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Factors affecting consumers' attitudes towards low water footprint products

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Abstract

Purpose: The purpose of this research is to explore some of the factors that are expected to influence consumers' attitudes towards low water footprint products and thereby provide insight into the concept of water footprint from a consumer behavior perspective.

Design/Methodology/Approach: Data were collected from 383 consumers using the convenience sampling method. The SPSS v24 package program was used for the descriptive statistics of the research, and the LISREL 11 package program was used for confirmatory factor analysis and to test the research hypotheses via structural equation modeling.

Findings: Consumers' water footprint consciousness, concerns about water resources, and attitudes towards water sustainability positively affect their attitudes towards low water footprint products whereas consumers' lack of habit to reduce their water footprints negatively affect their attitudes towards low water footprint products. Furthermore, according to the findings, consumers' water footprint consciousness and concerns about water resources are high, their attitudes towards water sustainability and low water footprint products are positive, and they do not have a lack of habit to reduce their water footprint.

Originality/Value: Since the concept of water footprint has been insufficiently examined in the consumer behavior and product management literature compared to the concepts of carbon footprint and ecological footprint, the originality of this research stems from the fact that this research makes important theoretical and practical contributions to the sustainability, consumer behavior and product management literatures by expanding the scope of empirical research on the concept of water footprint.

Keywords: Consumer behavior, green marketing, sustainable consumption, water footprint, water sustainability.

Tüketicilerin düşük su ayak izli ürünlere karşı tutumlarını etkileyen faktörler

Özet

Amaç: Bu araştırmanın amacı, tüketicilerin düşük su ayak izli ürünlere yönelik tutumlarını etkilemesi beklenen bazı faktörleri incelemek ve böylece su ayak izi kavramına tüketici davranışı perspektifinden bir bakış açısı sağlamaktır.

Tasarım/Metodoloji /Yaklaşım: Veriler, kolayda örnekleme yöntemi kullanılarak 383 tüketiciden toplanmıştır. Araştırmanın tanımsal istatistikleri için SPSS v24 paket programı, doğrulayıcı faktör analizi için ve araştırma hipotezlerini yapısal eşitlik modellemesi yoluyla test etmek için ise LISREL 11 paket programı kullanılmıştır.

Bulgular: Tüketicilerin su ayak izi bilinci, su kaynaklarına yönelik kaygıları ve su sürdürülebilirliğine karşı tutumları, düşük su ayak izli ürünlere karşı tutumlarını olumlu yönde etkilerken, tüketicilerin su ayak izini azaltmaya yönelik alışkanlık eksiklikleri, düşük su ayak izli ürünlere karşı tutumlarını olumsuz yönde etkilemektedir. Ayrıca, bulgulara göre, tüketicilerin su ayak izi bilinci ve su kaynaklarına yönelik kaygıları yüksektir, su sürdürülebilirliğine ve düşük su ayak izli ürünlere karşı tutumları olumludur ve su ayak izini azaltmaya yönelik alışkanlık eksiklikleri yoktur.

Özgünlük/Değer: Su ayak izi kavramının tüketici davranışı ve ürün yönetimi literatüründe karbon ayak izi ve ekolojik ayak izi kavramlarına göre yeterince incelenmemiş olması nedeniyle bu araştırmanın özgünlüğü, su ayak izi kavramına ilişkin ampirik araştırmaların kapsamını genişleterek sürdürülebilirlik, tüketici davranışı ve ürün yönetimi literatürüne önemli teorik ve pratik katkılar sağlamasından kaynaklanmaktadır.

Anahtar kelimeler: Tüketici davranışı, yeşil pazarlama, sürdürülebilir tüketim, su ayak izi, su sürdürülebilirliği.

INTRODUCTION

The topic of sustainability has been among the main priorities in the last decade. Water resources on earth are not unlimited. Therefore, sustainable use of water resources is of crucial importance. The people that utilize and manage these water resources bear the most accountability and duty in this regard (Özkan et al., 2013). Water resources are used predominantly in the agricultural sector in the world. The agricultural sector is eminently affected by consumer preferences regarding water consumption, particularly in light of global climate change. The availability of sufficient freshwater resources determines how much water is used for agriculture, industrial production of consumer goods, and food production (Nydrioti and Grigoropoulou, 2023). While freshwater resources have historically been thought of as endlessly renewable, as the humankind shifts farther from stable environmental conditions in the modern era, a number of factors, including population growth, consumption patterns, land expansion for agriculture, energy production, insufficient water resources and policies, and climate trends, make it evident that freshwater resources are being depleted (Novoa et al., 2023). Freshwater resources are becoming more scarce globally due to the increasing population, increasing distribution of water resources and decreasing water quality (Chapagain et al., 2006). Freshwater scarcity manifests as dwindling groundwater levels, diminished river flows, diminishing lakes, heavily contaminated waterways, increasing supply and treatment costs, irregular water supplies, and restricted water availability (Hoekstra, 2015). In the course of time, there has been more competition for freshwater resources due to factors like population growth, economic expansion, rising demand for agricultural products for both food and non-food uses, and changing dietary preferences toward more meat and sugar-based products (Ercin and Hoekstra, 2014). Future global water resources will be largely influenced by a number of factors, including altered patterns of production and trade, more competition for water due to rising domestic, industrial, and agricultural demand, and how different societal sectors respond to rising levels of pollution and water scarcity (Ercin and Hoekstra, 2014). In the Çukurova region, for instance, estimates have been made of the impact of water prices and other inputs on cotton's departure from the plain (Aktaş, 2006).

The World Economic Forum ranked water resource crises as the third-biggest risk globally in 2017 (World Economic Forum [WEF], 2017). According to the most up-to-date statistics, the world population is 8.07 billion (United States Census Bureau, 2024) and this number is expected to reach 8.5 billion in 2030 and 9.7 billion in 2050 (United Nations, 2024). Water requirements are predicted to rise in tandem with the anticipated growth in global population and food demand. It is anticipated that between 2010 and 2050, the world's water demand will rise by 20% to 30% (Mekonnen and Gerbens-Leenes, 2020). The increasing demand for water resources worldwide is exacerbated by a number of factors, including poor land use management, climate change, water waste, and pollution from human activities like pesticides and fertilizers used in agriculture. According to certain estimates, 52% of people on Earth may experience at least mild water scarcity by the year 2050 (Symeonidou and Vagiona, 2018). It is emphasized that the risk of not implementing effective water management policies will threaten the continuity of the world's population, economic development and natural life (Cosgrove and Loucks, 2015). Individuals who utilize water for particular purposes are commonly referred to as "water users." Thus, these users have frequently been the primary focus of government policies tasked with managing water resources. Government initiatives to lessen pollution and water scarcity did not address all parties involved in the supply chain, including traders, retailers, final consumers, and manufacturers of entire consumer goods. Nevertheless, it is now acknowledged that this trend is constrained since the ultimate consumption of consumers is linked to all water consumption worldwide. In this regard, it is essential to evaluate the precise water needs and effects of various consumer goods, particularly those that have high water requirements, such as food, drink, bioenergy, or materials made of recycled fibers (Aldaya and Hoekstra, 2010).

