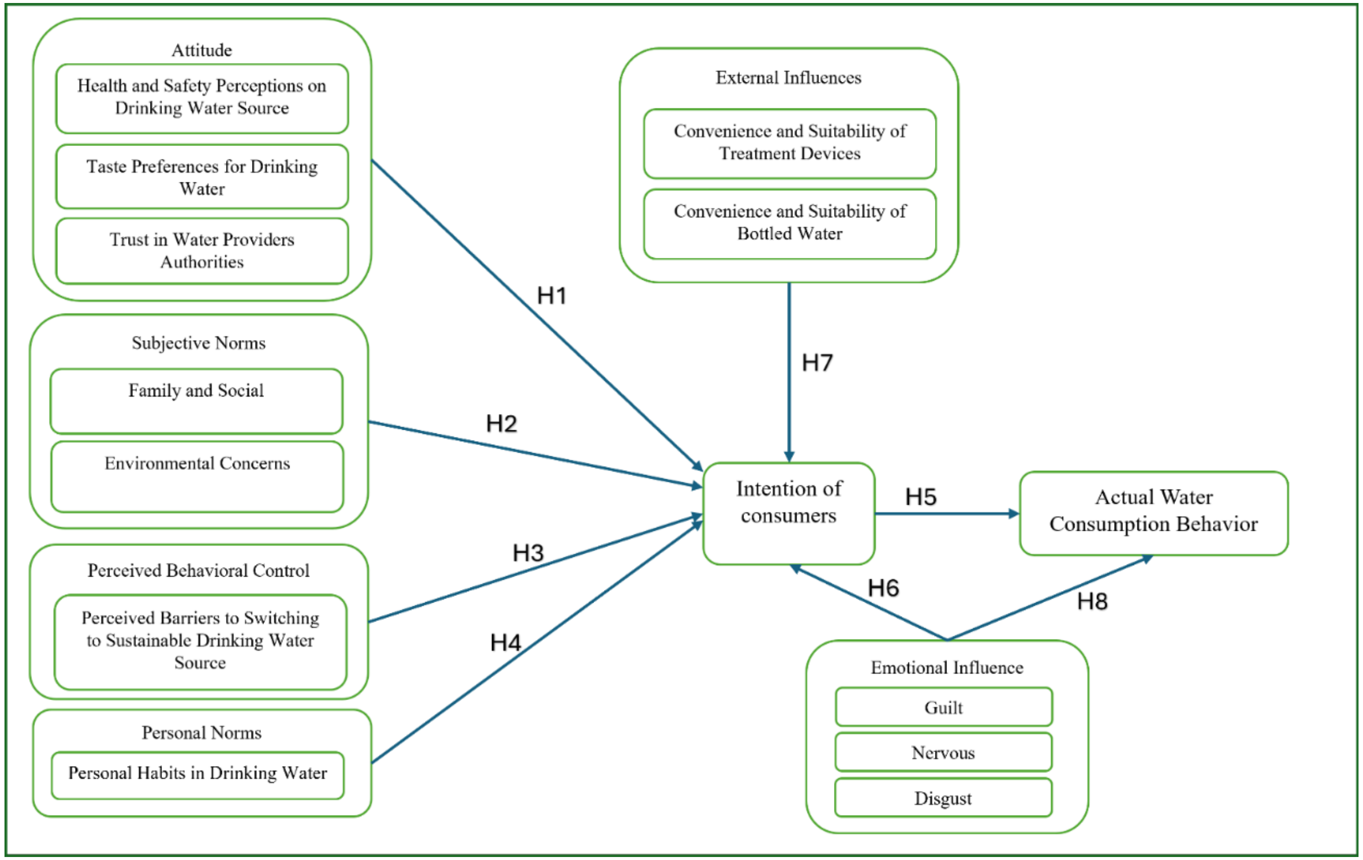


(Source: Ajzen (1991))

Additionally, we integrate personal norms into the TPB framework. Drawing from Harland et al. (1999), personal norms reflect individual expectations based on core values and self-obligations. By doing this, we enhance the TPB model by recognizing the influence of internalized beliefs on consumer behavior, complementing external social pressures (subjective norms).

Our research model, presented in Figure 3.2, reflects this modified TPB framework, adapted to the water consumption context. It explores the relationships among these constructs to understand their impact on consumer intention and actual behavior regarding drinking water consumption. We also elaborate on each TPB construct for discovering the components, which are specific to our context.

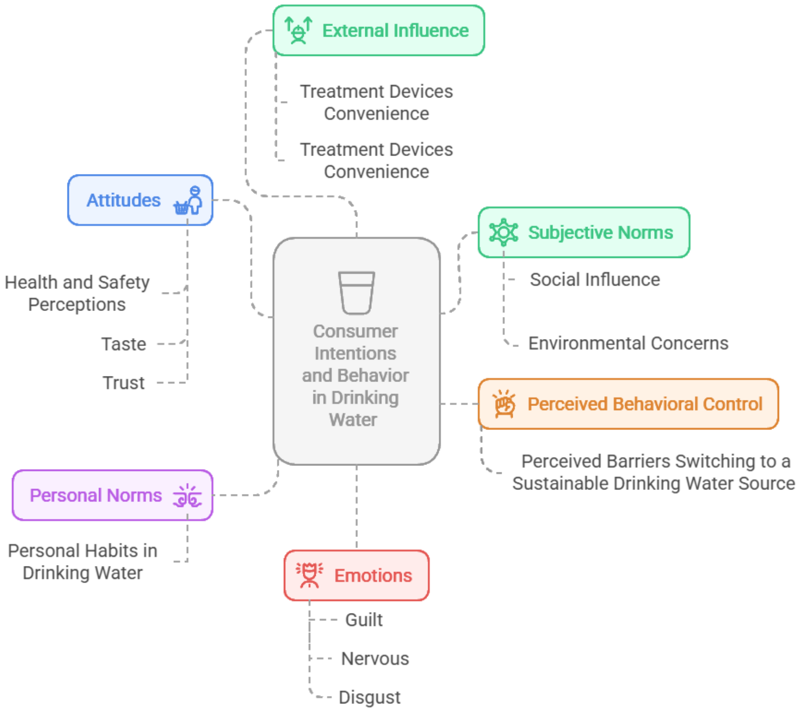
Figure 3.2. The TPB Model Adopted From Ajzen (1991) and Harland et al. (1999), Extended With Emotional and External Influences



3.2. Hypotheses Development

This section outlines the hypotheses developed for the study based on the Theory of Planned Behavior (TPB). Each hypothesis corresponds to a specific independent variable that is expected to influence the dependent variable, water consumption behavior (choosing bottled, tap, or filtered water). Figure 3.3 shows the Factors and Independent Variables Influencing Drinking Water Choices. Table 3.1 shows the hypothesis of the thesis.

Figure 3.3. Factors and Independent Variables



3.2.1. Attitude

In the TPB framework, attitude refers to the degree to which an individual has a favorable or unfavorable evaluation of a behavior (Ajzen, 1991). Positive attitudes toward a particular water source (e.g., bottled or filtered water) are likely to influence consumer intention. In water consumption research, Qian (2018) found that perceptions of safety significantly drive bottled water consumption, particularly when consumers doubt the quality of tap water. Johnstone & Serret (2012) highlight the role of convenience in consumer product choices, including water sources. Saylor et al. (2011) discuss how trust in municipal water systems or bottled water companies influences consumer behavior.

H1a: Health and safety perceptions positively influence the intention to use sustainable drinking water sources.

H1b: Taste preferences positively influence the intention to use sustainable drinking water sources.

H1c: Trust in water providers positively influences the intention to use sustainable drinking water sources.

3.2.2. Subjective Norms

Subjective norms refer to the perceived social pressure to perform or not perform a behavior (Ajzen, 1991). People tend to follow the behavior that their family, friends, or society supports, making this an important factor in water consumption behavior. Literature also supports the importance of subjective norms. Qian (2018) has examined how family influence and social norms affect bottled water consumption. Borusiak et al. (2021) found that environmental concerns are increasingly shaping consumer decisions about water consumption. Ajzen (1991) discusses how subjective norms (social pressure) are a key factor in shaping behavior within the Theory of Planned Behavior.

H2a: Environmental concerns positively influence the intention to use sustainable drinking water sources.

H2b: Family or social influence positively influences the intention to use sustainable drinking water sources.

3.2.3. Perceived Behavioral Control

In the theory of planned behavior, perceived behavioral control (PBC) refers to the extent to which individuals believe they have control over performing a behavior (Ajzen, 1991). According to Ajzen (1991), PBC reflects the perceived ease or difficulty of carrying out an action, and it directly influences both intention and actual behavior. Prior research on water consumption behavior has demonstrated that factors such as cost affordability, behavioral capability, and knowledge readiness regarding water sources significantly impact consumer intentions (Lili et al., 2021; Raimondo et al., 2022). In this study, we propose that consumers who perceive themselves as capable of engaging in environmentally responsible actions—such as reducing plastic bottle use—who are aware of how their drinking water is sourced, and who can afford sustainable alternatives, are more likely to exhibit a stronger behavioral intention to adopt sustainable water consumption practices.

H3: Perceived behavioral control positively influences the intention to use sustainable drinking water sources.

3.2.4. Personal Norms

Personal norms are internalized values that individuals hold, which reflect their sense of personal obligation to engage in a particular behavior. In the context of water consumption, individuals with strong personal norms regarding environmental responsibility are more likely to adopt sustainable water consumption habits. Harland et al. (1999) incorporated personal norms into the TPB model, emphasizing their role in shaping pro-environmental behaviors. Borusiak et al. (2021) found that individuals who feel personally responsible for their environmental impact are more likely to reduce bottled water consumption in favor of sustainable alternatives.

H4: Personal norms positively influence the intention to use sustainable drinking water sources.

3.2.5. External Influences

External factors such as reach easiness, and economic factors will be examined in this research to investigate its effect to form the consumer intention. Qian (2018) found that convenience and accessibility significantly influence water consumption choices, highlighting that filtered water is more likely to be chosen when it is perceived as easy to access. In addition to that Saylor et al. (2011) identified that consumers often prioritize drinking water options that minimize the effort required, such as home-delivered bottled water or readily available filtered water systems.

Mulhern et al. (2022) emphasized that affordability and upfront investment in filtration systems influence the likelihood of adoption, particularly among price-sensitive consumers. Also Delpla et al. (2020) discussed how perceived economic advantages, such as long-term cost savings from filtered water systems, drive consumer intention.

H5a: Economic and convenience suitability of treatment devices positively influences intention to use sustainable sources.

H5b: Convenience of bottled water negatively influences intention to use sustainable sources.

3.2.6. Intention

In the Theory of Planned Behavior (TPB), intention is considered the immediate antecedent of behavior. It reflects an individual's readiness or willingness to perform a behavior, influenced by their attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991). In this study, intention represents the likelihood that a consumer will choose a particular water source—such as bottled, tap, or filtered water—based on their evaluations, social influences, and perceived control. When a strong intention is formed, it increases the probability that the behavior will follow. According to Ajzen (1991), intention is the prior of consumer behavior within the Theory of Planned Behavior framework. It reflects an individual’s motivation and readiness to perform a particular action. Ajzen explains that when a strong intention is formed, influenced by attitudes, subjective norms, and perceived behavioral control, it significantly increases the likelihood of the behavior occurring.

H7: Intention positively influences actual behavior toward using sustainable water sources.

3.2.7. Emotional Influence

In this study, emotions are considered antecedent variables that influence the intention regarding drinking water source choices. By introducing emotions such as guilt, nervousness, and disgust of filtered water, this study aims to explore how responses influence the strength of consumers' acting on their intentions regarding water choices. For example, fear of water contamination may shift the individuals from following through on their intention to choose a sustainable water source to a bottled water source. Recent studies have expanded the Theory of Planned Behavior (TPB) to include emotional influences, providing evidence that emotions can significantly impact the relationship between intention and behavior. Perugini & Bagozzi (2001) explored how anticipated emotions, such as regret, can serve as a motivational effect within TPB, and found that incorporating anticipated emotions helps to explain the depth of commitment individuals feel toward acting on their intentions.

Ho et al. (2024) further examined the role of immediate emotions within TPB, suggesting that real time emotional responses, like fear or pride, can amplify or diminish the likelihood of following through on intentions.

In addition, Kaiser (2006) integrated anticipated feelings of moral regret within the TPB framework to explain conservation behaviors, revealing that emotions like guilt positively influence individuals' commitment to acting on their intentions.

H6a: Emotional guilt negatively influences the intention to use sustainable drinking water sources.

H6b: Emotional nervousness negatively influences the intention to use sustainable drinking water sources.

H6c: Emotional disgust negatively influences the intention to use sustainable drinking water sources.

H8a: Emotional guilt negatively impacts actual behavior toward using filter water source.

H8b: Emotional nervousness negatively impacts actual behavior toward using filter water source.

H8c: Emotional disgust negatively impacts actual behavior toward using filter water source.

