

RESEARCH ARTICLE

Determinants of the intention to purchase sustainable beer: Do gender and type of sustainable solution matter?

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Abstract

This paper aims to shed light on the determinants of sustainable products' purchase intention, with a focus on sustainable beer. Specifically, three determinants related to the theory of planned behavior (i.e., perceived consumer effectiveness, social influence, and environmental concern) and two determinants related to the perceived value (i.e., green perceived utility and perceived quality) have been investigated. Five categories of environmentally sustainable beer have been considered: three referred to the types of ingredients (organic, local, and Italian) and two to the type of packaging (recycled and biodegradable). Furthermore, the effect of gender has been investigated for all the five above-mentioned sustainable solutions. A survey has been conducted on 790 Italian consumers and structural equation modeling (SEM) has been employed for hypothesis testing. Results show that perceived quality, green perceived utility, and environmental concern influence the purchase intention of sustainable beer, regardless of the specific type of sustainable solution. Further, results highlight that gender does moderate the relationship between perceived quality and purchase intention only for two types of sustainable solutions (local ingredients and recycled packaging). Several implications for scholars, companies, and policymakers are drawn from this study.

KEYWORDS

gender, green products, green purchase, sustainable consumer behavior, sustainable beer, theory of planned behavior

1 | INTRODUCTION

The contemporary beer market exhibits dynamism, with a revenue amounting to US \$322.3 billion in 2023 and an anticipated annual growth exceeding 3%. The array of beers available in both on and off-trade sectors expands annually, propelled by consumer demand

for diversity and novelty (Parker et al., 2020). Notably, heightened consumer dissatisfaction with standardized beers and a preference for distinctive products and gourmet tastes (De Vargas Giorgi, 2015; Parker et al., 2020; Reid et al., 2014) have contributed to the emergence of a consumer base inclined towards traditional brewing methods, high-quality ingredients, and differentiated flavor profiles

Abbreviations: AGFI, adjusted goodness-of-fit index; AVE, average variance extracted; CB, craft beer; CFA, confirmatory factor analysis; CFI, comparative fit index; CR, composite reliability; EC, environmental concern; FMCGs, fast-moving consumer goods; GFI, goodness-of-fit index; GPU, green perceived utility; IFI, incremental fit index; PCE, perceived consumer effectiveness; PI, purchase intention; PQ, perceived quality; RMSEA, root mean square error of approximation; SEM, structural equation modeling; SI, social influence; SRMR, standardized root mean square residual; TPB, theory of planned behavior.

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(Bachman et al., 2021; Fastigi et al., 2015; Pozner et al., 2022; Verhaal et al., 2015). These consumers also demonstrate willingness to pay for superior quality products (Betancur et al., 2020). According to Drakopoulou Dodd et al. (2018), a response to consumer preferences for hyper-differentiation is evident in the introduction of new beer portfolios. For instance, in recent years the craft beer (CB) category has gained prominence and demonstrated substantial growth in various countries and regions (Albanese et al., 2018; Duarte Alonso et al., 2018).

Due to such changes, understanding consumer behavior in the beer market is of high importance nowadays. From the scientific perspective, the literature focused on investigating the factors influencing consumers' choice of beer. For instance, Betancur et al. (2020) underscored that these factors can be distinguished into product sensory attributes, consumers' personal factors (i.e., psychographic and behavioral variables and demographic and socio-cultural variables), and context and situational factors. In a study conducted on Czech consumers, Svatošová et al. (2021) underscored that the pivotal determinants guiding consumers' beer selection include taste, a reputable brand associated with high quality, and a preference for domestically produced beer. Calvo-Porrá et al. (2020) investigated whether consumer involvement influences beer flavor preferences. Specifically, many efforts have been made to investigate the consumer behavior towards CB and specialty beer (i.e., beer that includes special or unconventional ingredients during production, such as various fruits, aimed at enhancing the flavor), two product categories that aim to clearly distinguish from industrial beer. For instance, Haddad et al. (2023a) undertook a characterization of the profiles of both novice and experienced consumers of CB, with the overarching objective of evaluating their perceptions, knowledge, and purchase intentions. Guerra-Tamez and Franco-García (2022) investigated how much consumer loyalty toward CB can be influenced by flow, perceived value, and corporate social responsibility, considering both Mexican and Dutch consumers. Rivaroli et al. (2019) explored the motivations driving university students to choose CB. Carbone and Quici (2020) conducted an investigation into the awareness of CB among Italian consumers, scrutinizing their attitudes, habits, and behaviors. The study aimed to assess the influence of these characteristics on consumers' decision-making processes. Di Vita et al. (2023) undertook an analysis of consumer preferences and gauged the willingness to pay for CB in comparison to industrial products within the Italian context. With reference to specialty beer, Haddad et al. (2023b) investigated the consumers' perceptions toward specialty beer producers, analyzing consumers' preferences and perceptions toward these beers and determining buying factors. Other studies investigated consumer preferences toward gluten-free beer (Donadini et al., 2020).