Economic, environmental, or social tools known as "footprints" have emerged in recent years in order to identify the pressure that various human activities are placing on the world's ecological balance and to take measures for sustainable development. For this purpose, labeling studies such as carbon footprint, water footprint and ecological footprint have been carried out to ensure that consumers understand the environmental impacts of the products they choose (Nydrioti and Grigoropoulou, 2023). Footprints are indicators developed to identify the human appropriation of natural resources and to detect the gap between human needs and resource availability (Symeonidou and Vagiona, 2018).

It is known that 72% of Europeans believe that footprint labels on consumer goods are necessary and support their introduction. Nevertheless, there is a lack of information on consumers' reactions and preferences towards the sustainability information provided by footprint labels and the factors that influence their perceptions and decisions (Nydrioti and Grigoropoulou, 2023). The depletion of freshwater resources and their overexploitation in many parts

of the world are creating a number of social, environmental and economic problems. Throughout the past ten years, there has been a concurrent rise in interest in carbon and water footprints due to increased public awareness of this issue. Notwithstanding, the water footprint is not given enough thought, as evidenced by the fact that while the carbon footprint is taken into account in greenhouse gas accounting and reporting standards (i.e. ISO 14067) and product labeling systems, the water footprint is not included in quality standards and these systems (Ruini et al., 2013).

However, it seems that the concept of water footprint has not been sufficiently examined in the international academic literature in the context of sustainable consumption and consumer behavior, compared to concepts such as carbon footprint and ecological footprint. The purpose of this study is to explore some of the factors that are surmised to affect consumers' attitude towards low water footprint products. Examining consumers' awareness and attitudes regarding the water footprint is crucial in a market where there are a plethora of product options, as buying decisions for products that preserve or reduce the water footprint are assumed to be motivated by special motivations and voluntary efforts (Talwar et al., 2021). Based on the conceptual framework of water footprint in the literature, its significance in terms of sustainability of consumption, and the lack of studies on the consumer behavior dimension of water footprint in Turkey, this research aims to provide a perspective on how consumers develop attitudes towards low water footprint products.

With the findings obtained for this purpose, it is anticipated that an important gap will be filled in the water footprint and consumer behavior literature. Through a thorough analysis of various multidisciplinary literatures such as ecology, sustainable development, and responsible consumption, four key factors that are predicted to impact consumers' attitude towards low water footprint products were determined. These factors are water footprint consciousness, concern about water resources, attitude towards water sustainability, and lack of habit to reduce the water footprint. In this context, while the factors of water footprint consciousness, concern about water resources, and attitude towards water sustainability are thought to positively affect attitude towards low water footprint products, the factor of lack of habit to reduce the water footprint is thought to negatively affect consumers' attitude towards low water footprint products.

This section includes a literature review, conceptual framework and developed hypotheses regarding the effects of the factors included in the designed research model.

Water footprint

Since the last years of the 20th century and the first years of the 21st century, the concept of "footprint", which has economic, social and environmental components, has been developed in order to raise awareness of issues such as sustainable development and the impact of human activities on the ecological balance and to be able to measure these problems (Symeonidou and Vagiona, 2018). The concept of water footprint was developed to explore the relationships between consumptive water use, global trade and water resources management (Hoekstra, 2009). Based on Allan's (1993) concept of virtual water, the term "water footprint" (Hoekstra and Hung, 2002) refers to the total amount of water used in the production of all types of products that are consumed in daily life by individuals (consumers), businesses, and communities (Vanham and Bidoglio, 2013). In other words, water footprint is a metric that indicates the total amount of water utilized for both production and consumption (Zhuo et al., 2016). It is possible to measure the water footprint of any activity or product, as well as that of consumers, towns, cities, and countries (Hoekstra, 2009; Souissi et al., 2019). The entire volume of freshwater (blue, green, and gray) used both directly and indirectly in a product's production throughout the entire supply chain is known as the product's "water footprint" (Konar and Marston, 2020). Water footprint can be defined as an ecological concept developed to make the water consumption preferences of these elements sustainable (Gómez-Llanos et al., 2020). The concept of water footprint represents an increasingly popular method for calculating the amount of water used in the production of consumer goods such as food, beverages and clothing that every consumer needs in their daily lives (WWF et al., 2010).

Green, blue, and gray water are the three components that are considered when calculating and analyzing the water footprint (Mekonnen and Hoekstra, 2012). Water footprint is represented by a single numerical value, although in practical terms, it is a value that represents the total of these three distinct components and serves as an indicator of how much of each is consumed or used (Vanham and Bidoglio, 2013; Hoekstra, 2015). The consumption dimension of water footprint is represented by green and blue water, and the degradative dimension is represented by gray water (Hoekstra, 2017). Green water refers to the rainwater that accumulates in the soil (Hoekstra, 2009). The concept of blue water encompasses water above and below ground (Gerbens-Leenes et al., 2009; Konar and Marston, 2020). Gray water refers to the volume of fresh water required to assimilate waste into fresh water (Ridoutt et al., 2010). Based on these definitions, green water footprint represents the consumptive use of rainwater stored in the soil; blue

water footprint represents the consumptive use of groundwater or surface water; and gray water footprint represents the volume of water required to assimilate pollution caused by human activities (Ercin and Hoekstra, 2014).

The concept of water footprint is used to assess water use and dependence on water at all stages of the supply chain, the sustainability and efficiency of natural water resources, and the equitable distribution of water (Hoesktra, 2016). Water footprint was studied in the context of various crops (Chapagain et al., 2006; Chapagain and Hoekstra, 2007), sectors (Mekonnen et al., 2015), dietary habits (Vanham et al., 2013), national (Ercin et al., 2013) and global level (Hoekstra and Mekonnen, 2012), water resources management and security (Ding et al., 2024), soil moisture (Rodríguez et al., 2024), and tuber crops (Sunitha et al., 2024). In their study, Hoekstra and Chapagain (2007) evaluated the water footprint of each nation and found that, in relation to gross national income, four major factors influence a nation's water footprint: volume of consumption, consumption patterns, climate, and agricultural policies. It is postulated that the water footprint of consumers is affected by two main factors such as consumption volume and habits and the water footprint value per ton of the products consumed (Hoekstra and Mekonnen, 2012).

Although the concept of water footprint has raised a certain level of awareness and consciousness among sector representatives and the academic community over the last twenty years regarding the limited nature of natural water resources and the measures that need to be taken in this regard (such as the development of the www.waterfootprint.org website to calculate consumers' individual water footprints) (Souissi et al., 2019), it is emphasized that since it is a new concept, it is not yet sufficiently known by consumers and that this awareness needs to be created (Gómez-Llanos et al., 2020). Although consumers are the ultimate and most significant link in the supply chain and the primary source of all global water use, they are disregarded when it comes to administrative policies like water crisis management and resource sustainability. Nevertheless, given the unavoidable need for water-intensive consumer goods like food, drink, clothing, etc., the consumer aspect of the water footprint is substantial (Aldaya and Hoekstra, 2010). Ünal and Ünal (2023) argue that water consumption, along with consumption categories like transportation, energy, clothing, home, and food consumption, have a significant impact on consumers' efforts to reduce their ecological footprint. The primary cause of the lack of awareness regarding water footprint is that consumers assess their own water usage levels solely on the basis of direct water usage, failing to account for the indirect water used in the supply chain of every product they use (Gómez-Llanos et al., 2020). According to Hoekstra (2009), customers' buying decisions have an impact on the worldwide use of water, and it is important to assess their water footprint for efficient management of water resources (Hoekstra, 2017). Measuring the water footprint and taking appropriate actions are necessary for a number of reasons, including the depletion of water resources, rising costs associated with the production of potable water, growing consumer and industrialist demands for the preservation of water resources, and societal expectations and demands for the efficient and reuse of water (TGDF, 2022).