Table 3.1. Hypothesis Table

Independent Variable	Factor	Hypothesis
Attitude	Health and Safety Perceptions	*H1a: Health and safety perceptions positively influence the intention to use sustainable drinking water sources.*
	Taste Preferences	*H1b: Taste preferences positively influence the intention to use sustainable drinking water sources.*
	Trust in Water Providers	*H1c: Trust in water providers positively influences the intention to use sustainable drinking water sources.*
Subjective Norms	Environmental Concerns	*H2a: Environmental concerns positively influence the intention to use sustainable drinking water sources.*
	Family/Social Influence	*H2b: Family or social influence positively influences the intention to use sustainable drinking water sources.*
Perceived Behavioral Control	Ease of Use / Barriers	*H3: Perceived behavioral control positively influences the intention to use sustainable drinking water sources.*
Personal Norms	Personal Habits	*H4: Personal norms positively influence the intention to use sustainable drinking water sources.*
External Influence	Treatment Device Convenience	*H5a: Economic and convenience suitability of treatment devices positively influences intention to use sustainable sources.*

	Bottled Water Convenience	*H5b: Convenience of bottled water negatively influences intention to use sustainable sources.*
Emotional Influence	Guilt	*H6a: Emotional guilt negatively influences the intention to use sustainable drinking water sources.*
	Nervousness	*H6b: Emotional nervousness negatively influences the intention to use sustainable drinking water sources.*
	Disgust	*H6c: Emotional disgust negatively influences the intention to use sustainable drinking water sources.*
Intention	—	*H7: Intention positively influences actual behavior toward using sustainable water sources.*
Emotional Influence	Guilt	*H8a: Emotional guilt negatively impacts actual behavior toward using filter water source.*
	Nervousness	*H8b: Emotional nervousness negatively impacts actual behavior toward using filter water source.*
	Disgust	*H8c: Emotional disgust negatively impacts actual behavior toward using filter water source.*

3.3. Research Design

This research adopts a quantitative approach. The study seeks to test the relationship between attitudes, subjective norms, perceived behavioral control, and personal norms with the dependent variable—water consumption behavior (bottled, tap, or filtered water). This approach allows for the objective measurement of variables and the establishment of correlations through statistical analysis of the collected data.

The questionnaire will be divided into two main parts. The first section of the questionnaire will collect demographic information from the participants, including: Age, gender, and geographical location as shown in Table 3.2. This section is designed to ensure that the sample is representative of different groups, enabling a better understanding of how water consumption behavior may vary across demographic categories.

Table 3.2. Demographic Questions

Question	Values
Age.	(blank: participant will fill the value)
Gender.	Male, Female, Prefer not to say.
Residence city	(blank: participant will fill the value)

For drinking water, I prefer to use:	I only use tap water, I generally prefer tap water, I only use bottled water, I generally prefer bottled water, I only use filtered water, I generally prefer filtered water.
For daily uses such as: cooking, preparing drinks, etc. I prefer to use:	I only use tap water, I generally prefer tap water, I only use bottled water, I generally prefer bottled water, I only use filtered water, I generally prefer filtered water.

The second section will measure participants' attitudes, subjective norms, perceived behavioral control, personal norms, external factors, emotional influence, intention and actual consumer behavior using Likert-scale questions. Respondents will rate their level of agreement or disagreement with statements about their water consumption preferences (e.g., bottled, tap, or filtered water). These questions will be based on the variables derived from the Theory of Planned Behavior (TPB), assessing the earlier factors mentioned. The target population in this research consists of drinking water consumers. A random sampling technique will be employed, ensuring that different demographic groups (e.g., age, gender) are well represented in the study.

Table 3.3. Likert-Scale Items

Code	Construct	Component of the Construct	Source	Scale Item
3-A-01	Attitude	Health and Safety Perceptions on Drinking Water Source	(Lili et al., 2021)	Compared to bottled water, I believe drinking and using filtered water is safer for my health.
4-A-02	Attitude	Health and Safety Perceptions on Drinking Water Source	(Mu et al., 2023)	Compared to bottled water, I believe filtered water may cause diseases in the short or long term.
5-A-03	Attitude	Health and Safety Perceptions on Drinking Water Source	(Qian, 2018)	Compared to bottled water, I believe filtered water is safer in terms of harmful contaminants caused by storage and transportation.
6-A-04	Attitude	Health and Safety Perceptions on Drinking Water Source	(Qian, 2018)	Compared to bottled water, I believe filtered water may contain harmful contaminants such as bacteria and microplastics.
7-A-05	Attitude	Taste Preferences for Drinking Water	(Saylor et al., 2011)	Compared to bottled water, I am satisfied with the taste of filtered water.
8-A-06	Attitude	Taste Preferences for Drinking Water	Self adopted	Compared to bottled water, I am satisfied with the smell of filtered water.
9-A-07	Attitude	Taste Preferences for Drinking Water	(Qian, 2018)	Compared to bottled water, I think filtered water has the same taste as bottled water.

10-A-08	Attitude	Trust in Water Providers Authorities	(Saylor et al., 2011)	I believe filtered water undergoes safer treatment processes compared to bottled water.
11-A-09	Attitude	Trust in Water Providers Authorities	(Qian, 2018)	I trust public institutions to provide safe tap water.
12-A-10	Attitude	Trust in Water Providers Authorities	(Saylor et al., 2011)	I believe municipal water is properly treated by municipal facilities.
13-SN-01	Subjective Norms	Social Influence on Drinking Water Consumption	(Raimondo et al., 2022)	People around me prefer that I consume less bottled water.
14-SN-02	Subjective Norms	Social Influence on Drinking Water Consumption	(Raimondo et al., 2022)	People around me prefer and approve of my use of a water treatment device.
15-SN-03	Subjective Norms	Social Influence on Drinking Water Consumption	(Lili et al., 2021)	People around me prefer that I consume less plastic bottled water.
16-SN-04	Subjective Norms	Environmental Concerns Regarding Drinking Water	(Lili et al., 2021)	I think using filtered water helps prevent the water crisis.
17-SN-05	Subjective Norms	Environmental Concerns Regarding Drinking Water	(Lili et al., 2021)	I think using filtered water is environmentally friendly.

18-SN-06	Subjective Norms	Environmental Concerns Regarding Drinking Water	Self adopted	I think using filtered water contributes to sustainability.
19-SN-07	Subjective Norms	Environmental Concerns Regarding Drinking Water	(Qian, 2018)	When I use reusable bottles and reduce plastic consumption, I feel I contribute to saving the planet.
20-PBC-01	Perceived Behavioral Control	Perceived Barriers to Switching to Sustainable Drinking Water Source	(Raimondo et al., 2022)	Reducing the use of plastic bottle waste is within my control.
21-PBC-02	Perceived Behavioral Control	Perceived Barriers to Switching to Sustainable Drinking Water Source	(Raimondo et al., 2022)	I can stop or significantly reduce the waste or consumption of bottled water.
22-PBC-03	Perceived Behavioral Control	Perceived Barriers to Switching to Sustainable Drinking Water Source	(Lili et al., 2021)	I have enough knowledge about the storage of bottled water.
23-PBC-04	Perceived Behavioral Control	Perceived Barriers to Switching to Sustainable Drinking Water Source	(Lili et al., 2021)	I have enough knowledge about the functionality of water treatment devices.
24-PBC-05	Perceived Behavioral Control	Perceived Barriers to Switching to Sustainable Drinking Water Source	(Lili et al., 2021)	Even if the maintenance and replacement costs of water treatment devices increase significantly, I will not switch to bottled water.
25-PN-01	Personal Norms	Personal Habits in Drinking Water	(Huerta-Saenz et al., 2012)	I am very concerned about the water I drink.

26-PN-02	Personal Norms	Personal Habits in Drinking Water	(van der Werf et al., 2019)	I was raised with the belief not to waste drinking water, and I still believe in this.
27-PN-03	Personal Norms	Personal Habits in Drinking Water	(van der Werf et al., 2019)	I feel obligated to use plastic bottles.
28-EXI-01	External Influences	Convenience and Suitability of Bottled Water	(Qian, 2018)	I have a convenient experience when I want to buy bottled water (e.g., water can be delivered to my doorstep).
29-EXI-02	External Influences	Convenience and Suitability of Treatment Devices	(Qian, 2018)	My home is suitable for installing a water filtration system.
30-EXI-03	External Influences	Convenience and Suitability of Treatment Devices	(Saylor et al., 2011)	I don't need to make an effort to bring drinking water to my house.
31-EXI-04	External Influences	Convenience and Suitability of Treatment Devices	(Lili et al., 2021)	I am financially capable of purchasing and using a water treatment device.
32-EXI-05	External Influences	Convenience and Suitability of Bottled Water	(Lili et al., 2021)	I am financially capable of regularly buying bottled water.
33-INT-01	Intention	Intention Toward Choosing Drinking Water Option	(Nasiri et al., 2024)	I intend to use filtered water in the future.

34-INT-02	Intention	Intention Toward Choosing Drinking Water Option	(Nasiri et al., 2024)	I recommend filtered water to people around me.
35-INT-03	Intention	Intention Toward Choosing Drinking Water Option	Huerta-Saenz et al. (2012)	I do not consider switching to (or continuing to use) bottled water in the near future.
36-EMI-01	Emotional Influence	Guilt	(Laskoski et al., 2013)	I feel guilty for preferring filtered water for myself and my family when I could use bottled water.
37-EMI-02	Emotional Influence	Nervous	(Park et al., 2020)	I am worried about using filtered water.
38-EMI-03	Emotional Influence	Nervous	(Park et al., 2020)	I do not trust filtered water.
39-EMI-04	Emotional Influence	Nervous	(Park et al., 2020)	I have doubts about filtered water.
40-EMI-05	Emotional Influence	Disgust	(Etale et al., 2020)	The thought of drinking purified water makes me sick.
41-EMI-06	Emotional Influence	Disgust	(Etale et al., 2020)	Purified water probably has waste in it, which makes it disgusting to me.

42-EMI-07	Emotional Influence	Disgust	(Etale et al., 2020)	I think purified water would taste disgusting.
43-EMI-08	Emotional Influence	Disgust	(Etale et al., 2020)	I think purified water would smell disgusting.
44-WCB-01	Water Consumption Behavior	Actual Behavior for Drinking Water	(Nasiri et al., 2024)	I will continue to use filtered water in the coming years.
45-WCB-02	Water Consumption Behavior	Actual Behavior for Drinking Water	(Ajzen and Fishbein, 2005)	For me, filtered water is a better option compared to bottled water.
46-WCB-03	Water Consumption Behavior	Actual Behavior for Drinking Water	Self adopted	Drinking water from any source is not an issue for me.

3.4. Questionnaire Administration and Data Collection

The WordPress website, using the Forminator plugin, facilitates the informed consent process automatically through its built-in form features. Participants are presented with a clear consent statement at the beginning of the survey. It is important to note that neither WordPress nor the Forminator plugin has access to the data collected during this process. All data is securely stored directly on the website's hosting server, which is protected by industry-standard encryption and secure access protocols.

All participants are initially informed with a clear consent statement at the beginning of the survey, then about the purpose, expected duration and procedures of the research, how their data will be used, that attendance is on a voluntary basis, they are free to choose whether to participate or not, and terminate the process at any stage according to their free will. The gathered data will be stored in a locked folder and in an Excel file on the researcher's personal computer with a password known only by the researcher. The collected data will be analyzed by adhering to the data analysis procedures strictly/firmly. No data distortion will be made to maintain the objectivity of the findings and ethical treatment of the authentic responses.

The data collected during the research will be securely stored on a private website using the WordPress platform, with the Forminator plugin utilized for data collection. Both WordPress and Forminator are configured to ensure data security, and neither WordPress nor Forminator has direct access to the data. All collected data will be encrypted during storage and transmission, ensuring confidentiality and protection against unauthorized access. The website is hosted on a secure server with SSL encryption, password-protected administrative access, and regular security updates. Data will not be shared or published in raw form. Only aggregated and anonymized findings will be presented in research publications to protect participant privacy. Access to the data will be strictly limited to authorized personnel involved in the study, and secure backups will be maintained to prevent data loss.

DATA ANALYSIS AND RESULTS

This chapter presents the results obtained from the survey, analyzing the characteristics of the respondents and their water consumption behavior. The analysis provides insights into demographic attributes, geographic distribution, and preferences regarding drinking water consumption. Following the demographic analysis, the chapter includes factor analysis, regression analysis and reliability testing to validate the constructs, followed by correlation and regression analysis to examine relationships between key variables and test the research hypotheses.

4.1. Sample Characteristics

The survey included a total of 411 respondents from two countries: Türkiye (208 respondents, 50.6%) and Saudi Arabia (203 respondents, 49.4%). Respondents were randomly selected from the general population of both countries using online distribution through social media, email, and messaging platforms. Participation was voluntary, and respondents were screened to ensure they were over 18 years. The sample aimed to capture a diverse representation across age, gender, and geographical location, reflecting different water consumption profiles of the participants' preferred drinking and general use of water sources (tap, bottled, or filtered).

4.1.1. Age Demographics

The age of participants ranged from 18 to 75 years, with a mean of 39.5 years with a standard deviation of 14.38, indicating a diverse age distribution across younger and older adults. In Türkiye, the average respondent was 36.84 years old, with a maximum age of 70 years with a standard deviation of 12.68. While In Saudi Arabia, the average age was 42.23 years with a standard deviation of 15.51, slightly higher than in Türkiye, with a maximum age of 75 years and more di.

The distribution of age groups provides valuable insights into generational differences in water consumption habits, particularly concerning preferences for bottled, filtered, or municipal water sources. Age statistics are shown below in Table 4.1.

Table 4.1. Age Statistics of the Participants

	All participants		Türkiye		Saudi	
	n	S.D.	n	S.D.	n	S.D.
Number of Respondents	411		208		203	
Minimum	18	14.38	18	12.68	18	15.51
Maximum	75		70		75	
Average	39.50		36.84		42.23	

4.1.2. Gender Distribution

Among the 411 respondents, 46% were male (189), 50.4% were female (207), and 3.6% preferred not to say their gender (15). The gender distribution is relatively balanced across both countries. A slightly higher proportion of female respondents participated, especially in Türkiye (51.4%), compared to Saudi Arabia (49.3%). The gender profile data is shown below in Table 4.2.