Recently, the beer industry has begun to recognize the importance of sustainability and its role in consumer decision-making. Indeed, from the environmental perspective, several studies recognize the high environmental impact of beer production (e.g., Cordella et al., 2008; Mattila et al., 2012; Talve, 2001). Nevertheless, few studies have been conducted on consumer behavior toward sustainable beer. Specifically, Lee et al. (2020) investigated the purchase intention toward beer whose label reports the water conservation practices

implemented during the production process. Carley and Yahng (2018) examined the consumers' willingness to pay a premium price for beer whose production processes conserve energy or water or use an electricity source that produces limited greenhouse gas emissions, such as solar panels. Such few studies are in contrast with the high number of studies on consumer behavior toward sustainable products in general (Alzubaidi et al., 2021; Dangelico et al., 2021) and toward specific categories of products, such as clothing (e.g., Dangelico et al., 2022a; Paço et al., 2020), cars (e.g., Corradi et al., 2023; Secinaro et al., 2022), electronic products (e.g., Fraccascia et al., 2023), luxury products (Essiz & Senyuz, 2024), remanufactured products (Hazen et al., 2017), and food and beverage products as well (e.g., Rondoni & Grasso, 2021). Studies on sustainable consumer behavior in the food and beverage industry have been conducted with a focus on several products, such as fruit and vegetables (Boca, 2021), wine (Cobelli et al., 2021; Rodriguez-Sanchez & Sellers-Rubio, 2021; Sgroi et al., 2023; Vecchio et al., 2023), chocolate (Vecchio & Annunziata, 2015), seafood products (Zander & Feucht, 2018), meat products (Tait et al., 2016; Vanhonacker et al., 2013), coffee (De Pelsmacker et al., 2005; Van Loo et al., 2015), dairy products (Napolitano et al., 2010), and eggs (Güney & Giraldo, 2020). On the contrary, sustainable consumer behavior with specific regard to beer has so far been an under-investigated topic, with a limited number of studies (Carley & Yahng, 2018; Lee et al., 2020).

Furthermore, previous research on sustainable consumer behavior suggests that gender may play a role in explaining sustainable consumer behavior (e.g., Sreen et al., 2018; Zhao et al., 2021). Further, some previous studies highlighted that the specific eco-design option or sustainable solution chosen for a given category of products may affect the determinants of purchase intention (Dangelico et al., 2022a; Dangelico et al., 2024). To the best of our knowledge, no study has so far investigated whether the effect of gender is contingent upon the specific sustainable solution.

This study aims to answer the following research questions: What are the determinants of the purchase intention of sustainable beer? Are the determinants of purchase intention contingent upon the type of sustainable solution? Does consumer gender moderate the relationship between determinants and purchase intention? Is the moderating effect of gender contingent upon the specific sustainable solution?

In answering these research questions, this paper sheds further light on the determinants of sustainable products' purchase intention, with a focus on sustainable beer. Specifically, three determinants related to the theory of planned behavior (TPB) (i.e., perceived consumer effectiveness, social influence, and environmental concern) and two determinants related to perceived value (i.e., green perceived utility and perceived quality) have been investigated. Five categories of environmentally sustainable beer have been considered: three referred to the types of ingredients (organic, local, and Italian¹) and two to the type of packaging (recycled and biodegradable). Furthermore, the effect of gender has been investigated for all the five

¹A product sold to Italian consumers, made with Italian ingredients and manufactured in Italy, is expected to have a lower environmental impact due to transportation compared with a product manufactured abroad or manufactured in Italy with ingredients coming from abroad.

above-mentioned sustainable solutions. A survey has been conducted on Italian consumers. Italy seemed to be a good research setting for this research, as the Italian market for beer has been continuously growing since 2012, and in 2022, Italian consumers bought 37.8 L per capita, 5% more than the previous year.²

The article is structured as follows. In Section 2, the theoretical background and the hypothesis development are presented. In Section 3, materials and methods are reported, while in Section 4, results are presented. Finally, discussion and implications as well as limitations, future research directions, and conclusions are provided.