Water footprint consciousness

The paradigm that views the environment—particularly its water resources—as a free good that people can use without incurring substantial costs, in line with neo-classical economic principles, has left the environment severely damaged. The increase in production and consumption has further accelerated environmental pollution by increasing the use of more natural resources. On the other hand, freshwater resources have progressively declined or have become contaminated. Environmental consciousness gained prominence in the mid-19th century with the growth of environmental scientific approaches. Environmental consciousness refers to certain psychological elements associated with people's tendencies to act in ways that are beneficial to the environment (Zelezny and Schultz, 2000). Sanchez and Lafuente (2010) argue that environmental consciousness has a four-dimensional conceptual structure: affective, dispositional, cognitive and active. The affective dimension of environmental consciousness includes elements such as the perception of seriousness towards environmental conditions and the support of certain measures that will benefit the environment. The dispositional dimension of environmental consciousness represents attitudes toward pro-environmental behaviors and attitudes toward the personal costs of certain measures that will benefit the environment. The cognitive dimension of environmental consciousness represents the level of knowledge of individuals regarding environmental issues. The behavioral dimension of environmental awareness represents low-cost consumption behaviors that will contribute to environmental health and participation in pro-environmental actions at the social level (Sanchez and Lafuente, 2010). According to this conceptualization, there exists a reciprocal relationship between the affective, dispositional, cognitive, and behavioral dimensions of environmental consciousness. The fact that individuals acquire information about environmental health issues (cognitive) will contribute to taking the conditions that threaten environmental health seriously and supporting some measures that will benefit the environment (affective), and ultimately, they will develop positive attitudes (dispositional) towards pro-environmental behaviors

and the personal costs of some measures that will benefit the environment, can be given as an example of these interdependent relationships between the dimensions of environmental consciousness (Sanchez and Lafuente, 2010).

The ecological footprint, which quantifies the size and scope of human activity's impact on the planet, is a useful indicator for bringing environmental issues to the public's attention and holding individuals accountable for environmental safety and abuse (Oloruntegbe et al., 2013). Accordingly, people can improve environmental health if they are informed about their ecological footprint (Gündüz and Alsagher, 2018). When considered in the context of carbon footprint, it can be said that consumers' awareness of their carbon footprint is an important first step in achieving a sustainability-related goal that measures the impact of our daily routines and lifestyle decisions (Fitzpatrick et al., 2015). Similarly, it is possible to infer that the increase in water footprint awareness will contribute to the protection of limited water resources and therefore to sustainability and environmental health. In other words, it is argued that consumers who possess a high degree of awareness regarding indicators of environmental health and sustainability, such as ecological and carbon footprints, will also possess a high degree of awareness regarding their water footprint. According to Dascher et al. (2014), conscious water consumption is positively affected by a number of factors, including guidelines for the preservation of water resources, information about how water consumption affects water resources in terms of sustainability, and individual success in achieving these objectives. Therefore, based on this principle, it is argued that water footprint consciousness is a precursor for consumers to embrace positive attitudes towards low water footprint products due to its environment-related benefits. Thus, the following hypothesis is proposed:

H1: Consumers' water footprint consciousness positively affects their attitudes towards low water footprint products.

Concern about water resources

Environmental concerns refer to individuals' concerns about exhibiting behaviors that protect environmental health (Cruz and Manata, 2020; Kumar et al., 2021; Molinillo et al., 2020). Concerns about water resources can also be taken into account within the framework of concerns about environmental health. Despite significant improvements in infrastructure in many parts of the world, updated water management plans and technological solutions that increase water use efficiency, water scarcity still causes serious concern and is considered to become one of the biggest global risks in the 2030s (World Economic Forum [WEF], 2024). According to one of the most recent calculations on the global status of water resources, it is expected that all freshwater resources around the world will be depleted within 15 years unless urgent measures are taken (The World Counts, 2024). Due to the increasing global population, climate crisis and economic problems, issues such as reducing water losses and efficient use of water are increasingly crucial to water resources management. Since more than 95% of water use worldwide originates from domestic and agricultural water use, these sectors are the primary focus of efforts to increase water use efficiency (Tzanakakis et al., 2020). According to the United Nations World Water Development Report (UNWWDR), Turkey is currently considered a country experiencing high levels of water stress (UNESCO, 2024). With the increasing population in Turkey, the annual amount of usable water per capita is expected to decrease to 1200 m^3 in 2030, 1116 m^3 in 2040, and 1069 m^3 in 2050. Therefore, this forecast regarding the amount of water per capita shows that Turkey will be considered among the countries suffering from water scarcity in the next decade (WWF, 2023). On the consumer level, the average water footprint per capita of Turkish consumers is 1519 m^3 per year. This value, which reflects the average annual water footprint of Turkish consumers per capita, is higher than the world average (1243 m^3) (Machinery Specialized Organized Industrial Zone, 2023). Therefore, it is argued that consumers have concerns about reducing their water footprint, based on the idea that concerns and initiatives aimed at protecting natural resources and environmental health, such as reducing carbon and ecological footprints, may also be valid for protecting water resources and reducing water footprints. Thus, the following hypothesis is proposed:

H2: Consumers' concerns about water resources positively affect their attitudes towards low water footprint products.

Lack of habit to reduce the water footprint

In order to secure the ideal of a sustainable future, it is necessary to examine the impact of individuals' past consumption preferences and habits on sustainability and to learn how to abandon harmful consumption patterns and create new consumption preferences and habits that contribute to environmental health (Linder et al., 2022). Habits are considered one of the factors guiding the behavior of individuals or communities, and the resistance level developed against any change in behavior determines the level of habit (Verplanken, 2018). Habits are defined as

behaviors that are learned, purposefully chosen, goal-oriented, and turn into reflexive reactions in certain situations (Knussen and Yule, 2008; Linder et al., 2022). Reflexive responses, defined as automaticity, refer to situations in which the individual does not perform a behavior fully consciously. It is known that the behaviors of individuals that affect the environment consist of many partially controlled actions, which can be defined as habitual behavior patterns (Verplanken et al., 1998), semi-automatic response patterns (Ajzen, 2002) or behavioral scripts (Klöckner and Matthies, 2004), rather than a single action (Knussen and Yule, 2008). Habits shape most of the behaviors of individuals in their daily lives and can significantly hinder any behavioral change (Linder et al., 2022). Therefore, in order to change a habitual behavior, there must be interventions that prevent harmful habits and allow the formation of new habits (Mazar et al., 2021). Implementation intention technique (Gollwitzer and Sheeran, 2006) is one of the interventions that motivates people to display particular behaviors on their own volition (Linder et al., 2022). The implementation intention technique is based on an "if-then" logic that states "when event X occurs, respond Y." (Gollwitzer and Sheeran, 2006). This technique aims to trigger an instinctive behavioral response to contextual stimuli. If the technique works as intended, the desired behavior will happen in a predefined scenario automatically without conscious thought. In other words, a behavior can persist as a novel and desired habit after it has been sufficiently reinforced through repetition (Linder et al., 2022). Linder et al. (2022) argue that behaviors and habits are largely shaped by automatic processes and the environmental context in which they occur, and that behaviors and habits contribute to the formation of individuals' value judgments and self-identity. These presumptions highlight the transformative potential of examining sustainable behaviors within the framework of habits. Mazar et al. (2021) emphasize that pro-environmental sustainable policies play an important role in reducing consumption habits that harm sustainability by creating habits that reinforce sustainability instead of consumption habits that harm natural resources and the environment.