Table 4.2. Gender Profile of the Participants

	All participants		Türkiye		Saudi	
	n	%	n	%	n	%
Male	189	46%	96	46.2%	93	45.8%
Female	207	50.4%	107	51.4%	100	49.3%
Prefer not to say	15	3.6%	5	2.4%	10	4.9%

4.1.3. Geographic Distribution

The majority of respondents were from major cities in both countries, as shown in Table 4.3. In Türkiye, most respondents were from Istanbul (91.8%), followed by Ankara

(2.4%) and other smaller cities. In Saudi Arabia, the highest proportion of respondents were from Riyadh (87.2%), with smaller numbers from Jeddah (3%), Hasa (3.4%), and other cities.

Table 4.3. Geographic Distribution

Türkiye Cities	Number of Respondents		Saudi Arabia Cities	Number of Respondents	
	n	%		n	%
İstanbul	191	91.8%	Riyadh	177	87.2%
Ankara	5	2.4%	Jeddah	6	3%
Other Cities	12	5.8%	Hasa	7	3.4%
			Other Cities	13	6.1%

4.1.4. Drinking Water Preferences

The consumption profile covers two profiles of consumption: drinking and daily use such as cooking and use with beverages. Each profile has 3 main categories of consumption, whether bottled, filtered, or tap water preference.

Respondents were asked about their preferred source of drinking water. The distribution was as follows: Bottled water was the most used source, with 49.2% of respondents (both who generally prefer it and mainly use it) relying on it. Filtered water was also a popular option, with 47.7% of respondents preferring it. Tap water had the lowest preference, accounting for only 3.1% of the total respondents.

A comparison between Türkiye and Saudi Arabia shows In Türkiye, bottled and filtered water were nearly equally preferred. In Saudi Arabia, there was a higher inclination toward filtered water (50.2%) compared to Türkiye (45.2%). Saudi Arabia and Türkiye have similarities in preferences for drinking water. Table 4.4 shows an overview of respondents' statistics.

Table 4.4. Drinking Water Preferences

Terms	All Respondents		Türkiye		Saudi Arabia	
	n	%	n	%	n	%
I only use tap water	5	1.2%	2	1%	3	1.5%
I generally prefer tap water	8	1.9%	7	3.40%	1	0.50%
I only use bottled water	106	25.8%	54	26%	52	25.6%
I generally prefer bottled water	96	23.4%	51	24.5%	45	22.2%
I only use filtered water	87	21.2%	52	25%	35	17.2%
I generally prefer filtered water	109	26.5%	42	20.2%	67	33%

4.1.5. Daily Use Water Preferences

For daily activities such as cooking and beverage preparation, preferences were slightly different: Filtered water (51.3%) was the most used source. Tap water (26.3%) had a higher preference for daily use compared to direct drinking. Bottled water (22.4%) was still used by some respondents for daily purposes. These results suggest that while many consumers still prefer bottled water for drinking, they are more open to using tap or filtered water for other needs (as they may believe that boiled tap water is safe to consume). As well as the result also shows higher dependency on water filters rather than other sources, which might mean that some users tend to use filtered water only for cooking, but for drinking, they use bottled water. Table 4.5 shows insight into those statistics.

Table 4.5. Daily Use of Water for Cooking, Beverages, and Other Uses

Terms	All Respondents		Türkiye		Saudi Arabia	
	n	%	n	%	n	%
I only use tap water	73	17.8%	46	22.1%	27	13.3%
I generally prefer tap water	35	8.5%	27	13%	8	3.9%
I only use bottled water	46	11.2%	19	9.1%	27	13.3%
I generally prefer bottled water	46	11.2%	21	10.1%	25	12.3%
I only use filtered water	113	27.5%	46	22.1%	67	33%

I generally prefer filtered water	98	23.8%	49	23.6%	49	24.1%

4.2. Factor Analysis and Reliability Analysis

To assess the validity and reliability of the measurement items used in this study, an Exploratory Factor Analysis (EFA) was conducted separately for each construct. EFA is used to uncover the underlying structure among measured variables and to verify whether the items meaningfully group together to represent the intended latent factors (Watkins, 2018).

The adequacy of each construct for factor analysis was evaluated using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity. A KMO value above 0.50 was considered acceptable, while a significant Bartlett's test result ($p < 0.05$) confirmed the presence of sufficient correlations among items (Beavers et al., 2013).

The Principal Component Analysis (PCA) method with Varimax rotation was employed to extract factors and enhance interpretability. Factor loadings of 0.50 and above were considered meaningful, with values above 0.60 deemed strong. Items with low factor loadings or cross-loadings were evaluated for exclusion (Hair Jr. et al., 2019).

After EFA, reliability analysis was performed using Cronbach's Alpha to assess the internal consistency of each construct. A Cronbach's Alpha value of 0.70 or higher was considered acceptable for reliability, aligning with common thresholds in social science research. In different cases, values above 0.60 were deemed adequate, as suggested by Taber (2018).

For components with two items, internal consistency was assessed using both Cronbach's Alpha coefficient and the Spearman-Brown coefficient. The Spearman-Brown method provides a more suitable reliability estimate than Cronbach's Alpha in the context of two-item scales. The Spearman-Brown coefficient was calculated using split-half reliability with correlation analysis in SPSS, and values equal to or greater than 0.70 were considered acceptable indicators of reliability (Eisinga et al., 2013).

4.2.1. Factor and Reliability Analysis for Attitude

EFA was conducted on the Attitude construct using PCA with Varimax rotation. The KMO value was 0.778, indicating acceptable sampling adequacy, and Bartlett's Test of Sphericity was significant (Chi square = 1426.273, df= 28, $p < .001$), confirming the appropriateness of factor analysis. Based on expectations and the unidimensional nature of the construct, the number of factors was fixed to three during extraction.

Three components with eigenvalues greater than 1 were extracted, explaining a total of 76.63% of the variance. After rotation, Component 1 explained 33.95%, Component 3 explained 21.24%, and Component 2 explained 21.43% of the variance.

Component 1 – Health and Safety Perceptions on Drinking Water Source, represented by the items 5A03, 3A01, and 10A08. These items reflect beliefs related to the safety, treatment, and health implications of using filtered water compared to bottled water. Factor loadings ranged from 0.751 to 0.858. The internal consistency for this component was high, with a Cronbach's Alpha of 0.806, as shown on Table 4.6.

Table 4.6. Factor and Reliability Analysis for Attitude- Health and Safety Perceptions on Drinking Water Source

Items	Factor Loadings	Cronbach's Alpha	Cronbach's Alpha if Item Deleted	% of variance
5A03	0.858		0.712	
3A01	0.834	0.806	0.735	33.95%
10A08	0.751		0.757	

Component 2 – Trust in Water Providers Authorities, represented by items 12A10 and 11A09. These reflect trust in municipal treatment facilities and public institutions to deliver safe drinking water. The loadings were 0.92 and 0.913. To assess its reliability, Cronbach's Alpha coefficient results in 0.826, the Spearman-Brown coefficient results in

0.826, indicating strong internal consistency between the two items. The inter-item correlation results in 0.704, further supporting the coherence of the scale as shown in Table 4.7.

Table 4.7. Factor and Reliability Analysis for Attitude- Trust in Water Providers Authorities

Items	Factor Loadings	Spearman-Brown	Inter-Item Correlation	Cronbach's Alpha	% of variance
12A10	0.92	0.826	0.704	0.826	21.43%
11A09	0.913				

Component 3 – Taste Preferences for Drinking Water was represented by items 7A05, 9A07 and 8A06, relating to participants' sensory experiences such as taste similarity and satisfaction with smell. Loadings ranged from 0.617 to 0.886. The internal consistency for this component was good, with a Cronbach's Alpha of 0.788 as shown below in Table 4.8. During the analysis, two items were excluded due to cross-loading within their components. The excluded items are 4A02 and 6A04.

Table 4.8. Factor and Reliability Analysis for Attitude- Taste Preferences for Drinking Water

Items	Factor Loadings	Cronbach's Alpha	Cronbach's Alpha if Item Deleted	% of variance
7A05	0.617	0.788	0.591	21.24%
9A07	0.886		0.869	
8A06	0.651		0.636	

4.2.2. Factor and Reliability Analysis for Subjective Norms

EFA was performed on the Subjective Norms construct using PCA with Varimax rotation. The KMO value was 0.776, indicating good sampling adequacy, and Bartlett's Test of Sphericity was statistically significant (Chi square= 846.704, df=15, $p < .001$), confirming that the data was appropriate for factor analysis.

Two components with eigenvalues greater than 1 were extracted, accounting for a cumulative 68.97% of the total variance. After rotation, Component 1 explained 39.06% of the variance, and Component 2 explained 29.91% as shown on table 4.9.

Component 1 – Environmental Concerns Regarding Drinking Water was measured by items 17SN05, 18SN06, and 16SN04. These reflect participants' environmentally driven motivations for water consumption, including sustainability, eco-friendliness, and crisis prevention. Factor loadings ranged from 0.783 to 0.888. This component demonstrated excellent internal consistency, with a Cronbach's Alpha of 0.863.

Component 2 – Social Influence on Drinking Water Consumption measured by items 13SN01, 15SN03, and 14SN02. These items measure perceived social and familial expectations regarding the reduction of bottled water consumption and support for filtered water solutions. Loadings ranged from 0.633 to 0.826. The internal consistency of this component was approaching acceptable levels, with a Cronbach's Alpha of 0.674, which is often regarded as sufficient in early-stage or exploratory studies (Taber, 2018).

Item 19SN07 was excluded from the final analysis due to a factor loading below the 0.50 threshold in the initial model.

Table 4.9. Factor and Reliability Analysis for Subjective Norms

Items	Factor Loadings	Cronbach's Alpha	Cronbach's Alpha if Item Deleted	% of variance
		Component 1: Environmental Concerns		
17SN05	0.888		0.711	
18SN06	0.868	0.836	0.745	39.06%
16SN04	0.783		0.862	
		Component 2 – Social Influence		
13SN01	0.826		0.631	
15SN03	0.783	0.674	0.623	29.91%
14SN02	0.633		0.470	

4.2.3. Factor and Reliability Analysis for Perceived Behavioral Control

EFA was applied to the Perceived Behavioral Control construct using PCA with Varimax rotation. The KMO value was 0.668, indicating an acceptable level of sampling adequacy. Bartlett's Test of Sphericity was statistically significant (Chi square = 440.110, df=10, p < .001), confirming that the correlation matrix was suitable for factor analysis. Based on expectations and the unidimensional nature of the construct, the number of factors was fixed to one during extraction explaining 46.79% of the total variance.

Perceived Barriers to Switching to Sustainable Drinking Water Source were measured with items 20-PBC-01, 21-PBC-02, 22-PBC-03, 23-PBC-04, and 24-PBC-05. These items reflect participants' perceived control over reducing or switching to sustainable consumption choices even when faced with potential cost barriers. As only one factor was extracted based on theoretical assumptions, rotation was unnecessary, and factor loadings ranged from 0.597 to 0.748 and were interpreted from the Component Matrix. The internal consistency for the construct was acceptable, with a Cronbach's Alpha of 0.711. Table 4.11 presents the extracted SPSS outputs.

Table 4.10. Factor and Reliability Analysis for Perceived Behavioral Control

Items	Factor Loadings	Cronbach's Alpha	Cronbach's Alpha if Item Deleted	% of variance
21PBC02	0.747	0.711	0.695	46.79%
20PBC01	0.597		0.631	
24PBC05	0.672		0.673	
22PBC03	0.643		0.682	
23PBC04	0.748		0.630	

4.2.4. Factor and Reliability Analysis for Personal Norms

EFA was conducted for the Personal Habits in Drinking Water using Principal Component Analysis (PCA). The KMO value was 0.524, indicating a borderline level of sampling adequacy. Bartlett's Test of Sphericity was statistically significant (Chi square = 33.101, df = 3, p < .001), confirming the data was suitable for factor analysis.

Initial eigenvalues showed one component with an eigenvalue above 1, explaining 43.58% of the total variance. The extracted component comprised items 25PN01, 26PN02, and 27PN03, which were designed to reflect participants' personal norms and internalized values related to water consumption. Factor loadings ranged from 0.499 to 0.770, suggesting modest to strong associations with the component. However, reliability analysis revealed poor internal consistency, with a Cronbach's Alpha of 0.326. All corrected item-total correlations were below 0.30, and none of the items contributed meaningfully to the reliability of the scale.

Due to the low internal consistency and weak inter-item correlations, the construct was excluded from further analysis and not retained in the final model.

Table 4.11. Factor and Reliability Analysis for Personal Norms

Items	Cronbach's Alpha	Cronbach's Alpha if Item Deleted	% of variance
25PN01		0.096	
26PN02	0.326	0.260	43.58%
27PN03		0.371	

4.2.5. Factor and Reliability Analysis for External Influences

EFA was conducted on the External Influences construct, which consisted of five items addressing logistical and financial factors that may impact drinking water choices. The KMO value was 0.632, indicating borderline adequacy for sampling, and Bartlett's Test of Sphericity was statistically significant (Chi square = 126.698, df=3, $p < .001$), suggesting acceptable factorability.

Component 1 – Economic and Convenience Suitability of Treatment Devices, measured by items 29EXI02, 31EXI04, and 30EXI03, reflects the physical and financial ease of accessing filtered water at home. Loadings ranged from 0.717 to 0.781. indicating moderate to strong associations with the latent construct. Reliability analysis produced a

Cronbach's Alpha of 0.601, which is considered marginally significant for exploratory research as shown in Table 4.12.