2 | THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

2.1 | Theoretical background

Sustainable consumption has gained significant prominence in recent years, being acknowledged as one of the 17 goals of the 2030 agenda for sustainable development, alongside sustainable production (United Nations, 2018). However, the roots of this topic can be traced back to two decades ago, when Meulenbergh (2003) conducted an analysis and defined sustainable consumption as a decision-making process influenced by both social responsibility and individual needs and attitudes. Numerous models and theories have been developed to study and understand the sustainable behavior of consumers. The primary theories that serve as the foundation for most studies on sustainable consumption are Ajzen and Fishbein's Theory of Reasoned Action (Ajzen & Fishbein, 1980) and its extension the TPB (Ajzen, 1985). These theories provide insights into how consumer beliefs and psychological aspects shape their actions and drive specific behaviors. The complexity of the factors that define consumer behavior makes predicting their actions a challenging endeavor. Building upon these fundamental theories, a multitude of approaches and models have been established across various scientific disciplines (including psychology, social sciences, and decision sciences) and industrial sectors (fashion, vehicle, oil, gas, etc.). Certainly, one of the key domains for examining consumer behavior is the realm of food and beverages (Zhang & Dong, 2020). This sector is notably marked by production systems that have adverse environmental impacts, leading to climate change and the depletion of biodiversity (Godde et al., 2021; Gomez-Zavaglia et al., 2020). Hence, there is a growing need to reassess current solutions and shift toward more sustainable paradigms in the food and beverage sector (Schäufele & Janssen, 2021).

In line with previous research on green consumer behavior (e.g., Alzubaidi et al., 2021; Fransson & Gärling, 1999), this study employs environmental concern as an indicator of attitude. In the same vein, perceived consumer effectiveness serves as a substitute for perceived behavioral control (e.g., Alzubaidi et al., 2021). Finally, social influence is used as a proxy of subjective norms, delineating the

perceived pressure of individuals' sense from significant others either encouraging or discouraging the engagement in a particular behavior (White et al., 2009).

Furthermore, we extend the TPB by incorporating product perceived value. This extension is considered pertinent due to the significance of perceived value as a crucial factor influencing the intention to purchase environmentally friendly products, as demonstrated in previous studies (e.g., Dangelico et al., 2022a). Perceived value is comprehensively examined with two components: product quality (Chou et al., 2020) and green perceived utility (Chang, 2011; Magnier et al., 2019).

2.2 | Hypothesis development

This section is divided into three subsections. Section 2.2.1 regards the factors related to the TPB. Section 2.2.2. regards the factors related to the perceived value. Finally, Section 2.2.3 regards the role of gender.

2.2.1 | Factors related to the TPB

Perceived consumer effectiveness

Perceived consumer effectiveness refers to an individual's belief in his/her capacity to make a positive environmental impact through personal choices. Previous studies have underscored the positive effect that perceived consumer effectiveness plays on the purchase intention of several products (Casalegno et al., 2022), such as green smartphones (Raj et al., 2023), electronic products from industrial symbiosis (Fraccascia et al., 2023), sustainable clothing (Apaolaza et al., 2023), eco-friendly apparel (Kumar et al., 2022), fairtrade-cut flowers (Berki-Kiss & Menrad, 2022), products that do not add to plastic pollution (Kautish et al., 2021), and electric vehicles (Asadi et al., 2021), among the others.

Several previous studies found that perceived consumer effectiveness significantly influences purchase intention in the food sector, where consumers increasingly seek sustainable, locally sourced, and organic options (Ghvanidze et al., 2016; Gleim et al., 2013; Gupta & Ogden, 2009; Kaur et al., 2023). As consumers become more aware of the environmental impact of their food choices, their perceived effectiveness in contributing to sustainability encourages the preference for products that align with their values. The belief that their decisions can positively impact the environment propels their intention to purchase food items that are produced ethically, with minimal environmental impact, and support practices promoting biodiversity and conservation. This evolving consumer mindset not only shapes their buying behavior, but also drives the food industry to adapt, innovate, and offer more environmentally responsible options to meet these growing consumer demands. Specifically, Barber et al. (2016) found that perceived consumer effectiveness can influence the purchase behavior of consumers toward pro-environmental wine products.