Based on these arguments, it is argued that such behavioral habits and value judgments of consumers who adopt and exhibit environmentally friendly behaviors are also reflected in another context related to environmental health, such as the water footprint. It is stated that intensive water consumption habits have become a critical problem worldwide (Gurbuz et al., 2021). Nevertheless, it seems that pro-environmental and sustainable behavioral habits have not been examined in the context of water footprint. Accordingly, it is argued that the lack of habit factor can be positively or negatively affected by reactions (habits) that are initially aimed at a specific goal and become automatic over time (Knussen and Yule, 2008). Therefore, it is argued that consumers' tendencies to protect and/or reduce their water footprint (their attitudes towards low water footprint products) may be negatively affected depending on their lack of habits in this regard. Thus, the following hypothesis is proposed:

H3: Consumers' lack of habit to reduce the water footprint negatively affect their attitudes towards low water footprint products.

Attitude towards water sustainability

Due to the direct impact of water consumption behaviors on the sustainability of water resources, the psychological factors underlying these behaviors should not be overlooked. Consumers' attitudes towards issues such as water crisis, water conservation and water sustainability can be considered as one of the psychological factors underlying their water consumption behavior. Water sustainability can be defined as the conservation of all kinds of clean water resources required for the continuity of production, consumption and, inclusively, life on earth, by various methods and their transfer to future generations. Although consumers are aware of the importance of effective use and conservation of existing water resources for the continuity of life on earth and believe that they have responsibilities in this regard, it can be said that these attitudes may not be fully reflected in the water use behaviors they exhibit in their daily lives. Miller and Buys (2008) argue that consumers are not always aware of how much water they consume during their daily activities. Accordingly, even if consumers have general concerns about water sustainability, they may not be aware of how much water they consume in daily life unless they have sufficient knowledge about the impacts of their individual use on water sustainability (Miller and Buys, 2008). Contrary to the findings of Miller and Buys (2008), Clark and Finley (2006) found in their research that consumers' awareness of climate change and global warming significantly affects their intention to save water.

In their research examining water conservation behaviors, Russell and Fielding (2010) found that one of the factors affecting water conservation behaviors is attitudes. Accordingly, attitudes towards water conservation behaviors are shaped by the subjective norm and perceived behavioral control variables, which are the components of the Theory of Planned Behavior (Ajzen, 1991). According to this theory, individuals' behavioral intentions are the biggest determinant of their performance of a behavior. Attitudes, subjective norms, and perceived behavioral control

are the three main determinants of behavioral intentions (Ajzen, 1991). In terms of subjective norms, if individuals observe that others in their immediate circle, such as their families and friends, are sensitive to water sustainability, they will realize that water conservation behaviors are socially acceptable and thus will engage in water conservation behaviors themselves (Russell and Fielding, 2010). Perceived behavioral control refers to whether individuals have sufficient ability, control or resources to engage in a behavior (Akıncı and Kıymalıoğlu, 2014). In the context of water sustainability, even if consumers intend to engage in behaviors that will positively affect water sustainability, their intentions toward sustainability will be negatively affected if they do not have the resources (i.e., money, time, knowledge) or ability to perform these behaviors.

Therefore, when evaluated in general from the perspective of the Theory of Planned Behavior, if consumers perceive that other consumers around them have developed positive attitudes and behaviors towards water sustainability and that they can have control over such behaviors, their intentions to engage in behaviors that will contribute to water sustainability will be strengthened and these intentions will ultimately result in behaviors in the same direction (Russell and Fielding, 2010). Some studies in the literature (Harland et al, 1999; Clark and Finley, 2006; Lam, 2006) show that attitudes towards efficient use and conservation of water can be explained by the Theory of Planned Behavior. Based on these arguments, it is thought that consumers' water waste levels in their daily lives and their consumption preferences to protect and/or reduce their water footprint may be positive indicators of their attitudes towards the sustainability of water resources (Bozoglu et al., 2016), and that as a result of positive attitudes towards sustainability, they also develop positive attitudes towards low water footprint. Thus, the following hypothesis is proposed:

H4: Consumers' attitudes towards water sustainability positively affect their attitudes towards low water footprint products.

MATERIAL AND METHOD

Research model

The research model created by the authors to graphically illustrate the hypotheses stated in the previous parts of the study is shown in Figure 1.

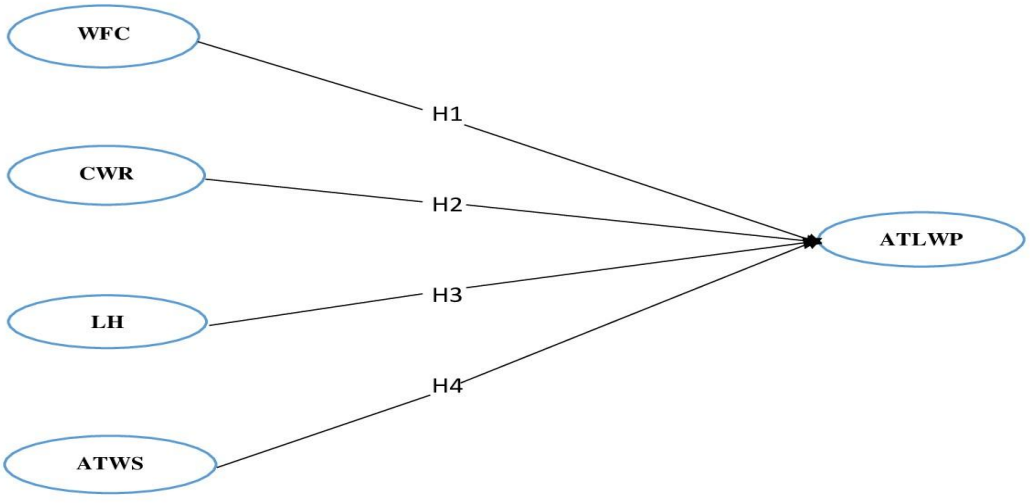

Figure 1. Conceptual model of the research.

Measures, sample and data collection process

In this quantitative study, data were collected through online and face-to-face surveys between February 9, 2024 and April 7, 2024. The online survey form was prepared via Google Forms and directed to the participants.

The survey form consists of two parts. The first part of the questionnaire form includes scale items related to the research variables. The second part includes demographic questions. Before the survey form for the study was presented to the participants, an explanatory definition of the concept of water footprint was given in the introduction part of the form. The scales of the research were adapted from various studies that have been tested for validity and reliability. The three-item seven-point Likert-type water footprint consciousness scale was adapted from the study of Michaelidou and Hassan (2008); the four-item five-point Likert-type concern about water resources scale was adapted from the study of Mostafa (2007); the eleven-item seven-point Likert-type lack of habit scale was adapted from the study of Knussen and Yule (2008); the four-item five-point Likert-type attitude towards water sustainability scale was adapted from the study of Okur-Berberoğlu and Uygun (2012); and the four-item five-point Likert-type attitude towards low water footprint products scale was adapted from the study of Sharma et al. (2021). All items in the scales used in the research were adapted to a 5-point Likert scale. The items in the scales are given in Table 1.