Table 4.12. Factor and Reliability Analysis for External Influences - Economic and Convenience Suitability of Treatment Devices

Items	Factor Loadings	Cronbach's Alpha	Cronbach's Alpha if Item Deleted	% of variance
29EXI02	0.781		0.444	
31EXI04	0.739	0.601	0.514	55.71%
30EXI03	0.717		0.544	

Component 2 – Economic and Convenience Suitability of Bottled water measured by items 28EXI01 and 32EXI05, reflecting ease of access and regular purchase capability for bottled water. Despite high factor loadings (0.819 and 0.818), this two-item component's internal consistency was insufficient. Cronbach's Alpha coefficient results in 0.557, the Spearman-Brown coefficient results in 0.558, and the inter-item correlation results in 0.387, all of which fall below accepted thresholds for reliability. As a result, this component was excluded. Table 4.13 presents the output extracted from SPSS.

Table 4.13. Factor and Reliability Analysis for External Influences: Economic and Convenience Suitability of Bottled Water

Items	Factor Loadings	Spearman-Brown	Inter-Item Correlation	Cronbach's Alpha	% of variance
28EXI10	0.819	0.558	0.387	0.557	21.43%
32EXI09	0.818				

4.2.6. Factor and Reliability Analysis for Emotional Influence

Exploratory factor analysis (EFA) was conducted on the emotional influence construct using principal component analysis (PCA) with variable rotation. The Kaiser-Meyer-Olkin (KMO) value was 0.905, indicating excellent sampling adequacy. Bartlett's Test of Sphericity was statistically significant (Chi square = 2906.778, df = 28, $p < .001$), confirming that the correlation matrix was suitable for factor analysis.

Based on theoretical expectations, three factors were fixed at three during extraction. The resulting three-component solution explained 87.17% of the total variance. After rotation, Component 1 explained 36.42%, Component 2 explained 35.98%, and Component 3 explained 14.78%, as presented in Table 4.14.

Table 4.14. Factor and Reliability Analysis for Emotional Influences

Items	Factor Loadings	Cronbach's Alpha	Cronbach's Alpha if Item Deleted	% of variance
Component 1: Nervous				
38EMI03	0.849	0.921	0.904	36.42%
39EMI04	0.843		0.865	
37EMI02	0.825		0.887	
Component 2: Disgust				
42EMI07	0.904	0.928	0.922	35.98%
43EMI08	0.889		0.909	
41EMI06	0.707		0.894	
40EMI05	0.624		0.901	
Component 3: Guilt				
36EMI01	0.937	Not applicable		14.78%

4.2.7. Factor and Reliability Analysis for Intention

Exploratory Factor Analysis was applied to the Intention construct, consisting of three items reflecting participants' willingness and future plans regarding filtered water usage. The Kaiser-Meyer-Olkin (KMO) value was 0.631, indicating a mediocre but acceptable level of sampling adequacy. Bartlett's Test of Sphericity was statistically significant (Chi square 460.680, df=3, $p < .001$), supporting the factorability of the data.

A single component with an eigenvalue more significant than one was extracted, accounting for 70.46% of the total variance. Since the component structure was unidimensional, no rotation was required. The loading factors were ranging from 0.711 to 0.902.

This factor was interpreted as Intention to Choose Drinking Water Source, reflecting both direct intentions and recommendations toward filtered and bottled water consumption. The internal consistency was acceptable, with a Cronbach's Alpha value of 0.775, indicating good reliability for a three-item scale.

Table 4.15. Factor and Reliability Analysis for Intention

Items	Factor Loading	Cronbach's Alpha	Cronbach's Alpha if Item Deleted	% of variance
33INT01	0.902		0.622	
34INT02	0.891	0.775	0.593	70.46%
35INT03	0.711		0.866	

4.2.8. Factor and Reliability Analysis for Actual Behavior

Exploratory Factor Analysis was conducted for the Actual Behavior construct, which included three items measuring current consumption patterns and attitudes toward filtered water. The KMO value was 0.500, indicating marginal sampling adequacy. However, Bartlett's Test of Sphericity was statistically significant (Chi square = 396.365, df=1, $p < .001$), suggesting that the data was appropriate for factor analysis.

The analysis revealed a single factor with an eigenvalue greater than 1, accounting for 89.40% of the total variance. Since only one component was extracted, rotation was not applicable. This factor was interpreted as Filtered Water Consumption Behavior, as it encapsulates sustained use and preference for filtered water over other options.

The initial Cronbach's Alpha for the three-item scale was 0.623, indicating nearly to acceptable range. To improve reliability, item 46WCB03 was excluded, which raised the Cronbach's Alpha to 0.880. As the revised scale consisted of only two items, internal consistency was further assessed using the Spearman-Brown coefficient, which yielded a value of 0.881, with an inter-item correlation of 0.788. These results are presented in Table 4.16.

Table 4.16. Factor and Reliability Analysis for Actual Behavior

Items	Factor Loading	Spearman-Brown coefficient	inter item correlation	Cronbach's Alpha	% of variance

44WCB01	0.946	0.881	0.788	0.88	89.403%
45WCB02	0.946				

4.3. Regression and Correlation Analysis

This section presents the statistical analyses used to assess the relationships among the constructs developed in this study. Initially, a correlation analysis was conducted to examine the strength and direction of the relationships between each construct, followed by regression analysis in subsequent sections to assess predictive power and hypothesis testing.

4.3.1. Correlation Analysis

According to Pallant (2020), a Pearson Correlation Analysis was conducted to explore the strength and direction of relationships among the research variables. This step provides an initial understanding of how constructs such as Attitude, Subjective Norms, Perceived Behavioral Control, External Influences, and Emotional Influence, relate to Intention prior to performing regression analysis. Pearson's r values indicate the degree of linear association between variables, with values ranging from −1 to +1. Correlations above ±.30 are typically considered moderate, and those above ±.50 are considered strong (Cohen, 1988). Following the guidelines of (Cohen, 1988 as cited in Pallant (2020)), the strength of the correlation was interpreted as follows: values between .10 and .29 were considered small, .30 to .49 as medium, and .50 to 1.00 as large, regardless of the sign, which indicates the direction rather than the magnitude of the relationship.

Table 4.17. Correlation Analysis Results

	Variable	1	2	3	4	5	6	7	8	9	10	11	12
1	Behavior	0.880											
2	Intention	.651**	0.755										
3	Emotional Influence Guilty	-.190**	-.190**	-									
4	Emotional Influence Nervous	-.431**	-.464**	.523**	0.904								
5	Emotional Influence Disgust	-.386**	-.406**	.503**	.758**	0.928							
6	External Influence Component 1	.389**	.450**	-.154**	-.236**	-.265**	0.601						
7	Perceived Behavioral Control	.532**	.525**	-0.088	-.296**	-.236**	.468**	0.711					
8	Subjective Norms Component 1	.348**	.390**	-.134**	-.225**	-.218**	.408**	.389**	0.836				
9	Subjective Norms Component 2	.420**	.416**	-0.074	-.204**	-.160**	.300**	.437**	.441**	0.674			
10	Attitude Component 1	.546**	.603**	-.232**	-.423**	-.361**	.316**	.502**	.422**	.463**	0.806		
11	Attitude Component 2	.185**	.175**	0.029	-0.017	-0.024	.151**	.187**	.243**	.230**	.174**	0.826	
12	Attitude Component 3	.597**	.572**	-.247**	-.445**	-.455**	.390**	.516**	.428**	.412**	.607**	.183**	0.788

The reliability scores are presented along the diagonal. **. Correlation is significant at the 0.01 level (2-tailed).

As shown in Table 4.17, the intention to use sustainable water sources demonstrated strong positive correlations with Attitude: Health and Safety Perceptions on Drinking Water Source (Component 1) ($r = 0.603$), Attitude: Taste Preferences (Component 3) ($r = 0.572$), and Perceived Behavioral Control ($r = 0.525$), suggesting that individuals who hold more positive attitudes, feel in control of their water consumption behavior, and are knowledgeable about water treatment functionality are more likely to intend using sustainable water sources.

Moderate correlations of intention were observed with Subjective Norms: Environmental Concerns (Component 1) ($r = 0.39$), Subjective Norms: Social Influence (Component 2) ($r = 0.416$), Emotional Influence: Nervous (Component 2) ($r = –0.464$), Emotional Influence: Disgust (Component 3) ($r = –0.406$), and External Influence: Economic and Convenience Suitability of Treatment Devices (Component 1) ($r = 0.45$). These findings indicate that individuals who are less emotionally disturbed by filtered water, find water treatment devices convenient, are environmentally conscious, and are influenced by social norms tend to have stronger intentions to adopt sustainable water sources.

Small correlations of intention were found with Emotional Influence: Guilt (Component 1) ($r = –0.19$) and Attitude: Trust in Water Provider Authorities (Component 2) ($r = 0.175$). This suggests that individuals who feel less guilt about using filtered water and moderately trust water providers are more inclined to choose sustainable water sources.

Actual behavior showed a strong positive correlation with intention ($r = 0.651$), indicating that the stronger individuals' intentions are, the more likely they are to act upon them by using filtered water. Moderate strength relationships were found of actual behavior with Emotional Influence: Nervous ($r = –0.42$) and Emotional Influence: Disgust ($r = –0.38$), These correlations suggest that users who are less disturbed emotionally about filtered water are more likely to use filtered water sources. Weak correlations were found with Emotional Influence: Guilt ($r = –0.18$), indicating that guilt plays a limited role in predicting actual behavior related to water consumption.

4.3.2. Linear Regression Analysis of Intention With All Respondents

Linear regression analysis is a commonly used statistical technique to examine the relationship between one continuous dependent variable and multiple independent variables, helping to determine the extent to which each predictor contributes to the outcome(Field, 2013; Hair et al., 2019).

A standard multiple linear regression was performed to assess the predictive power of the independent variables on individuals' intention to use sustainable water sources. The model was statistically significant, $F(10, 410) = 44.267$, $p < .001$, and accounted for approximately 52.5% of the variance in intention, as indicated by the R^2 value of 0.525 (Adjusted $R^2 = 0.513$). This suggests that the predictors collectively explain a substantial portion of the variance in individuals' intentions to adopt sustainable water practices.

As shown on Table 4.18, significant predictors of Intention included Attitude Health and Safety Perceptions (component 1) ($\beta = .273$, $p < .001$), suggesting that individuals who perceive filtered water as a safe and healthy option are more likely to form an intention to use it. External Influence – Convenience and Suitability of Treatment Devices (Component 1) ($\beta = .171$, $p < .001$) also significantly predicted intention, indicating that perceived ease of access to filtered water positively contributes to sustainable choices. Perceived Behavioral Control ($\beta = .132$, $p = .004$) was another significant predictor, supporting the idea that individuals who feel capable of acting on their preferences are more likely to intend sustainable consumption. Attitude – Taste Preferences (Component 3) ($\beta = .147$, $p = .003$) also showed a positive relationship with intention, meaning those who believe filtered water tastes similar to bottled water are more inclined to make the switch. Emotional Influence – Nervousness (Component 2) showed a significant negative relationship ($\beta = -.199$, $p < .001$), suggesting that the lesser feeling of nervous or hesitation about using filtered water may reduce the likelihood of forming intention to use it. This underscores the importance of addressing emotional barriers in promoting sustainable water consumption.

Table 4.18. Multiple Linear Regression Analysis Summary for Predicting Intention

Predictor Variable	Standardized Beta (β)	t-value	Sig. (p)	Hypothesis Results
Attitude – Health and Safety Perceptions (Component 1)	.273	5.713	< .001	Yes
External Influence – Convenience and Suitability of Treatment Devices (Component 1)	.171	4.135	< .001	Yes
Perceived Behavioral Control	.132	2.899	.004	Yes
Attitude – Taste Preferences (Component 3)	.147	2.996	.003	Yes
Emotional Influence – Nervous (Component 2)	–.199	–3.513	< .001	Yes
Emotional Influence – Disgust (Component 3)	–.037	–0.677	.499	No
Subjective Norms – Social Influence (Component 2)	.068	1.608	.109	No
Attitude – Trust in Water Authorities (Component 2)	.025	.694	.488	No
Emotional Influence – Guilt (Component 1)	.077	1.854	.071	No
Subjective Norms – Environmental Concerns (Component 1)	.012	.28	.78	No
Model Summary: $R = .725$, $R^2 = .525$, Adjusted $R^2 = .513$, $F(10, 400) = 44.267$, $p < .001$				

4.3.3. Linear Regression Analysis of Actual Behavior With All Respondents

To assess the predictive power of the independent variables on individuals' actual behavior regarding the use of sustainable water sources, a standard multiple linear regression was conducted. The model was statistically significant, $F(4, 406) = 82.084$, $p < .001$, and accounted for approximately 44.7% of the variance in actual behavior, as indicated by the R^2 value of 0.447 (Adjusted $R^2 = 0.442$). This suggests that the set of predictors collectively provides a meaningful explanation of participants' sustainable water consumption behavior.

As shown in Table 4.19, significant predictors of actual behavior included Intention (β = .569, p < .001), indicating that individuals who express a strong intention to use sustainable water sources are significantly more likely to act on those intentions. This finding reinforces the Theory of Planned Behavior's assumption that intention is the immediate antecedent of behavior, bridging the gap between attitude and action.

In addition, Emotional Influence – Nervousness (Component 1) was also found to be a significant negative predictor (β = –.121, p = .047), suggesting that individuals who feel nervous or hesitant about filtered water are less likely to follow through with sustainable consumption behavior. Although the effect size was smaller compared to intention, its significance highlights that emotional discomfort—such as uncertainty about water quality or filter performance—can still undermine behavioral action, even when intentions are strong.

These results validate the relevance of integrating emotional variables alongside traditional TPB constructs. The model suggests that while intention is a dominant driver of behavior, addressing emotional barriers such as nervousness may further enhance the translation of sustainable intentions into consistent actions.