Based on the above considerations, we hypothesize that

- H1.** Perceived consumer effectiveness positively influences the consumer's intention to purchase sustainable beer.

²https://www.ilsole24ore.com/art/business-birra-crescita-guidato-consumi-fuori-casa-AEJBAqrD?refresh_ce=1

Social influence

Social influence can be defined as the perceived social expectations influencing whether one engages in a particular action or refrains from doing so (Ajzen, 1991). This factor plays an important role in shaping consumer behavior (Cialdini, 2005). In particular, social influence emerged as one of the most influential drivers of sustainable behavior (Bhukya & Paul, 2023), encompassing actions such as energy conservation, recycling, and adoption of sustainable transportation (Liobikiene et al., 2016; White et al., 2009). Several studies underscored the positive effect that social influence plays on the purchase intention of electronic products from industrial symbiosis (Fraccascia et al., 2023), solar panels (Roy & Mohapatra, 2022), and electric vehicles (Jayasingh et al., 2021; Kim et al., 2014), as well as on the intention of adopting emerging healthcare technology (Wei et al., 2024), among the others.

Furthermore, social influence is acknowledged as a relevant predictor of customers' intention to purchase sustainable food and, in particular, organic foods (Carfora & Catellani, 2023; Torres-Ruiz et al., 2018). Hence, we hypothesize that

- H2.** Social influence positively influences the consumer's intention to purchase sustainable beer.

Environmental concern

Environmental concern refers to “the degree to which consumers are concerned about environmental problems and support efforts to solve them,” for instance by purchasing green or sustainable products (Dunlap & Jones, 2002, p. 485). This factor is considered an important predictor of consumers' environmentally friendly behavior and may directly impact purchase intention. In particular, the literature has underscored the impact that environmental concern plays on the purchase intention of several products (Lopes et al., 2024), such as package-free products (De Canio et al., 2024), carbon-labeled products (Sun et al., 2023), sustainable fashion products (Dangelico et al., 2022a; Rausch & Kopplin, 2021), and electric vehicles (Song et al., 2022), among the others. Specifically, to food products, the positive impact of environmental concern has been recognized in the intention to purchase carbon footprint labeled foods (Rondoni & Grasso, 2021), plant-based food (Suhartanto et al., 2022), and organic food (Laureti & Benedetti, 2018; Roseira et al., 2022). Hence, we hypothesize that

- H3.** Environmental concern positively influences the consumer's intention to purchase sustainable beer.

2.2.2 | Factors related to the product's perceived value

Green perceived utility

Green perceived utility encompasses an individual's assessment of the positive environmental impact generated by green products and positively influences green purchase intention (Chang, 2011). Chen

and Chang (2012) redefined green purchase intention as “the likelihood that a consumer would buy a particular product resulting from his or her environmental needs” (Chen & Chang, 2012, p. 508). According to Wang and Hazen (2016), when consumers possess awareness regarding the reduced environmental harm of green products compared to conventional alternatives, they tend to place a higher value on these eco-friendly options. This increased perceived value directly influences their inclination to purchase green products (Fraccascia et al., 2023). Evidence supports this result for several categories of green products, for example, hybrid vehicles (Kahn, 2007), green homes (Rashid & Shaharudin, 2017), and green furniture (Xu et al., 2020). Hence, we hypothesize that

- H4.** Green perceived utility positively influences the consumer's intention to purchase sustainable beer.