The depletion of water resources has an adverse effect on every person. Thus, everyone should be aware of the behaviors of trying to minimize their water footprint and selecting products that are thought to have a low water footprint. Therefore, the universe of the research is quite broad. The universe of the research comprises all individuals who are older than 16 in order to ensure accurate survey responses. Convenience sampling method was used to reach the required sample size that could represent the research universe. 421 participants were reached using online and face-to-face channels. Data for 38 participants were removed from the data set due to incorrect or incomplete filling. The research hypotheses were tested with data obtained from the remaining 383 participants. The survey conducted within the scope of the research was found ethically appropriate by the Çağ University Scientific Research and Publication Ethics Board at its meeting dated 29/09/2023 and numbered 2023/05.

Table 1. Scale items

Variables and Scale Items		n = 383			
		Mean	S. D.	Kurtosis	Skewness
Water Footprint Consciousness (WFC)					
WFC1	I am alert to changes in the water footprint that I create.	3.728	1.098	-0.003	-0.729
WFC2	I am usually aware of changes in the water footprint that I create.	3.789	1.067	0.169	-0.878
WFC3	I am aware of the water footprint that I create as I go through the day.	3.890	1.008	0.569	-0.945
Concern About Water Resources (CWR)					
CWR1	When humans interfere with water resources, it often produces disastrous consequences.	4.078	1.022	0.572	-1.043
CWR2	The balance of water resources is very delicate and easily upset.	4.151	0.968	0.843	-1.121
CWR3	Humans are severely abusing the water resources.	4.491	0.893	1.052	-1.056
CWR4	If things continue on their present course, we will soon experience a major ecological catastrophe.	4.460	0.901	1.430	-1.070
Lack of Habit to Reduce The Water Footprint (LH)					
LH1	I am not in the habit of reducing my water footprint.	2.358	1.117	-0.679	0.422
LH2	It does not occur to me to reduce my water footprint, or I forget.	2.543	1.259	-0.765	0.493
LH3	I can not be bothered to reduce my water footprint.	2.405	1.225	-0.550	0.603
LH4	I do not have time to reduce my water footprint.	2.272	1.074	0.117	0.750
LH5	I do not believe it is worth reducing the water footprint.	2.692	1.209	-0.830	0.271
LH6	I feel that it is other people's responsibility to reduce the water footprint.	2.133	1.079	0.273	0.883
Attitude Towards Water Sustainability (ATWS)					
ATWS1	A bucket of water is enough to wash a car.	3.731	1.026	0.015	-0.651
ATWS2	I think it is a good choice to buy a water saving washing machine.	4.178	1.017	0.965	-1.245
ATWS3	I think it is not necessary to collect rainwater for watering the garden. (R)	4.018	1.078	0.196	-0.979
ATWS4	I am thinking of providing my home's hot water needs with solar energy.	3.943	1.118	0.043	-0.911
Attitude Towards Low Water Footprint Products (ATLWP)					
ATLWP1	Consuming low water footprint products is gratifying.	3.561	0.975	0.334	-0.572
ATLWP2	Consuming low water footprint products is satisfying.	3.585	0.935	0.075	-0.392
ATLWP3	Consuming low water footprint products is good.	3.872	0.997	0.490	-0.852
ATLWP4	Consuming low water footprint products is pleasing.	3.804	1.027	0.458	-0.847

R: Reverse-coded item

Sample characteristics and descriptive statistics

The demographic characteristics of the 383 participants in the sample were studied. Table 2 provides information on the sample's socioeconomic and demographic characteristics. When examined according to gender, 42% of the participants are male and 58% are female. When examined according to their ages, it is seen that 15.7% of the participants are between the ages of 16-25, 25.6% are between the ages of 26-33, 26.4% are between the ages of 34-41, 18.8% are between the ages of 42-49 and 13.5% are 50 years old and above. Examining the participants' educational levels reveals that 2.4% have completed elementary and secondary school, 18% have completed high school, 10.5% have earned an associate's degree, 47.2% have earned a bachelor's degree, and 21.9% have completed a postgraduate program. When examined according to occupational groups, it is seen that 20.4% of the participants are in the private sector, 36.5% in the public sector, 4.7% are retired, 16.7% are housewives, 15.4% are students and 6.3% are unemployed.

Table 2. Demographic and socio-economic characteristics of the sample

Variables	(n=383)		Variables	(n=383)	
Sex	*n*	*%*	*Occupation*	n	*%*
Male	161	42.0	Private sector	78	20.4
Female	222	58.0	Public sector	140	36.5
Age	*n*	*%*	Retired	18	4.7
16-25	60	15.7	Housewife	64	16.7
26-33	98	25.6	Student	59	15.4
34-41	101	26.4	None	24	6.3
42-49	72	18.8			
50 and above	52	13.5			
Education level	*n*	*%*			
Elemantary-Secondary school	9	2.4			
High school	69	18.0			
Associate's degree	37	10.5			
Bachelor's degree	124	47.2			
Postgraduate	141	21.9			

In addition to the demographic information of the participants, descriptive statistics of the scales used in the study were also examined. Descriptive statistics including mean, standard deviation, skewness and kurtosis values for each observed variable in the study are also summarized in Table 1. Kurtosis and skewness values were examined to ascertain whether the distribution of the data was compatible with the normal distribution. The kurtosis and skewness values of all items in the scales are within the range of ±1.96, indicating that the data are normally distributed (Mayers, 2013). After examining the kurtosis and skewness values of the observed variables, it was concluded that all of the variables had a normal distribution, allowing parametric tests to be used to analyze the hypotheses. When the means of the responses to the scale items of the variables in Table 1 are examined, it is seen that the water footprint consciousness variable has an average of 3.80; the concern about water resources variable has an average of 4.29; the lack of habit to reduce the water footprint variable has an average of 2.40; the attitude towards water sustainability variable has an average of 3.97; and the attitude towards low water footprint products variable has an average of 3.71. According to these results, it is observed that the participants' water footprint consciousness and concerns about water resources are high, their attitudes towards water sustainability and low water footprint products are positive, and they do not have a lack of habit to reduce their water footprint.

RESEARCH FINDINGS

Data analysis was conducted in two stages. In the first stage, confirmatory factor analysis was performed and the measurement model was evaluated. In the second stage, structural equation model analysis was used to test the hypotheses in the research model. The SPSS v24 program was used for the descriptive statistics of the study, and the LISREL 11 package program was used for confirmatory factor analysis and structural equation modeling.

Evaluation of the measurement model

The construct validity and reliability of the research scales were assessed prior to the research model being tested. In order to evaluate the dimensional structure of the scales, factor loadings were first examined to make a first assessment of the internal consistency of the structures. As illustrated in Table 4, all factor loadings in the relevant structures are above the recommended value of 0.6. (Malhotra and Dash, 2016). In the next stage, Cronbach's Alpha

(α) and composite reliability (CR) coefficients were evaluated to test the reliability of the scales. As depicted in Table 4, Cronbach's Alpha (α) values of the scales are between 0.860 and 0.811, and the composite reliability coefficients are between 0.861 and 0.911. Cronbach's Alpha values of the scales are between 0.70 and 0.95 (Hair et al., 2019) and slightly above, indicating that the internal consistency of these scales is quite good and reliable.