Table 4.19. Multiple Linear Regression Analysis Summary for Predicting Actual Behavior

Predictor Variable	Standardized Beta (β)	t-value	Sig. (p)	Hypothesis Results
Intention	.569	13.537	< .001	Yes
Emotional Influence – Nervous (Component 1)	–.121	–1.989	0.047	Yes (negative)
Emotional Influence – Disgust (Component 2)	–.073	–1.254	.211	No
Emotional Influence – Guilty (Component 3)	.018	0.407	.684	No
Model Summary: $R = .669$, $R^2 = .447$, Adjusted $R^2 = .442$, $F(4, 406) = 82.084$, $p < .001$				

The regression models effectively identified key predictors of both intention and actual behavior in relation to sustainable water use. Intention was primarily influenced by health and safety attitudes, perceived control, taste preferences, and emotional nervousness. In turn, actual behavior was strongly predicted by intention, along with similar attitudinal and control-related factors. While some variables were not statistically significant, the overall models explained over half of the variance, confirming the strength of the theoretical framework.

4.3.4. Comparative Linear Regression Analysis of Intention Between Türkiye and Saudi Arabia

To compare the predictive power of the independent variables on individuals' intention to use sustainable water sources between Türkiye and Saudi Arabia, a standard multiple linear regression was performed separately for each sample.

For Türkiye, the regression model was statistically significant, $F(10, 197) = 18.767$, $p < .001$, accounting for approximately 48.8% of the variance in intention, as indicated by the R^2 value of 0.488 (Adjusted $R^2 = 0.462$).

Similarly, the regression model for Saudi Arabia was statistically significant, $F(10, 192) = 27.846$, $p < .001$, explaining approximately 59.2% of the variance in intention, as indicated by the R^2 value of 0.592 (Adjusted $R^2 = 0.571$).

These results suggest that the selected predictors collectively explain a substantial portion of individuals' intentions to adopt sustainable water practices in both countries.

The regression results, as shown in Table 4.20 for Türkiye and Saudi Arabia, reveal both common and country-specific predictors of intention. Among the common predictors, Attitude – Health and Safety Perceptions (Component 1) emerged as the strongest influence on intention in both Türkiye ($\beta = 0.27$, $p < 0.001$) and Saudi Arabia ($\beta = 0.276$, $p < 0.001$), suggesting that individuals who believe filtered water provides safety and health benefits compared to bottled water are more likely to adopt sustainable sources. This was followed by Attitude – Taste Preferences (Component 3), which showed a positive relationship in both Türkiye ($\beta = 0.15$, $p = 0.038$) and Saudi Arabia ($\beta = 0.13$, $p = 0.06$), indicating that those who perceive filtered water to taste like bottled water are more likely to intend switch to a sustainable water source. Perceived Behavioral Control was also a common significant predictor for both Türkiye ($\beta = 0.143$, $p = 0.036$) and Saudi Arabia ($\beta = 0.160$, $p = 0.001$), reflecting that individuals who feel capable of switching to a sustainable source are more likely to form intention. Furthermore, External Influence – Treatment Device Suitability was marginally significant in Türkiye ($\beta = 0.121$, $p = 0.055$) and strongly significant in Saudi Arabia ($\beta = 0.222$, $p < 0.001$), emphasizing that convenience and ease of using water filters play a greater role in influencing Saudi consumers' intentions to obtain a sustainable water source.

In terms of emotional variables, noticeable differences appeared between the two countries. In Türkiye, none of the emotional predictors were statistically significant. However, in Saudi Arabia, Emotional Influence – Guilt (Component 3) showed a significant positive relationship with intention ($\beta = 0.192$, $p < 0.001$), meaning that participants who felt guilty for using filtered water were more likely to intend its use. On the other hand, Emotional Influence – Nervous (Component 1) had a significant negative effect ($\beta = –0.289$, $p < 0.001$), suggesting that feeling less As shown in Table 4.19, significant predictors of actual behavior included Intention ($\beta = .569$, $p < .001$), indicating that individuals who express a strong intention to use sustainable water sources are significantly more likely to act on those intentions. This finding reinforces the Theory of Planned Behavior's assumption that intention is the immediate antecedent of behavior, bridging the gap between attitude and action.

In addition, Emotional Influence – Nervousness (Component 1) was also found to be a significant negative predictor ($\beta = –.121$, $p = .047$), suggesting that individuals who feel nervous or hesitant about filtered water are less likely to follow through with sustainable consumption behavior. Although the effect size was smaller compared to intention, its significance highlights that emotional discomfort—such as uncertainty about water quality or filter performance—can still undermine behavioral action, even when intentions are strong.

These results validate the relevance of integrating emotional variables alongside traditional TPB constructs. The model suggests that while intention is a dominant driver of behavior, addressing emotional barriers such as nervousness may further enhance the translation of sustainable intentions into consistent actions.

or hesitation about filtered water increases sustainable consumption intention. Emotional Influence – Disgust (Component 2) was marginally significant in Saudi Arabia (β = –0.048, p = 0.54), indicating it had an negative impact on consumers' intentions such as those who are less likely to feel disgust about filtered water are more likely to intend to rely on a sustainable water source.

Table 4.20. Intention Predictor Variables Comparison Between Türkiye and Saudi Arabia: Significant and Marginally Significant Variables Only

Predictor Variable	Türkiye (β, t-value, Sig.)	Saudi Arabia (β, t-value, Sig.)
External Influence – Treatment Devices (Component 1)	β = 0.121, t-value = 1.929, p = 0.055	β = 0.222, t-value = 4.044, p < 0.001
Perceived Behavioral Control	β = 0.143, t-value = 2.11, p = 0.036	β = 0.16, t-value = 2.583, p < 0.001
Attitude-Health (Component 1)	β = 0.27, t-value = 1.979, p < 0.001	β = 0.276, t-value = 4.101, p < 0.001
Attitude-Taste (Component 3)	β = 0.15, t-value = 2.088, p = 0.038	β = 0.13, t-value = 1.915, p = 0.06
Emotional Influence-Guilt (Component 3)		β = 0.192, t-value = 3.449, p < 0.001
Emotional Influence-Nervous (Component 1)		β = -0.289, t-value = -3.515, p < 0.001

Emotional Influence-Disgust (Component 2)	β = -0.048, t-value = -0.601, p = 0.54

4.3.5. Comparative Linear Regression Analysis of Actual Behavior Between Türkiye and Saudi Arabia

To compare the predictive power of the independent variables on individuals' actual behavior regarding the use of sustainable water sources between Türkiye and Saudi Arabia, a standard multiple linear regression was performed separately for each sample.

For Türkiye, the regression model was statistically significant, $F(4, 203) = 36.424$, $p < .001$, accounting for approximately 41.8% of the variance in actual behavior, as indicated by the R^2 value of 0.418 (Adjusted $R^2 = 0.406$).

Similarly, the regression model for Saudi Arabia was statistically significant, $F(4, 198) = 47.120$, $p < .001$, explaining approximately 48.8% of the variance in actual behavior ($R^2 = 0.488$, Adjusted $R^2 = 0.477$).

These results suggest that the selected predictors collectively explain a substantial portion of individuals' actual behavior regarding the adoption of sustainable water practices in both countries.

The regression results presented in Table 4.21 indicate that intention was the only statistically significant predictor of actual behavior in both Türkiye ($\beta = 0.574$, $p < .001$) and Saudi Arabia ($\beta = 0.580$, $p < .001$). This suggests that individuals who have formed an intention to adopt a sustainable water source are more likely to act on those intentions, regardless of cultural context. Interestingly, while emotional influences such as guilt and nervousness were significant on intention, and emotional influence-nervousness was significant when we combined the samples of both countries, they did not emerge as significant predictors when the analysis was conducted separately for each country. This may indicate that although emotions influence intention in certain contexts (as seen in the Saudi sample for intention), their direct effect on actual behavior may be more limited or mediated through intention.

Table 4.21. Actual Behavior Predictor Variables Comparison Between Türkiye and Saudi Arabia, Showing Significant and Marginally Significant Variables Only

Predictor Variable	Türkiye (β, t-value, Sig.)	Saudi Arabia (β, t-value, Sig.)
Intention	β = 0.574, t-value = 9.832, p < 0.001	β = 0.58, t-value = 9.341, p < 0.001

4.3.6. Hypothesis Testing Summary

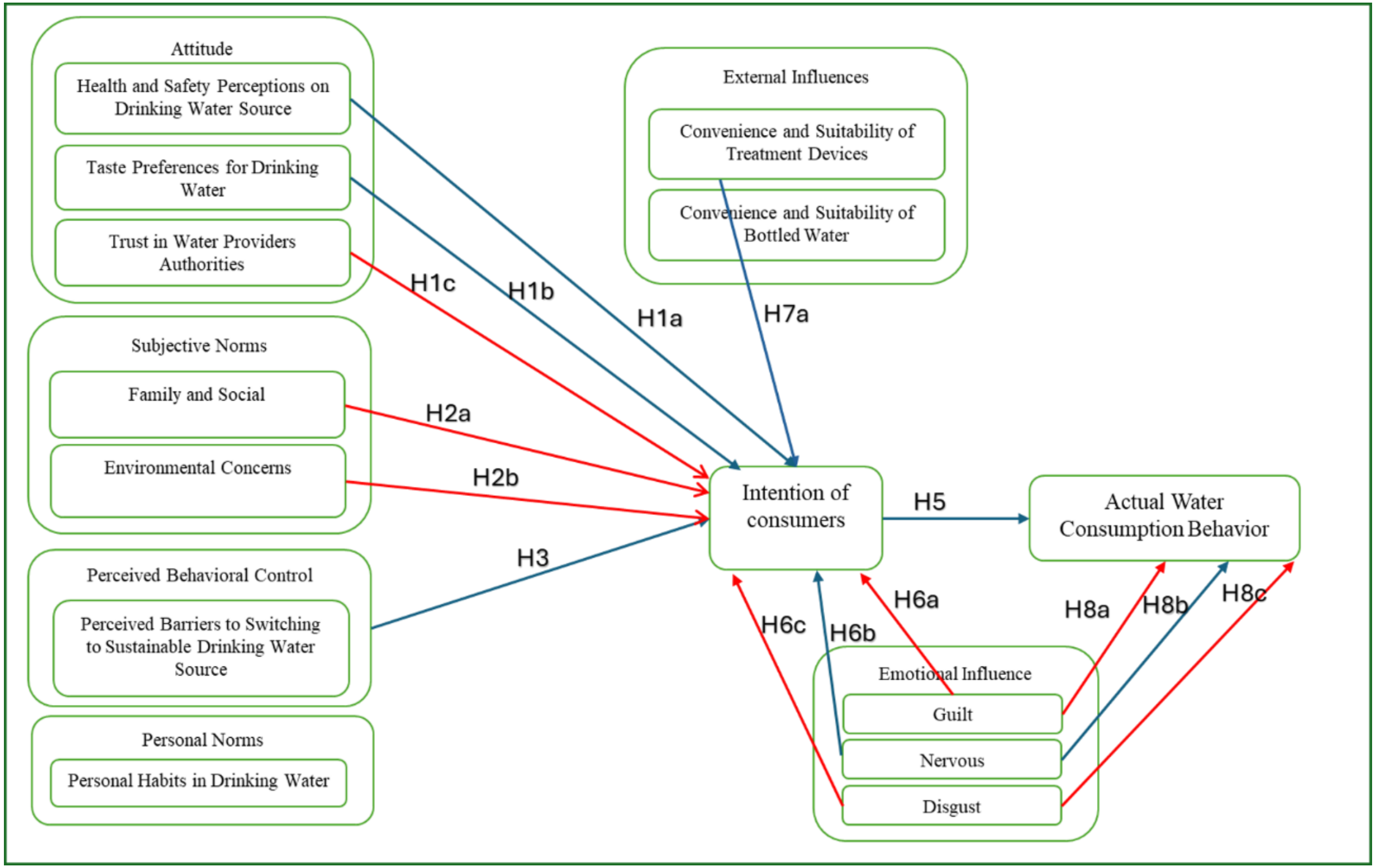
This section presents the summary of hypotheses tested using multiple linear regression analyses for both intention to use sustainable drinking water sources and actual behavior. The results revealed that while several factors were significantly associated with the dependent variables in earlier correlation analyses, not all of them remained significant predictors in the regression models when controlling for other variables. Table 4.22 shows the supported and unsupported hypotheses. And Figure 6 visualizes supported and unsupported hypotheses

Table 4.22. Hypothesis Testing Summary

Hypothesis Code	Statement	Result
H1a	Health and safety perceptions positively influence the intention to use sustainable sources.	Supported
H1b	Taste preferences positively influence the intention to use sustainable sources.	Supported
H1c	Trust in water providers positively influences the intention to use sustainable sources.	Not Supported
H2a	Environmental concerns positively influence intention to use sustainable sources.	Not Supported
H2b	Family/social influence positively influences the intention to use sustainable sources.	Not Supported

H3	Perceived behavioral control positively influences intention.	Supported
H4	Excluded.	Excluded
H7a	Treatment device convenience positively influences intention.	Supported
H7b	Excluded.	Excluded
H6a	Emotional guilt negatively influences the intention.	Not Supported
H6b	Emotional nervousness negatively influences the intention.	Supported
H6c	Emotional disgust negatively influences the intention.	Not Supported
H5	Intention positively influences actual behavior.	Supported
H8a	Emotional guilt negatively impacts actual behavior.	Not Supported
H8b	Emotional nervousness negatively impacts actual behavior.	Supported
H8c	Emotional disgust negatively impacts actual behavior.	Not Supported

Figure 4.1. Visual Presentation of Whether Each Hypothesis Is Supported or Not (Red Indicates Unsupported Hypotheses)



4.4. Binary Logistic Regression Analysis

This section presents the results of binary logistic regression analyses conducted to examine the influence of psychological and demographic variables on distinct categories of water consumption behavior. Guided by the constructs validated through Exploratory Factor Analysis (EFA), five binary outcome variables were analyzed: tap water user, bottled water drinker, bottled water user, filtered water drinker, and filtered water user. Tap water drinkers were excluded from the analysis as the number of samples participated are too low (n=13).