Perceived quality

In the food and beverages sector, the perceived quality of products plays a crucial role in determining purchasing intentions (Rai et al., 2023). Perceived quality encompasses factors like taste, freshness, nutritional value, and eco-friendliness. Previous studies identified perceived quality as a predictor of purchase intention in different food and drink categories (such as meat and wine) (de Araújo et al., 2022; Pickering, 2023). In the field of organic food consumption, several studies have confirmed this result (Magnusson et al., 2001; Padel & Foster, 2005; Wee et al., 2014). In particular, this trend is due to the unique and in some cases higher attributes of organic food compared to conventional alternatives in terms of healthiness and environmental impact (Jolly, 1991; Vindigni et al., 2002). Additionally, Mascarello et al. (2015) conducted a survey on Italian consumers and found a close connection between food quality characteristics (taste, appearance, and freshness) and purchase intention. The authors also identified that other crucial factors in defining food quality are related to the significance of protected designation of origin (PDO) certification, along with organic and locally sourced production. A more recent study also reinforces this result, highlighting that local food is perceived to be of higher quality due to appearance, information about their production, and freshness and this increases future intention to buy it (Carfora & Catellani, 2023).

Hence, we hypothesize that

- H5.** Perceived quality positively influences the consumer's intention to purchase sustainable beer.

2.2.3 | Gender

The exploration of gender differences in sustainable consumption has been a topic of great debate in recent years, which reveals intriguing patterns across various domains (Dangelico et al., 2022b; Mostafa, 2007; Sreen et al., 2018; Zhao et al., 2021). In studies on the determinants of sustainable consumer behavior, gender has generally been

analyzed as an explanatory or as a control variable. In this study, we aim to analyze the role of gender as a moderating variable.

Considering the factors related to the TPB, previous contributions emphasized that pro-environmental behaviors may depend on gender, with females more inclined to have active participation in pro-environmental initiatives, *ceteris paribus* (Hansmann et al., 2020; Silvi & Padilla, 2021; Xiao & Hong, 2010), and to buy sustainable products, *ceteris paribus* (Meet et al., 2024; Smith & Brower, 2012; Sreen et al., 2018). Indeed, women seem to display a greater environmental attitude, being more inclined to protect the natural environment, than men (e.g., Davidson & Freudenburg, 1996; Gomez-Zavaglia et al., 2020; O'Connor et al., 1999). Based on the above considerations, we hypothesize that

H1a. Gender moderates the relation between perceived consumer effectiveness and purchase intention—the effect is stronger for females than for males.

The expectation state theory (Ridgeway & Bourg, 2004) introduces the concept of distinct social behaviors based on gender. Numerous studies identified women as more people-oriented, while men are often described as more self-confident and independent (Miller, 2012; Minton & Schneide, 1985; Skitka & Maslach, 1996). Starting from these premises, it is valuable to assess how men and women respond to the information provided by their influential individuals in purchasing decisions. Previous studies resulted in women being more motivated and influenced by social interactions in their purchasing behaviors (Lee, 2009; Noble et al., 2006). A study conducted on Indian consumers supported the hypothesis that females are more influenced than men by subjective norms in their green purchase intention (Sreen et al., 2018). In addition, Gundala et al. (2022) confirmed this result as they found that the subjective norm affects women more in the purchasing decision of organic food in the United States. Hence, we hypothesize that

H2a. Gender moderates the relationship between social influence and purchase intention—the effect is stronger for females than for males.

Sreen et al. (2018) introduce the concept of gender socialization, asserting that distinct socialization processes contribute to behavioral differences between men and women. Women, generally more concerned about environmental issues, exhibit a more positive attitude toward eco-friendly products. Given that women tend to have higher environmental concerns, they are likely to demonstrate eco-friendly behavior, even in situations where it may be inconvenient for them, such as in terms of financial cost, time commitment, or self-efficacy (Lee, 2009). Indeed, in their research, Laroche et al. (2001) find that women exhibit greater environmental concern and a higher willingness to pay for eco-friendly products compared to men. In their study on Italian consumers, Dangelico et al. (2022b) highlight that, after the COVID-19 pandemic, women's awareness about environmental

problems increased significantly more than men's, and the same difference can be noticed in terms of the frequency of purchases of sustainable products. The research on Lebanese consumers by Dagher and Itani (2014) suggests that gender moderates the relationship between environmental concern and green purchasing behavior, with women exhibiting a stronger link. Hence, we hypothesize that

H3a. Gender moderates the relation between environmental concern and purchase intention—the effect is stronger for females than for males.