Confirmatory factor analysis was performed in order to evaluate the construct validity of the scales in the measurement model. When the model fit indices related to confirmatory factor analysis are examined in Table 3, it is seen that the x^2/df, RMSEA, IFI, CFI and NFI criteria of the model are in the range of good fit values, while the GFI and AGFI criteria are in the range of acceptable fit values [x^2/df = 1.60, GFI = 0.92, AGFI = 0.90; IFI = 0.99, CFI = 0.99, NFI = 0.97, RMSEA = 0.040] (Schermelleh-Engel et al., 2003). Therefore, according to the goodness of fit values obtained as a result of confirmatory factor analysis, it is seen that all items in the measurement model are in good fit with the model. Before testing the research hypotheses, the goodness of fit values of the research model were calculated and summarized in Table 3. As illustrated in Table 3, it is seen that x^2/df, RMSEA, IFI, CFI and NFI criteria are in good fit range, while GFI and AGFI criteria are in acceptable fit range [x^2/df = 1.62, GFI = 0.93, AGFI = 0.91; IFI = 0.99, CFI = 0.99, NFI = 0.99, RMSEA = 0.040] (Schermelleh-Engel et al., 2003). Therefore, these results indicate that there is a fit between the data and the research model.

Table 3. Goodness of fit statistics for the measurement of CFA and structural model SEM

Classification	Fit index	CFA model	SEM model	Acceptable values
Chi-square	χ^2	287.45	289.30	-
Degrees of freedom (df)	df	179	179	-
Absolute fit measurements	χ^2/df	1.60	1.62	< 5
	GFI	0.92	0.93	> 0.90
	AGFI	0.90	0.91	> 0.90
	RMSEA	0.040	0.040	< 0.08
Incremental fit measurements	CFI	0.99	0.99	> 0.90
	IFI	0.99	0.99	> 0.90
	NFI	0.97	0.99	> 0.90

Convergent and discriminant validity were analyzed in order to establish the construct validity of the scales. Fornell and Larcker (1981) argue that in order to ensure convergent validity of a scale, the composite reliability coefficient of the scale should be above 0.70 and the average variance extracted should be above 0.50. As depicted in Table 4, these two criteria were met for all scales. Consequently, convergent validity of all scales used in the research was ensured.

Table 4. Construct validity

Latent construct	Measured variable	Standardized factor loading (CFA) (>0.6)	VIF Outer Model	Cronbach's Alpha (>0.7)	CR (>0.7)	AVE (>0.5)
Water Footprint Consciousness (WFC)	WFC1	0.893	2.807	0.911	0.911	0.773
	WFC2	0.851	2.184			
	WFC3	0.894	2.355			
Concern About Water Resources (CWR)	CWR1	0.630	1.726	0.860	0.861	0.610
	CWR2	0.796	2.184			
	CWR3	0.830	2.310			
	CWR4	0.849	2.073			
Lack of Habit to Reduce The Water Footprint (LH)	LH1	0.682	2.500	0.898	0.897	0.594
	LH2	0.728	2.120			
	LH3	0.790	2.171			
	LH4	0.773	1.953			
	LH5	0.857	2.737			
	LH6	0.784	1.713			
Attitude Towards Water Sustainability (ATWS)	ATWS1	0.664	1.873	0.867	0.869	0.627
	ATWS2	0.904	2.867			
	ATWS3	0.769	2.145			
	ATWS4	0.811	1.931			
Attitude Towards Low Water Footprint Products (ATLWP)	ATLWP1	0.897	2.935	0.899	0.899	0.689
	ATLWP2	0.792	2.799			
	ATLWP3	0.847	2.503			
	ATLWP4	0.781	2.511			

Another criterion for construct validity is to ensure the discriminant validity. The Fornell and Larcker criterion was taken into consideration in order to test the discriminant validity. According to this criterion, the square root of the average variance extracted (AVE) of the relevant scale must be greater than the correlation coefficients of the structure of the relevant scale with other structures (Fornell and Larcker, 1981; Malhotra and Dash, 2016). The values highlighted in bold in Table 5 provide the square root of the average variance extracted (AVE) of the relevant scales. As depicted in Table 5, it was determined that the correlation between each variable and other variables was lower than the square root of the average variance extracted of the relevant variable. Therefore, discriminant validity of all scales used in the research was ensured. Consequently, ensuring convergent validity for all scales indicates that the scales have construct validity.

Table 5. Correlation matrix of principle constructs

	Mean	SD	Correlation matrix				
			1	2	3	4	5
Lack of Habit to Reduce The Water Footprint	2.40	0.94	**0.771**				
Water Footprint Consciousness	3.80	0.98	-0.146	**0.879**			
Concern About Water Resources	4.29	0.79	-0.336	0.564	**0.781**		
Attitude Towards Water Sustainability	3.97	0.89	-0.485	0.145	0.301	**0.792**	
Attitude Towards Low Water Footprint Products	3.71	0.86	-0.373	0.550	0.556	0.427	**0.830**

Note: The bold diagonal values are the Average Variance Extracted (AVE) square root.

Common method bias and measurement invariance assessment

Common method bias is an issue that can arise and impact the relationships between constructs, particularly when data on all constructs are collected using a single method or source (Podsakoff et al., 2003). This issue might cause measurement errors and thus jeopardize the validity of the findings. The problem of common method bias should be checked to test the quality of the data set that may cause measurement errors particularly in studies where data is collected by survey method. Podsakoff et al. (2003) argues that the Harman single factor test should be applied to understand whether there is a common method bias problem in the data set. The Harman single factor test states that multiple dimensions should appear and that the first dimension should account for less than 50% of the explained variance when an exploratory factor analysis without rotation is carried out on all scale items of the study. As a result of the exploratory factor analysis, a five-factor structure with an eigenvalue greater than 1 emerged, and the first dimension explained 34.96% of the total variance.

Moreover, confirmatory factor analysis was performed on the observed variables under a single latent variable in order to support the Harman single factor test and it was checked whether the measurement model had good fit values. The fit values obtained from confirmatory factor analysis, which tests the observed variables by clustering them under a single dimension, must be poor in order to avoid the problem of common method bias. In this regard, it was determined that the fit values of the confirmatory factor analysis were at a very low level and had poor fit [x^2 = 4620.71, df = 189, x^2/df = 17.83; CFI = 0.73; GFI = 0.46; IFI = 0.73; NFI = 0.72; AGFI = 0.35; RMSEA = 0.25]. All these results indicate that there is no common method bias problem in the data collected from the same source that could affect the results of the research.