For each behavioral outcome, models were developed using the Enter method, simultaneously incorporating all average factor components and demographic variables (gender). This approach allows for the comprehensive assessment of predictor variables to explore cultural distinctions in behavioral predictors, the analyses were conducted separately for participants from Türkiye and Saudi Arabia, in addition to the full sample, enabling meaningful cross-cultural comparisons.

Model adequacy and explanatory power were evaluated using omnibus model tests, Nagelkerke R^2 values, Hosmer and Lemeshow goodness-of-fit tests, and classification accuracy rates. Statistically significant predictors were determined based on regression coefficients (B), Wald statistics, significance levels (p-values), and odds ratios (Exp(B)) (Field, 2013). The findings provide insights into the cognitive, emotional, normative, and situational factors influencing water consumption decisions in different socio-cultural contexts.

4.4.1. Tap Water Drinkers

The logistic regression model for predicting tap water drinkers was excluded from interpretation due to extremely low sample size (n = 13), class imbalance, and a nonsignificant model fit (chi square (15) = 16.250, p = .366), which rendered the model statistically unreliable.

4.4.2. Tap Water Users

The overall model for all respondents was statistically significant chi square (12) = 26.462, p = .009, with a Nagelkerke R^2 of .091, suggesting the model explained approximately 9.1% of the variance in tap water usage. The classification accuracy was 73%. For Türkiye, the model was significant Chi square (12) = 27.088, p = .008, with a Nagelkerke R^2 of .168. The classification accuracy was 66.3%. In contrast, the model for Saudi participants was not statistically significant overall Chi square (12) = 20.971, p = .051, with a Nagelkerke R^2 of .163 and classification accuracy (81.8%). Table 4.23 shows the summary of significant predictors for tap water users.

For all respondents, Attitude – Trust in Water Provider Authorities (Component 2) was a significant positive predictor of tap water use (B = 0.318, p = 0.010, Exp(B) = 1.375), indicating that individuals who trust municipal or public water providers are more likely to use tap water.

Among Türkiye respondents, two predictors were significant. First, Subjective Norms – Social Influence (Component 2) (B = 0.505, p = 0.040, Exp(B) = 1.658), suggesting that individuals influenced by family or social expectations are more likely to use tap water. Second, Attitude – Trust in Water Providers (Component 2) remained significant (B = 0.382, p = 0.022, Exp(B) = 1.466), reinforcing the role of institutional trust in shaping tap water use.

For Saudi Arabia, although Attitude – Trust in Water Providers (Component 2) was statistically significant (B = 0.686, p = 0.004, Exp(B) = 1.987), the overall model itself was not significant at the .05 level (Chi square= 20.971, p = 0.051), suggesting that while this individual predictor was influential, the model as a whole did not adequately explain the behavior in this subgroup. Table 4.23 shows the comparison of significant predictors among Türkiye and Saudi Arabia.

Table 4.23. Summary of Significant Predictors for Tap Water User – Binary Logistic Regression Results

Predictor Variable	B	Sig.	Exp(B)
All respondents			
Attitude Trust in Water Providers Authorities (Component 2)	0.318	0.01	1.375
Türkiye respondents			
Subjective Norms Social Influence (Component 2)	0.505	0.040	1.658
Attitude Trust in Water Providers Authorities (Component 2)	0.382	0.022	1.466
Saudi Arabia respondents			
Attitude Trust in Water Providers Authorities (Component 2)	0.686	0.004	1.987
Overall Model Significance: All respondents, Chi square= 26.462, p = .009. Türkiye, Chi square= 27.088, p = .008. Saudi Arabia Not significant.			

4.4.3. Bottled Water Drinkers

The regression model for the overall sample was statistically significant, chi square (12) = 222.196, $p < .001$, with a Nagelkerke R^2 of .557, indicating that approximately 55.7% of the variance in bottled water consumption behavior was explained by the predictors. The classification accuracy was high at 82.5%. When analyzing Türkiye's sample, the model was significant, Chi square (12) = 93.017, $p < .001$, with Nagelkerke $R^2 = .481$. Classification accuracy was 81.7%. In contrast, the model for Saudi Arabia yielded the strongest predictive power, chi square (12) = 142.180, $p < .001$, with a Nagelkerke R^2 of .672 and a classification accuracy of 87.7%.

In general, the significant predictors included Actual Behavior (B = –0.887, p < .001, Exp(B) = 0.412), indicating that individuals who already practice sustainable consumption were significantly less likely to drink bottled water. Attitude – Health and Safety Perceptions on Drinking Water Source (Component 1) also negatively predicted bottled water drinking (B = –0.498, p = .009, Exp(B) = 0.608), suggesting that individuals who perceived filtered water as healthy and safe were less likely to rely on bottled water. Similarly, Intention (B = –0.567, p = .016, Exp(B) = 0.567) was a significant negative predictor, meaning that individuals with a stronger intention to use sustainable water sources were less likely to be bottled water drinkers. Emotional Influence – Guilt (Component 3) had a significant positive effect (B = 0.354, p = .029, Exp(B) = 1.425), suggesting that individuals who felt guilty about using filtered water were more likely to use bottled water.

In the Türkiye sample, three predictors were significant: Intention (B = –0.691, p = .015, Exp(B) = 0.501), Attitude – Health and Safety Perceptions (Component 1) (B = –0.626, p = .018, Exp(B) = 0.535), and Actual Behavior (B = –0.752, p = .018, Exp(B) = 0.472). This pattern justifies that those with less health beliefs about filtered water and are less likely to use filtered water are more likely to choose bottled water.

Similarly in Saudi Arabia, the significant predictors were Actual Behavior (B = –1.190, p = .002, Exp(B) = 0.304) and Attitude – Taste Preferences (Component 3) (B = –0.801, p = .02, Exp(B) = 0.449). These results suggest that Saudi respondents who consume less filtered water and who perceive its taste as not like bottled water are more inclined to drink bottled water. Table 4.24 shows the comparison of significant predictors among Türkiye and Saudi Arabia.

Table 4.24. Summary of Significant Predictors for Bottled Water Drinkers – Binary Logistic Regression Results

Predictor Variable	B	Sig.	Exp(B)
All respondents			
Actual Behavior	-0.887	<0.001	0.412
Attitude Health and Safety Perceptions on Drinking Water Source (Component 1)	-0.498	0.009	0.608
intention	-0.567	0.016	0.567
Emotional Influence Guilty (Component 3)	0.354	0.029	1.425
Türkiye respondents			
Intention	-0.691	0.015	0.501
Attitude Health and Safety Perceptions on Drinking Water Source (Component 1)	-0.626	0.018	0.535
Actual Behavior	-0.752	0.018	0.472
Saudi Arabia respondents			
Actual Behavior	-1.190	0.002	0.304
Attitude Taste Preferences for Drinking Water (Component 3)	-0.801	0.020	0.449

Overall Model Significance: All respondents, Chi square= 222.196, $p < .001$. Türkiye, Chi square= 93.017, $p < .001$. Saudi Arabia, Chi square= 142.180, $p < .001$

4.4.4. Bottled Water Users

The overall model for all respondents was statistically significant chi square (12) = 144.585, $p < .001$, with a Nagelkerke R^2 of .396, suggesting the model explained approximately 39.6% of the variance in bottled water usage. The classification accuracy was 74.2%. For Türkiye, the model was significant chi square (12) = 84.148, $p < .001$, with a Nagelkerke R^2 of .445. The classification accuracy was 76.4%. While the model for Saudi Arabia was significant as well, chi square (12) = 70.190, $p < .001$, with a Nagelkerke R^2 of .392 and a classification accuracy of 73.9%.

From all respondents, the significant predictors are Intention (B = 0.442, p = .030, Exp(B) = 1.556), suggesting that individuals who express a higher intention toward sustainable consumption are paradoxically more likely to use bottled water in some general-purpose contexts, possibly due to partial or situational habits as they have the intention to use sustainable water source but still use bottled water. Emotional Influence – Disgust (Component 2) had a significant negative effect (B = –0.632, p = .002, Exp(B) = 0.531), indicating that respondents who felt less disgust toward filtered water were more likely to use bottled water.

In the Türkiye sample, Actual Behavior was the only significant predictor (B = 0.939, p = .003, Exp(B) = 2.557), implying that Turkish participants who already engage in sustainable practices still use bottled water in some contexts, likely for convenience or habit-related reasons. Emotional or attitudinal factors were not found to be significant in this act.

In contrast, the Saudi Arabia sample showed three significant predictors. First, Emotional Influence – Disgust (B = –0.757, p = .018, Exp(B) = 0.469) had a strong negative relationship, meaning that those who felt less disgust toward filtered water were more likely to rely on bottled water. Second, Attitude – Taste Preferences (Component 3) (B = 0.553, p = .034, Exp(B) = 1.738) positively influenced bottled water use, implying that taste perceptions remain a strong determinant of bottled water usage in Saudi Arabia. Lastly, Subjective Norms – Environmental Concerns (Component 1) (B = 0.565, p = .049, Exp(B) = 1.759) had a positive effect, which may seem counterintuitive, but could indicate a conflict between environmental awareness and habitual or culturally influenced behaviors. Table 4.25 explores the comparison of significant predictors in Türkiye and Saudi Arabia.

Table 4.25. Summary of Significant Predictors for Bottled Water Users – Binary Logistic Regression Results

Predictor Variable	B	Sig.	Exp(B)
All respondents			
Intention	0.442	0.030	1.556
Emotional Influence Disgust (Component 2)	-0.632	0.002	0.531
Türkiye respondents			
Actual Behavior	0.939	0.003	2.557
Saudi Arabia respondents			
Emotional Influence Disgust (Component 2)	-0.757	0.018	0.469
Attitude Taste Preferences for Drinking Water (Component 3)	0.553	0.034	1.738
Subjective Norms Environmental Concerns (Component 1)	0.565	0.049	1.759
Overall Model Significance: All respondents, Chi square= 144.585, p < .001. Türkiye, Chi square= 84.148, p < .001. Saudi Arabia, Chi square= 70.190, p < .001			

4.4.5. Filtered Water Drinkers

The overall model for all respondents was statistically significant chi square (12) = 238.748, $p < .001$, with a Nagelkerke R^2 of .588, suggesting the model explained approximately 58.8% of the variance in filtered water drinking. The classification accuracy was 82%.

For Türkiye, the model was significant chi square (12) = 108.506, $p < .001$, with a Nagelkerke R^2 of .544. The classification accuracy was 81.7%. While the model for Saudi Arabia was significant as well, chi square (12) = 139.987, $p < .001$, with a Nagelkerke R^2 of .664 and a classification accuracy of 87.2%.

Among all respondents, significant predictors are Actual Behavior (B = 1.138, p < .001, Exp(B) = 3.119), which strongly indicates that individuals already practicing sustainable behavior are more likely to choose filtered water as their drinking source. Attitude – Health and Safety Perceptions (Component 1) was also significant (B = 0.564, p = .004, Exp(B) = 1.758), reflecting that participants who perceive filtered water as safe and healthy are more likely to drink it. Emotional Influence – Nervous (Component 1) had a negative relationship (B = –0.510, p = .020, Exp(B) = 0.601), suggesting that those who feel less anxious or hesitant about filtered water are more inclined to consume it. In addition, Attitude – Taste Preferences (Component 3) (B = 0.475, p = .023, Exp(B) = 1.608) showed a positive influence, indicating that those who find the taste of filtered water acceptable or comparable to bottled water are more likely to adopt it.

In the Türkiye sample, Actual Behavior remained a strong predictor (B = 1.230, p = .001, Exp(B) = 3.421), followed by Attitude – Health and Safety Perceptions (Component 1) (B = 0.836, p = .003, Exp(B) = 2.307), suggesting that participants who have positive health and safety beliefs are more likely to rely on filtered water.

In Saudi Arabia, the significant predictors included Actual Behavior (B = 1.174, p = .002, Exp(B) = 3.236), Attitude – Taste Preferences (Component 3) (B = 0.843, p = .015, Exp(B) = 2.324), and Attitude – Trust in Water Providers (Component 2) (B = –0.557, p = .037, Exp(B) = 0.573). These results suggest that Saudi respondents rely more heavily on taste preferences and general trust in water authorities, in addition to their existing behavior. Interestingly, trust in water providers showed a negative association, which could reflect skepticism or dissatisfaction with public water systems, pushing consumers toward filtered water as a perceived safer option. Further comparison across Türkiye and Saudi Arabia is presented in Table 4.26.

Table 4.26. Summary of Significant Predictors for Filtered Water Drinkers – Binary Logistic Regression Results

Predictor Variable	B	Sig.	Exp(B)
All respondents			
Actual Behavior	1.138	0.000	3.119

Attitude Health and Safety Perceptions on Drinking Water Source (Component 1)	0.564	0.004	1.758
Emotional Influence Nervous (Component 1)	-0.510	0.020	0.601
Attitude Taste Preferences for Drinking Water (Component 3)	0.475	0.023	1.608
Türkiye respondents			
Actual Behavior	1.230	0.001	3.421
Attitude Health and Safety Perceptions on Drinking Water Source (Component 1)	0.836	0.003	2.307
Saudi Arabia respondents			
Actual Behavior	1.174	0.002	3.236
Attitude Taste Preferences for Drinking Water (Component 3)	0.843	0.015	2.324
Attitude Trust in Water Providers Authorities (Component 2)	-0.557	0.037	0.573
Overall Model Significance: All respondents, Chi square= 238.748, p < .001. Türkiye, Chi square= 108.506, p < .001. Saudi Arabia, Chi square= 139.987, p < .001			

4.4.6. Filtered Water Users

The overall model for all respondents was statistically significant chi square (12) = 123.991, $p < .001$, with a Nagelkerke R^2 of .398, suggesting the model explained approximately 39.8% of the variance in filtered water usage. The classification accuracy was 82%. For Türkiye, the model was significant chi square (12) = 56.274, $p < .001$, with a Nagelkerke R^2 of .380. The classification accuracy was 83.7%. While the model for Saudi Arabia was significant as well, chi square (12) = 85.884, $p < .001$, with a Nagelkerke R^2 of .508 and a classification accuracy of 86.2%.