Concerning perceived value factors, Medina-Molina et al. (2021) suggest that women process information more extensively, capturing data at lower thresholds. Men, on the other hand, are portrayed as more selective data processors, relying on heuristics and preconceptions. This extends to food purchasing decisions, where men simplify choices using heuristics. Gender significantly influences the interaction with food labeling, with women showing a preference for labeled foods and being more attentive to nutritional information. This selectivity hypothesis posits that women are inclined to detect, elaborate, and employ less accessible but more relevant information in their purchase evaluations. Thus, women might be more sensitive to environmental information and, consequently, perceive sustainable products as more effective in contributing to environmental causes. Hence, we hypothesize that

H4a. Gender moderates the relation between green perceived utility and purchase intention—the effect is stronger for females than for males.

Finally, in their study conducted in the beverage industry, Sharif et al. (2023) find that gender (being female) has a positive and significant moderating role in the relationship between perceived quality and repurchase intention. In the same vein, Das (2015) underlines that gender significantly influences the relationship between perceived quality and consumer's purchase intention of fashion retail brands, making this relationship stronger for females than for males. Hence, we hypothesize that

H5a. Gender moderates the relation between perceived quality and purchase intention—the effect is stronger for females than for males.

Figure 1 summarizes the developed hypotheses and the theoretical framework.

3 | MATERIALS AND METHODS

In this section, we present how the data was collected (Section 3.1), the survey used for data collection (Section 3.2), and the procedure used to analyze the data (Section 3.3).

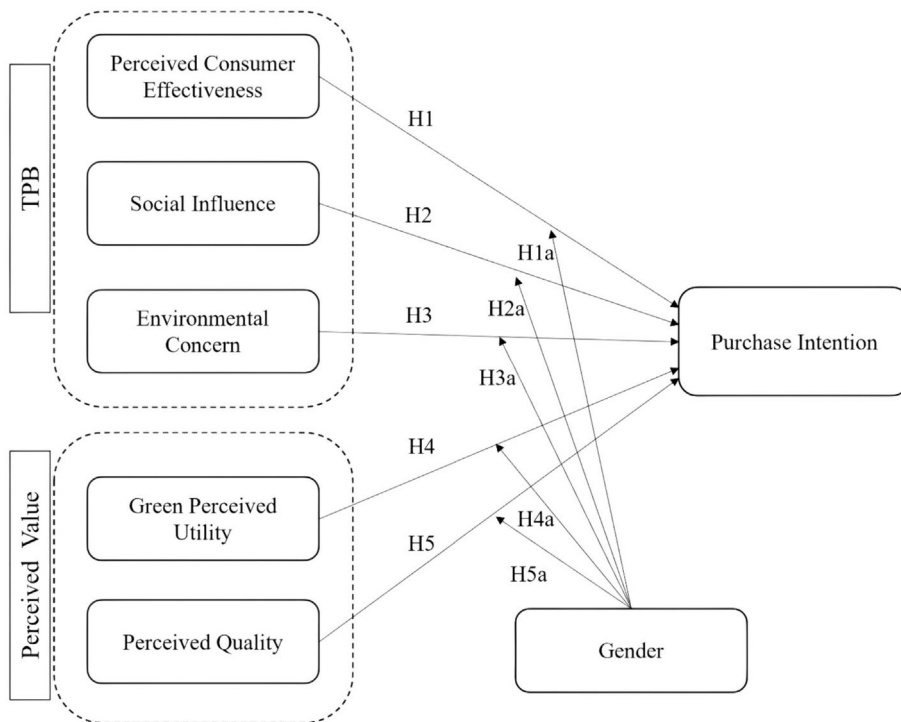


FIGURE 1 Theoretical framework.

3.1 | Data collection

The selected target population for this study is represented by adult Italian consumers. Primary data was collected between October 2021 and December 2021 through an online survey. A pre-test was done on a limited number of consumers to assess the questionnaire's clarity and the time of completion. Convenience sampling was used as common in consumer behavior studies (Chaihanchai & Anantachart, 2023; Lavuri et al., 2023; Rezvani et al., 2018). The authors and three research assistants shared the online survey through social networks and instant messaging clients; at the end of the survey, each respondent was in turn invited to share the survey via his/her social networks. The collection phase resulted in a final sample of 790 respondents, who purchase beer at least occasionally. Since all questions were mandatory, there are no missing values in the dataset. Demographic data collected for each consumer consisted of gender, age, education, and monthly household net income. Respondents were more likely to be male (57%). Age groups included 18–24 (32%), 25–34 (30%), 36–45 (12.4%), 45–54 (14%), and over 55 years old (8%). The majority of consumers (61%) had a bachelor's degree or above, as shown in Table 1.