In order to reach the required sample size quickly and cost-effectively, the questionnaires were collected using a mixed method, face-to-face and online. However, collecting data with two different methods may affect an individual's response process differently and lead to systematic differences between responses (Zager Kocjan et al., 2023). Consequently, before combining the data collected by two different methods into a single dataset, the measurement invariance between the scales collected by different methods was examined. The three-step composite model measurement invariance (MICOM) analysis proposed by Henseler et al. (2016) was used to check the measurement invariance of the data collected by different methods. In step 1 of MICOM, constructs were parameterized equally in both survey methods to check measurement invariance based on the permutation algorithm. Thus, it was assumed that configural invariance was ensured. In step 2, compositional invariance of MICOM was checked. As depicted in Table 6, c (original correlation) and cu values obtained as a result of MICOM were compared for compositional invariance. Since c values were smaller than 5% quantile of cu values, compositional invariance was achieved for all scales (Kutlu et al., 2022). In the 3rd step of MICOM, the equality of the mean values and variances of the compounds between the groups was checked by permutation test. When Table 6 is examined, it was determined that the composite mean values and variances of the composites are equal for all scales (Henseler et al., 2016). In this case, it was determined that all scales have full measurement invariance.

Table 6. Summary of MICOM assessment

	Step 2			Step 3						
				Equal means			Equal variances			
Construct	C	5% quantile of C_u	Part. MI	Diff.	Confidence interval	Perm p-value	Diff.	Confidence interval	Perm p-value	Full MI
Survey meth.										
LH	0.999	0.991	Yes	-0.092	(-0.211; 0.245)	0.403	-0.195	(-0.270; 0.297)	0.175	Yes
WFC	1.000	0.999	Yes	-0.182	(-0.211; 0.215)	0.092	-0.115	(-0.310; 0.367)	0.494	Yes
CWR	1.000	0.995	Yes	0.012	(-0.211; 0.225)	0.918	0.020	(-0.483; 0.608)	0.940	Yes
ATWS	0.999	0.991	Yes	0.131	(-0.218; 0.203)	0.236	-0.256	(-0.376; 0.418)	0.206	Yes
ATLWP	1.000	0.999	Yes	-0.020	(-0.205; 0.222)	0.847	-0.184	(-0.332; 0.362)	0.312	Yes

Testing research hypotheses

Covariance-based structural equation modeling method was used to test the hypotheses in the research model. According to the analysis results depicted in Table 7, consumers' water footprint consciousness (β=0.37, t=6.40, p<0.01), concern about water resources (β=0.24, t=3.88, p<0.01), and attitude towards water sustainability (β=0.25 t=4.75, p<0.01) positively affect their attitudes towards low water footprint products. Consumers' lack of habit to reduce their water footprints (β=-0.11, t=-1.99, p<0.05) negatively affect their attitudes towards low water footprint products. Therefore, H1, H2, H3, and H4 hypotheses were supported. Furthermore, the four independent variables of the research, namely water footprint consciousness, concern about water resources, lack of habit to reduce water footprint and attitude towards water sustainability, explain 48.7% of consumers' attitude towards low water footprint products.

Table 7. Evaluation of PLS structural equation model analysis

Relationships	*β*	*t-value*	*S.E.*	VIF Inner Model	Result	R^2
H1: WFC => ATLWP	0.37	6.40*	0.058	1.471	Supported	0.487
H2: CWR => ATLWP	0.24	3.88*	0.062	1.657	Supported	
H3: LH => ATLWP	-0.11	-1.99**	0.053	1.381	Supported	
H4: ATWS => ATLWP	0.25	4.75*	0.053	1.345	Supported	

Note: *p*< 0.01; p**< 0.05.*

WFC: Water Footprint Consciousness; CWR: Concern About Water Resources; LH: Lack of Habit to Reduce The Water Footprint; ATWS: Attitude Towards Water Sustainability; ATLWP: Attitude Towards Low Water Footprint Products

CONCLUSION

Hypothesis H1 was developed to determine whether consumers' consciousness of the concept of water footprint positively affects their attitudes towards low water footprint products. According to the findings obtained as a result of the analysis, the H1 hypothesis was supported because consumers' consciousness of the concept of water footprint positively affects their attitudes towards products with low water footprints. This finding is parallel to the findings of similar studies in different contexts in the sustainable consumption literature (Michaelidou and Hassan, 2008; Sanchez and Lafuente, 2010; Talwar et al., 2021). This positive relationship between water footprint consciousness and attitudes towards low water footprint products can be explained by the fact that consumers are conscious of the water footprint they create as a result of various activities they carry out in their daily lives and the belief that their theoretical and/or practical consciousness of the water footprint concept contributes to environmental health and water sustainability. The findings obtained from this hypothesis will also provide data for policies to be developed regarding agricultural products.

Hypothesis H2 was developed to determine whether consumers' concerns about water resources positively affect their attitudes towards low water footprint products. According to the findings obtained as a result of the analysis, hypothesis H2 was supported as consumers' concerns about water resources positively affect their attitudes towards low water footprint products. This finding is parallel to the findings of similar studies in different contexts in the sustainable consumption literature (Hartmann and Apaolaza-Ibáñez, 2012; Arısal and Atalar, 2016; Kang et al., 2017; Maichum et al., 2017). This positive relationship between concern about water resources and attitudes towards low water footprint products can be explained by the belief that low water footprint products will contribute to the conservation of clean water resources and environmental health as an effective measure, as clean water resources face

the risk of depletion at a global level. This finding can further be explained as a positive nudge in behavioral economics that has emerged recently.

Hypothesis H3 was developed to determine whether consumers' lack of habit to reduce the water footprint negatively affects their attitudes towards low water footprint products. According to the findings obtained as a result of the analysis, hypothesis H3 was supported as consumers' to reduce the water footprint negatively affects their attitudes towards low water footprint products. This finding is parallel to the findings of similar studies in different contexts in the sustainable consumption literature (Huang et al., 2020; Mumtaz et al., 2022). The negative relationship between the lack of habit to reduce the water footprint and the attitude towards low water footprint products may be due to the fact that consumers are not exposed to interventions that could change their water usage habits (i.e. personal hygiene, dishwashing and laundry, food consumption) and enable the formation of new habits.

Finally, hypothesis H4 was developed to determine whether consumers' attitudes towards water sustainability positively affect their attitudes towards low water footprint products. According to the findings obtained as a result of the analysis, hypothesis H4 was supported as consumers' attitudes towards water sustainability positively affect their attitudes towards low water footprint products. This finding is parallel to the findings of similar studies in different contexts in the sustainable consumption literature (Malik and Singhal, 2017). The fact that attitudes towards water sustainability positively affect attitudes towards low water footprint products can be explained by the fact that consumers are aware of the amount of water they use directly or indirectly in their daily lives and some ecological and industrial developments that put the sustainability of global water resources at risk, and this awareness creates an incentive in consumers to take precautions, leading them to turn to low water footprint products that they believe make a significant contribution to water sustainability. Moreover, the findings obtained from this hypothesis may constitute an important reference for water policies in Turkey.