Among all respondents, the key predictor of filtered water usage was Emotional Influence – Disgust (Component 2) (B = 0.666, p = .002, Exp(B) = 1.946). This indicates that participants who experienced less disgust toward filtered water were more likely to use it for general purposes, supporting the idea that emotional comfort with filtered water plays a meaningful role in driving behavior for general uses rather than directly drinking it.

In the Türkiye sample, both Emotional Influence – Disgust (B = 0.797, p = .019, Exp(B) = 2.220) and Subjective Norms – Social Influence (Component 2) (B = –0.861, p = .019, Exp(B) = 0.423) were significant. This suggests that Turkish consumers who feel less repelled by filtered water are more likely to use it for general purposes. However, the negative relationship with social influence implies that those who sense a lack of encouragement, or even discouragement from family or close people regarding filtered water use, are more likely to adopt it for daily tasks.

In the Saudi Arabia sample, three predictors stood out. Actual Behavior was the strongest (B = 1.174, p = .002, Exp(B) = 3.236), meaning that those already practicing sustainable water habits are over three times more likely to use filtered water more broadly. Attitude – Taste Preferences (Component 3) (B = 0.843, p = .015, Exp(B) = 2.324) further reinforces that taste perception significantly boosts usage. Lastly, Attitude – Trust in Water Providers (Component 2) had a negative impact (B = –0.557, p = .037, Exp(B) = 0.573), implying that lower trust in public water systems motivates Saudi consumers to rely more on filtered water as a safer alternative for general use. Further comparison across Türkiye and Saudi Arabia is presented in Table 4.27.

Table 4.27. Summary of Significant Predictors for Filtered Water Users – Binary Logistic Regression Results

Predictor Variable	B	Sig.	Exp(B)
All respondents			
Emotional Influence Disgust (Component 2)	0.666	0.002	1.946
Türkiye respondents			
Emotional Influence Disgust (Component 2)	.797	.019	2.220
Subjective Norms Social Influence (Component 2)	-.861	.019	.423
Saudi Arabia respondents			
Actual Behavior	1.174	0.002	3.236
Attitude Taste Preferences for Drinking Water (Component 3)	0.843	0.015	2.324
Attitude Trust in Water Providers Authorities (Component 2)	-0.557	0.037	0.573
Overall Model Significance: All respondents, Chi square= 123.991, p < .001. Türkiye, Chi square= 56.274, p < .001. Saudi Arabia, Chi square= 85.884, p < .001			

CONCLUSION

This chapter summarize the study's key findings on consumer behavior and preferences in drinking water consumption across Türkiye and Saudi Arabia. Using the extended Theory of Planned Behavior (TPB) as the conceptual framework—incorporating personal norms, emotional influences, and external factors—this research examined how psychological, social, and contextual determinants shape intention and behavior toward selecting sustainable water sources (filtered or tap water) versus bottled water.

5.1. Cross-Cultural Insights: Managerial and Marketing Implications in Türkiye and Saudi Arabia

While the two countries share similarities in some aspects of water consumption options, the underlying motivations for choosing bottled, filtered, or tap water reveal critical differences that bear implications for marketing, management, and public policy. Based on our findings, both countries shared certain behavioral patterns, especially around the role of taste, habit, and perceived behavioral control. Many respondents in both Türkiye and Saudi Arabia used filtered water for cooking and general use, but hesitated to drink it directly. This suggests an existing trust gap between filtered water and tap water. Based on our findings, we will discuss possible uses based on Türkiye and Saudi Arabia separately.

5.1.1. Türkiye: Rationality, Habit, and Value-Oriented Communication

In Türkiye, the findings suggest that sustainable water behavior—specifically the intention to use filtered water—is primarily driven by rational, cognitive evaluations. Health and safety perceptions, perceived behavioral control, Treatment devices' suitability and convenience, and taste preferences were the most significant predictors of intention. This aligns with findings from Akpinar & Gul (2014), who observed that

Turkish consumers often prioritize health assurance and product familiarity in choosing bottled or filtered water. Seçer & Bulut (2021). Emotional variables such as guilt or nervousness were not statistically significant, indicating that Turkish consumers approach water decisions with a utility-driven mindset.

This has several implications for businesses like water treatment solutions in Türkiye. In terms of marketing, marketing campaigns should be grounded in education and practical benefits. For example, filtered water should be positioned not just as environmentally beneficial but as a cost-effective and health-conscious alternative to bottled water. Clear messaging around filtration quality, certification from health authorities, and comparisons with bottled water can help build trust. Since taste perception plays a strong role in Turkish consumer decisions, marketing strategies may benefit from in-store tasting stations, chef endorsements, blind taste booths, or social media content comparing the taste of filtered and bottled water.

Interestingly, many Turkish respondents already use filtered water for daily needs like cooking, yet still rely on bottled water for drinking. This split behavior presents an opportunity for companies to bridge the gap through targeted campaigns that normalize filtered water for direct drinking. Highlighting real-life testimonials, expert recommendations, and offering trial usage models (e.g., short-term filter rentals) could ease the transition from partial to full use.

From a pricing perspective, while the economic suitability of filtration systems was only marginally significant in regression models, Turkish consumers remain highly price-conscious. Upfront cost is a critical barrier. To address this, companies can consider installment plans, subscription-based filter models, or bundling installation with service warranties. Campaigns that visually demonstrate long-term savings compared to regular bottled water purchases may increase perceived affordability.

Meanwhile, bottled water companies can use these findings to reposition their brands more sustainably, perhaps by offering eco-certified packaging, hybrid models that combine filter and bottled options, such as partnering with refill stations. Transparency in sourcing and eco-footprint may help retain conscious consumers.

Policymakers in Türkiye have a role to play in enabling this shift. Public health institutions could support the credibility of filtered water by issuing consumer guidance or conducting awareness campaigns. Municipalities can work with water treatment brands to provide subsidized filters in lower-income areas or include filtration systems in public housing programs. Education programs in schools could address long-standing myths about tap and filtered water, helping younger generations adopt sustainable habits.

5.1.2. Saudi Arabia: Emotion-Driven Decisions and Trust-Building Strategies

In contrast, the Saudi Arabian context revealed a more emotionally driven decision-making process. In addition to rational and cognitive evaluations, health and safety perceptions, perceived behavioral control, treatment devices' suitability and convenience, and Taste preferences, Guilt and nervousness were significant predictors of intention, and filtered water was more strongly adopted for both drinking and daily use compared to Türkiye. This suggests that Saudi consumers are influenced not only by rational evaluations but also by emotional and moral considerations. This mirrors insights from Alhidari & Almeshal (2018), which reported that Saudi consumers' decisions around water are shaped not only by health concerns but also by social expectations and emotional sensitivity to responsibility and risk.

For marketers and private water filter companies in Saudi Arabia, this means that messaging must appeal to both logic and emotion. Campaigns that highlight the role of filtered water in protecting family health, fulfilling environmental responsibilities, or aligning with social influence are likely to resonate deeply. Emotional guilt was found to positively predict intention, meaning that campaigns assist in spreading awareness that reshaping the frame of filtered water use as a family health risk could motivate change. At the same time, emotional nervousness had a negative impact, considering that consumer doubt and fear about filtered water may be assured with campaigns messages supporting the idea of safety regarding filtered water. Brands may have a better impact on the market as well if they display certification, perform live demonstrations, and share user testimonials to reduce uncertainty.

The convenience and suitability of filtration systems also played a significant role in Saudi Arabia. This points to the importance of not only product quality but also user experience. Additional added services, such as alerting users to change filters on time, installation support, mobile app integration, and strong after-sales service, are all value propositions that can distinguish market leaders. As Saudi consumers are increasingly tech-savvy and value convenience, brands must prioritize quality in addition to features.

The challenge for bottled water companies in Saudi Arabia lies in maintaining relevance without undermining the push toward sustainability. They may consider repositioning their products around luxury or travel use, or invest in sustainable packaging, refill stations, or partnerships with filter manufacturers to stay aligned with the sustainability movement. Bottled water providers may also use fear-based campaigns of containment in water, and by pointing out the convenience of using bottled water, they will be effective based on our findings.

Government entities in Saudi Arabia have significant leverage to support sustainable water practices. Such as raising awareness of sustainability, encouraging sustainable water choices, and emphasizing environmental concerns. The government may introduce sustainable water acts, such as providing public filter lines in mosques, parks, and schools to normalize filtered water use and provide consumers who have never used filtered water with the experience of it. Regulatory support for filter certification, along with campaigns led by trusted figures, could enhance perceived moral alignment. Since many Saudi consumers were found to act based on emotional responsibility, tapping into purity, health, and family responsibility may be especially effective.

5.2. Comparison with Existing Literature and Research Contribution

This study builds on the foundational work of Ajzen (1991) and Fishbein & Ajzen (1975) who developed the Theory of Planned Behavior (TPB) as a framework for predicting intention and actual behavior based on core constructs such as attitude, subjective norms, and perceived behavioral control. In alignment with TPB's, the current findings confirm that attitude (particularly components 1 and 3) and perceived behavioral control were significant predictors of intention to use sustainable drinking water sources. Additionally, intention demonstrated a strong, positive relationship with actual behavior, further supporting TPB's predictive structure. However, diverging from the traditional TPB framework, subjective norms did not significantly influence intention in this context, suggesting that social pressure may not play a primary role in shaping sustainable water consumption decisions among the sampled populations.

Attitude—particularly related to health and safety concerns—has been widely examined in water consumption research. Qian (2018) found that negative health perceptions significantly decreased the intention to consume tap water, suggesting that participants who were less doubtful about tap water safety were more likely to drink it. Similarly, Saylor et al. (2011) reported a significant association between health concerns and bottled water consumption, indicating that individuals who prioritized health and safety were more inclined to choose bottled water. These findings align with the results of the current study, where Attitude – Health and Safety Perceptions (Component 1) was found to significantly predict intention to use sustainable water sources. This suggests that participants who hold positive health and safety beliefs about filtered water are more likely to adopt sustainable consumption practices.

Taste-related attitudes have also been explored in prior research. Qian (2018) found that negative perceptions of taste similarity between bottled and filtered water significantly influenced consumer choices, indicating that participants who disagreed with the idea that bottled and filtered water taste the same were more likely to rely on filtered tap water. In contrast, our research revealed that taste similarity preferences had a significant positive effect on intention, suggesting that participants who perceived filtered water to taste similar to bottled water were more likely to intend to use sustainable water sources.

Subjective norms have been identified in previous studies as significant predictors of consumer intention in water-related behaviors. For instance, Lili et al. (2021) reported a significant positive effect of subjective norms on intention, while Raimondo et al. (2022) found an even more substantial influence, suggesting that social pressure and perceived approval from others can motivate sustainable water behaviors. However, in contrast to these findings, both components of subjective norms in the current study were not significant predictors of intention, neither in the full sample nor when analyzed separately for Türkiye and Saudi Arabia.

Despite their limited influence on intention, subjective norms emerged as significant predictors in binary logistic regression analyses. Specifically, Subjective Norms – Environmental Concerns (Component 1) was positively associated with bottled water usage and negatively associated with filtered water usage in both countries. Subjective Norms – Social Influence (Component 2) was significant only within the Türkiye sample, showing a positive association with tap water usage and a negative association with filtered water usage. These findings suggest that while subjective norms may not directly influence consumers' intentions, they may still play a role in shaping specific consumption behaviors, particularly in how individuals conform to social expectations regarding different water sources.

Previous studies have established personal norms as influential predictors of pro-environmental intentions. Harland et al. (1999) demonstrated a strong and significant relationship between personal norms and intention even after controlling for other TPB constructs. Similarly, Borusiak et al. (2021) found that environmental personal norms not only significantly predicted intention but also had a direct effect on multiple TPB components, including attitude, subjective norms, perceived behavioral control, and perceived moral obligation. In contrast, our study did not observe an acceptable level of internal consistency for this construct and thus it was excluded from further analysis. This divergence from previous findings may be attributed to several factors, including conflicting item directions within the construct, potential misinterpretation of translated statements, or cultural variations in how moral responsibility is perceived across the Turkish and Saudi samples.

Turning to perceived behavioral control, previous research by Raimondo et al. (2022) identified a strong positive relationship with intention. Consistent with this, the present study found that perceived behavioral control was a significant predictor of intention supporting TPB's assertion that individuals are more likely to form intentions toward a behavior when they feel capable of performing it.

External influences of accessibility and convenience have been shown to impact drinking water choices significantly. Saylor et al. (2011) found that participants who experienced difficulty accessing tap water were more likely to consume bottled water, emphasizing the role of perceived ease in shaping consumption behavior. These findings are supported by predicting intention, External Influence – Treatment Device Suitability (Component 1) was found to have a significant positive relationship, indicating that convenience and ease of use of filtration systems are key drivers of intention to adopt sustainable water sources, even if that intention does not always translate into actual behavior.

In a limited number of studies, emotional influences have been incorporated into TPB-based models, yet evidence suggests that doing so can significantly improve the model's predictive power. For example, Kim et al. (2013) found that including anticipated regret increased the explained variance in intention. Similarly, Londono et al. (2017) reported that emotional variables accounted for up to 49% of the variance in intention in certain contexts. De Pelsmaeker et al. (2017) also demonstrated that integrating emotions improved a TPB model that initially explained only 17.4% of behavioral variance.

In the present study, emotional influence—particularly nervousness (Component 1)—showed a significant negative relationship with intention, indicating that negative emotional responses may act as barriers to adopting sustainable water sources. Although emotions were not consistently significant in all models, their inclusion in the binary logistic regression analysis led to modest but meaningful increases in explanatory power, with the highest improvement observed in the filtered water drinkers model. As shown in Table 5.1, the comparison of model fit with and without emotional predictors confirms that even small gains in R^2 are valuable in behavioral research. These findings highlight the relevance of integrating emotional constructs into TPB-based frameworks to enhance their explanatory capacity and capture a more comprehensive understanding of water consumption behavior.

Table 5.1. Comparison of Model Fit With and Without Emotional Predictors (Guilt, Nervousness, Disgust) Across Water Consumption Profiles

	With Emotional Influence		Without Emotional Influence	
	Chi Square	R^2	Chi Square	R^2
Tap Water Users	35.145	0.12	26.462	0.091
Bottled Water Users	163.402	0.438	144.585	0.396
Bottled Water Drinkers	265.56	0.635	222.196	0.557
Filtered Water Users	137.255	0.434	123.991	0.398
Filtered Water Drinkers	275.233	0.651	238.748	0.588

Saylor et al. (2011) observed that women were more likely to consume bottled water, mainly due to greater concern about potential health risks associated with other water sources. In contrast, the current study found that gender did not significantly predict intention to adopt sustainable water sources. However, the direction of the effect was negative, suggesting that males were slightly more likely to opt for sustainable water consumption. While not statistically significant, this trend aligns with Saylor et al.'s (2011) findings, as it implies that women may still exhibit greater caution, potentially leading them to favor bottled water over filtered or tap options.

5.3. Limitations

While the findings of this study offer valuable insights into consumer intentions and behaviors regarding sustainable water consumption in Türkiye and Saudi Arabia, several limitations should be acknowledged.

Firstly, the study relied entirely on self-reported data, which may be subject to common response biases, including social desirability bias, where participants respond in ways they believe are socially acceptable or viewed favorably by others (Fisher, 1993), and recall bias, which occurs when participants are unable to accurately remember or report past behaviors, particularly regarding routine actions such as water consumption (Coughlin, 1990). These biases may reduce the accuracy of both behavioral and emotional self-assessments, potentially affecting the reliability of the findings.

Secondly, measuring emotional constructs such as guilt, nervousness, and disgust was based on self-reflective Likert-scale items rather than physiological indicators or observed behaviors, which may not fully capture emotional responses' intensity, spontaneity, or authenticity.

Thirdly, the study utilized a cross-sectional design, collecting data at a single point in time. This limits the ability to establish causal relationships between psychological constructs and behavior. A longitudinal design could offer stronger evidence regarding the directionality and consistency of these relationships over time.

Fourthly, although the sampling strategy ensured balanced gender representation and geographic coverage within urban areas, rural populations and low-income groups were underrepresented. This limits the generalizability of the findings, as individuals in rural or economically disadvantaged settings may exhibit different consumption behaviors, motivations, or access to water sources.

Finally, the language adaptation and translation of the questionnaire from English into Arabic and Turkish may have introduced semantic nuances or interpretation differences, despite the careful involvement of linguistic experts. Cultural interpretations of emotional terms—such as "guilt" or "disgust"—may not carry equivalent emotional weight or social meaning across languages and cultural contexts.

5.4. Suggestions for Future Research

Future studies could explore the longitudinal impact (e.g., Mohiyeddini et al., 2009) of changes observed over time of various factors such as user experience after switching to a sustainable water source, the influence of negative social pressure, feelings of self-satisfaction following the switch, or the effects of awareness campaigns on water consumption behavior. Conducting longitudinal research allows tracking how behaviors and attitudes evolve, providing stronger evidence on how intentions are sustained or transformed into actual behaviors, and whether these changes endure in the presence of external influences. Additionally, future research should further investigate the role of religious, cultural, and familial influences in shaping moral emotions and pro-environmental behavior, particularly in contexts like Saudi Arabia, where emotional and normative factors were found to exert a stronger influence on intention.

Another valuable direction would be the integration of objective water usage data, such as smart meter readings or device-based tracking, to validate self-reported consumption patterns and overcome biases commonly associated with questionnaire-based studies.

Interestingly, this study revealed a notable shift in tap water usage behavior, particularly in how consumers distinguish between drinking and general uses. While only 3.1% reported drinking tap water directly, a significantly larger group of 26.3% reported using it for daily needs such as cooking, beverages, or preparing meals. This sharp contrast suggests that future studies should differentiate more precisely between types of water use (drinking vs. cooking) and explore the underlying reasons behind selective trust in tap water.

It is also important to reconsider the binary categorization of behavior. In this study, tap water users were classified as "1" if they reported using it "generally" or "mainly," and "0" if they did not use it at all. While this served the purpose of quantitative comparison, future research could benefit from a more nuanced classification that distinguishes between partial, occasional, and exclusive use, to better reflect real-world consumption patterns.

In terms of design, the survey length and number of items posed challenges. Despite offering coupons and small incentives, many participants noted that the questionnaire was lengthy, which may have led to fatigue or reduced response accuracy in later sections. Simplifying the questionnaire could help maintain response quality in future work.

Finally, this study covered a broad range of psychological, emotional, normative, and contextual variables. While this wide lens was necessary to build an extended behavioral framework, future research may benefit from a more focused, topic-specific approach, targeting narrower constructs such as trust in water infrastructure, emotional barriers to tap water use, or price sensitivity in water-related purchases. Such focus-oriented studies may yield more.

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APPENDICES

Appendix A. Result of the Evaluation by the Ethics Committee

Evrak Tarih ve Sayısı: 30.01.2025-43714

İstanbul Bilgi Üniversitesi
ETİK KURUL

Sayı : E-89026508-050.04-43714 23.01.2025
Konu : Etik Kurul Kararı 2024-20112-223

ETİK KURUL DEĞERLENDİRME SONUCU
RESULT OF EVALUATION BY THE ETHICS COMMITTEE

Başvuru Sahibi/Applicant: Abdulsalam Farahat
Proje Başlığı / Project Tittle: Tap or Filtered Water: Anticipating the Factors that Determine the Preferences in Water Consumption
Proje No / Project Number: 2024-20112-223

1	Herhangi bir değişikliğe gerek yoktur / There is no need for revision **X**
2	Ret /Application Rejected Reddin Gerekçesi /Reason for Rejection:

Değerlendirme Tarihi / Date of Evaluation: 30.12.2024

Dr. Öğr. Üyesi Mahmut ELBİSTAN
Etik Kurul Üyesi

Doç.Dr. Yağmur NUHRAT YAZGAN
Etik Kurul Üyesi

Prof. Dr. Ster IRMAK SAV
Etik Kurul Üyesi

Prof. Dr. Itır ERHART
Etik Kurul Üyesi

Doç.Dr. Mehmet Bedii KAYA
Etik Kurul Başkanı

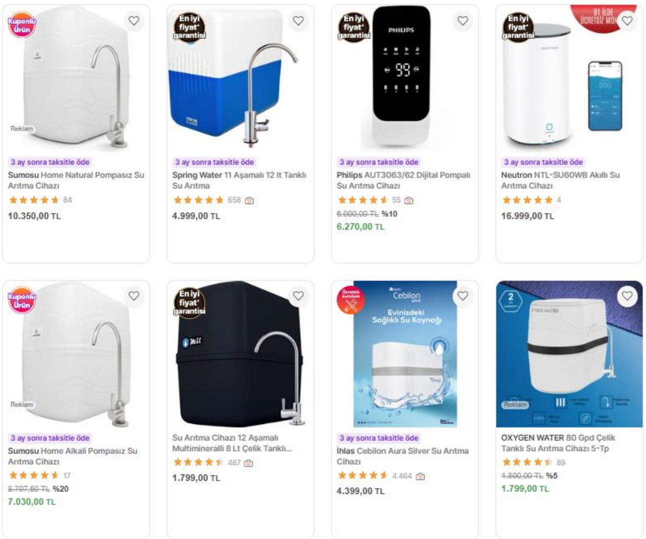
Bu belge, güvenli elektronik imza ile imzalanmıştır.

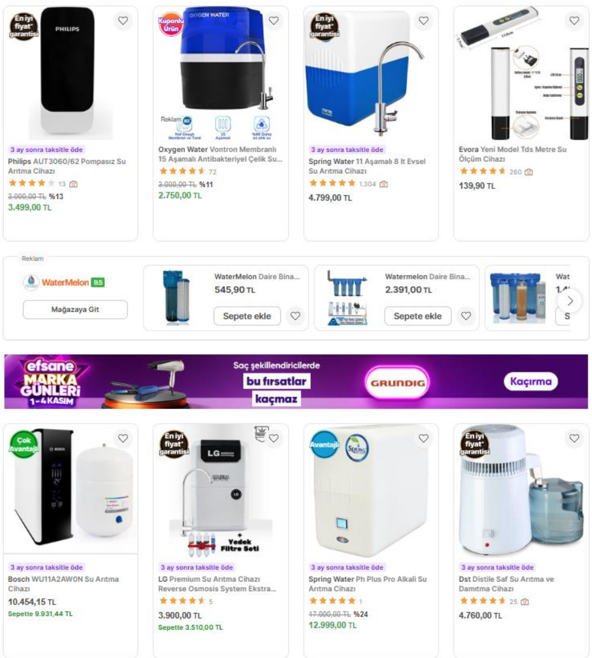
Belge Doğrulama Kodu :*BSN43VADA2* Pin Kodu :73942
Belge Takip Adresi : https://turkiye.gov.tr/ebd?eK=5442&eD=BSN43VADA2&eS=43714

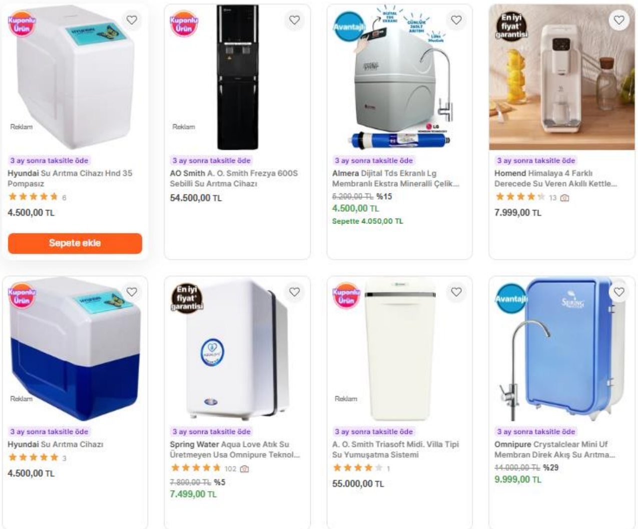
Adres:Istanbul Bilgi Üniversitesi (santralistanbul Kampüsü) Eski Silahtarağa Elektrik Santrali
Kazımkarabekir Cd. No:2/13 34060 Eyüpsultan İstanbul
Telefon:0212-311-50-00 Faks:0212-216-24-14
e-Posta:rektorluk@bilgi.edu.tr Web:http://www.bilgi.edu.tr/
Kep Adresi:bilgi.rektorluk@hs03.kep.tr

Bilgi için: Nuray Çolak
Unvanı: Etik Kurul Sekreterliği

Appendix B. List of the Latest 20 Water Filter Device Prices on the Market







Kuponlu Ürün
Reklam
3 ay sonra taksitle öde
Hyundai Su Arıtma Cihazı Hnd 35 Pompasız
6
4.500,00 TL
Sepete ekle
Kuponlu Ürün
Reklam
3 ay sonra taksitle öde
AO Smith A. O. Smith Frezya 600S Sebilli Su Arıtma Cihazı
54.500,00 TL
Avantajlı
3 ay sonra taksitle öde
Almera Dijital Tds Ekranlı Lg Membranlı Ekstra Mineralli Çelik...
5.200,00 TL %15
4.500,00 TL
Sepette 4.050,00 TL
En iyi fiyat* garantisi
3 ay sonra taksitle öde
Homend Himalaya 4 Farklı Derecede Su Veren Akıllı Kettle...
13
7.999,00 TL
Kuponlu Ürün
Reklam
3 ay sonra taksitle öde
Hyundai Su Arıtma Cihazı
3
4.500,00 TL
En iyi fiyat* garantisi
3 ay sonra taksitle öde
Spring Water Aqua Love Atık Su Üretmeyen Usa Omnipure Teknol...
102
7.800,00 TL %5
7.499,00 TL
Kuponlu Ürün
Reklam
3 ay sonra taksitle öde
A. O. Smith Triasoft Midi. Villa Tipi Su Yumuşatma Sistemi
1
55.000,00 TL
Avantajlı
3 ay sonra taksitle öde
Omnipure Crystalclear Mini Uf Membran Direk Akış Su Arıtma...
14.000,00 TL %29
9.999,00 TL

Appendix C. Table of the Devices Prices of the List on Appendix B. with Average Device Price in USD and TL

Sequence	Listed Price
1	10350
2	4999
3	6270
4	16999
5	7030
6	1799
7	4399
8	1799
9	3499
10	2750
11	4799
12	10454.15
13	3900
14	12999
15	4760
16	4500
17	4500
18	7999
19	4500
20	7499
Average TL	6290.2075
USD to TL	34.3367
Average USD	183.1919637