Theoretical implications

This research offers some theoretical implications. The first and most important theoretical implication of this research is that the concept of water footprint is examined empirically for the first time in the field of consumer behavior. Since the concept of water footprint has been insufficiently examined in the consumer behavior and product management literature compared to the concepts of carbon footprint and ecological footprint, this research makes important theoretical contributions to the sustainability, consumer behavior and product management literatures by expanding the scope of empirical research on the concept of water footprint. Secondly, by examining the concept of water footprint at the final consumer level, this research provides a theoretical basis for understanding the factors that affect the attitudes of final consumers towards all products with water footprints, regardless of whether they have a low or high water footprint, such as water footprint consciousness, concerns about water resources, lack of habit to reduce the water footprint and attitudes towards water sustainability, which correspond to the affective, cognitive and behavioral components of attitudes. The finding that consumers' water footprint consciousness positively affects their attitudes towards low water footprint products has important theoretical implications. Accordingly, when considered in the context of the Theory of Planned Behavior (Ajzen, 1991), high water footprint consciousness may influence environmental attitudes, supporting the idea that attitudes and perceived behavioral control influence behavioral intention (intention to buy low water footprint products). Concerns about water resources may represent a heightened normative belief, where consumers conform to societal norms to conserve water, thus reinforcing attitudes aligned with sustainable choices. Lack of habit to reduce water footprint may represent the perceived behavioral control dimension of the Theory of Planned Behavior. When considered in the context of the Values-Beliefs-Norms Theory (Stern et al., 1999), it can be said that the variables of water footprint consciousness, concern about water resources, attitude towards water sustainability and attitude towards low water footprint products represent a value-based consumer motivation and can create and strengthen the link between values and behaviors through personal responsibility and environmental attitudes. When considered in the context of Cognitive Dissonance Theory (Festinger, 1957), consumers' consciousness of their water footprint impact and concerns about water resources motivate them to align their attitudes with their environmental values. Choosing and buying products with a low water footprint can address any conflicting feelings between unsustainable decisions and goals for sustainability.

Practical implications

The findings of this research have some practical implications for businesses and government agencies. Firstly, it is observed that the vast majority of consumer products available in Turkey do not have water footprint labels. Labeling may be a crucial tool to bridge the knowledge gap between consumers and producers (Nikolaou and Kazantzidis, 2016) despite the fact that there are still problems with comprehension and understanding of the

information on labels (Grunert, 2011; Grunert et al., 2014). The nutritional information on labels is considered one of the most effective tactics for encouraging consumers to make healthier food choices, especially when it comes to the health aspect of sustainability (Drichoutis et al., 2005; Mhurchu et al., 2018). Similarly, providing reliable and verifiable information on the label of any consumer product regarding the types of water (green, blue, gray) and amount used in the product's supply chain can encourage consumers to engage in more conscious buying behavior. Mapping the direct water consumption of products in the production process as well as the indirect water consumption in the supply chain is substantial, especially for industries that provide raw materials such as agricultural products. Businesses that produce consumer goods can design their low water footprint products with blue packaging and labels that include informative messages about water sustainability. Therefore, activities targeting water footprint labeling and packaging can provide businesses with a competitive advantage in terms of brand transparency, corporate social responsibility, brand trust and brand loyalty, and thus consumers' attitudes towards products with a low water footprint can become more positive, while businesses can further integrate water sustainability measures such as water footprint into their production processes. With global climate change, water resources are gradually depleting in Turkey as in the rest of the world. The fact that Turkey is on the brink of water scarcity and is among the countries that will be most affected by global climate change makes water resources management even more vital. Therefore, when considered in the context of the agricultural sector of countries like Turkey that are on the brink of water scarcity, water footprint should be taken as a reference especially in water management or crop supports. It is necessary to inform both producers and consumers about the water footprint and develop policies in this regard. Other implications for agricultural policies related to water footprint can also be drawn. Agricultural technologies that reduce the water footprint should be promoted. In particular, the prominence of limited irrigation systems and renewable energy sources used in irrigation will reduce both the water footprint and carbon footprint of crops. In addition, water-resistant products should be prioritized in water-stressed countries such as Turkey. In order to increase public awareness of their water footprint, businesses can provide training to their employees and external stakeholders on issues such as water sustainability, the status of water resources and their water footprint, or they can appeal to consumers through various elements of the marketing communication mix, such as advertising, public relations and sales promotion. In this context, collaboration can be established between the Ministry of National Education, the Ministry of Agriculture and Forestry, the Ministry of Environment, Urbanization and Climate Change, and the Ministry of Trade to provide education to children and young people at all education levels starting from primary school in order to raise awareness on issues such as water sustainability, the status of water resources and water footprint, and to create habits that will reduce the water footprint. Another implication for government institutions is related to the calculation and reporting of Turkey's national water footprint. Although the Water Efficiency Campaign carried out within the scope of the Ministry of Agriculture and Forestry is an important step in calculating and reporting the water footprint, it is seen that this study has scope limitations in terms of analysis level. Therefore, the scope of the Water Efficiency Campaign can be expanded to include the direct and indirect water footprints of all sectors and consumers in Turkey. This implication is particularly important considering the fact that Turkey is a country experiencing high levels of water stress. Additionally, deterrent measures such as legal and economic sanctions may be applied to businesses producing products with a high water footprint. Another practical implication can also be made for businesses in terms of pricing. Accordingly, businesses can encourage consumers to buy products with a low water footprint by increasing the prices of products with a high water footprint. Some important practical implications can be drawn for the concern about water resources. From an industrial perspective, technologies such as IoT and AI can be leveraged to control water use, predict water scarcity and make water distribution networks more efficient. From a consumer perspective, digital applications can be developed that can provide practical tactics for consumers to control the amount of water they use, provide information about the quality of the water they use, and warn about environmental events that may affect water use at the local level. In addition, governments, NGOs and businesses that embrace social marketing practices can encourage consumers to develop community-led water conservation programs that aim to protect wetlands such as lakes and rivers. Although the first implications were made about the measures in Turkey since the data was collected from Turkey, the measures to be taken are similar for all countries because when previous international studies (Manson & Epps, 2014; Owusu-Sekyere et al., 2016; Godfrey & Feng, 2017; Cheng et al., 2019; Bazrafshan & Dehghanpir, 2020; Maaoui, et al., 2021; Li et al., 2022) are examined, it is seen that similar to the Turkish context, these studies are quantitatively scant, water footprint awareness is not sufficient and at the desired level for both individuals and institutions, which implies that the measures recommended to be taken are at the global level.

Limitations and directions for future research

The use of convenience sampling method is a limitation of this research due to financial limitations such as time and funding. This limitation can be addressed by expanding the sample, geographic and demographic scope of

the study by using different sampling techniques in cities where it is thought that the sample can represent a larger portion of the population. Another methodological limitation of this research is that the research model does not include the variable of willingness to buy low water footprint products. These limitations provide new opportunities for future marketing research on water footprint. Future research should focus on creating and increasing water footprint consciousness and researchers should be encouraged to undertake more empirical studies. In future research, some other factors that may influence attitudes towards low water footprint products can be examined in the context of Expectancy Theory (Vroom, 1964). An experimental study can be conducted to discover the differences in purchasing behaviors between products with and without water footprint labels by comparing products with and without water footprint labels in different product categories. Future research could examine whether consumers' positive attitudes toward low water footprint products would actually result in buying behavior. In this context, facilitating and/or inhibiting factors that may affect consumers' motivation to buy low water footprint products can be discovered by applying qualitative and quantitative research methods. Additionally, mediating and/or moderating variables that may change the strength and/or direction of consumers' attitudes towards low water footprint products and their motivation to buy such products can be explored.

Contribution Rate of Researchers Declaration Summary

The authors declare that they have contributed equally to the article and have not plagiarized.

Conflict of Interest Declaration

The authors of the article declare that there is no conflict of interest between them.

Ethical Consent of the Research

The survey conducted within the scope of the research was found ethically appropriate by the Çağ University Scientific Research and Publication Ethics Board at its meeting dated 29/09/2023 and numbered 2023/05.

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