3.2 | Measurements

The questionnaire is structured in different sections.

In the first section, we explored consumer's purchasing habits by asking a direct Yes/No question: *When you go shopping, do you happen*

TABLE 1 Socio-demographic statistics of the sample.

| Socio-demographic variables | | |
|-------------------------------------|-----------|------------|
| | Frequency | Percentage |
| Gender | | |
| Female | 336 | 43% |
| Male | 454 | 57% |
| Age group | | |
| 18–24 | 256 | 32% |
| 25–34 | 235 | 30% |
| 35–44 | 126 | 16% |
| 45–54 | 112 | 14% |
| Over 55 | 61 | 8% |
| Education | | |
| Middle school or lower | 26 | 3% |
| High school | 283 | 36% |
| Bachelor's degree | 221 | 28% |
| Master's degree | 235 | 30% |
| Doctorate | 25 | 3% |
| Monthly household net income | | |
| Less than 1000 € | 53 | 7% |
| 1000–1500 € | 139 | 18% |
| 1501–2000 € | 161 | 20% |
| 2001–2500 € | 141 | 18% |
| 2501–3000 € | 125 | 16% |
| Over 3000 € | 171 | 22% |

to buy beer? This first question allowed us to narrow down the sample of respondents to only those who purchase beer (even occasionally).

In the second section, preferences and perceptions of the specific information reported on the beer packaging are collected. In particular, we asked consumers to report their level of agreement or disagreement—on a five-item Likert scale ranging from 1 = “Strongly disagree” to 5 = “Strongly agree”—with the importance of different information reported on beer packaging: (1) clear information on the possible use of alternative raw materials to traditional ones, (2) clear information about the materials used for the packaging (bottle or can) and its disposal methods, (3) certification attesting that the product is organic, (4) certification attesting that the product is produced sustainably, (5) clear information on the use of energy derived from renewable sources in the production processes, (6) detailed information on the terms used (e.g., organic and sustainable) and on the initiatives undertaken by the producer in terms of sustainability, and (7) clear information about the type and origin of the ingredients used.

In the third section, we asked consumers to report their level of product familiarity on a three-item scale (I have purchased it; I have never purchased it, but have heard about it; I have never purchased it; and I have never heard about it) in relation to different beer characteristics: (1) with ingredients from organic farming, (2) with alternative ingredients (e.g., the use of stale bread to replace part of the cereals), (3) with local ingredients (e.g., barley cultivated near the production facility), (4) produced by an Italian company with Italian ingredients, (5) with a packaging (bottle or can) made from recycled material, and (6) with a biodegradable packaging (e.g., bottle made of wood fiber or bioplastic and cap made of bioplastic or cork). In line with Dangelico et al. (2022a), consumers who replied “I have purchased it” were assumed to have a direct experience with the product. Consumers who replied “I have never purchased it but have heard about it” were assumed to have an indirect experience with the product. Finally, consumers who replied “I have never heard about it” were assumed to have no previous experience with the product.

In the fourth section, we collected data about the different constructs reported in the theoretical model. Again, we asked respondents to rate on a five-item Likert scale—ranging from 1 = “Strongly disagree” to 5 = “Strongly agree”—their purchase intention, perceived consumer effectiveness, social influence, environmental concern, perceived quality, and green perceived utility. Specifically, to measure consumers' purchase intention we used a two-item scale (adapted by Magnier et al., 2019; Mugge et al., 2017). For social influence, we used a three-item scale based on Alzubaidi et al. (2021); environmental concern was measured with three items (D'Souza et al., 2015), and perceived consumer effectiveness was evaluated with a three-item scale (Kang et al., 2013). Perceived quality was assessed with two items (Cheung et al., 2015; Oude Ophuis & Van Trijp, 1995) while the green perceived utility was measured with two items adapted from Chang (2011) and Magnier et al. (2019). The scales are detailed in Appendix 1. Purchase intention, perceived quality, and green perceived utility were assessed for five different categories of sustainable solutions for beer: three types of ingredients (organic, local, and Italian) and two types of packaging material (recycled and biodegradable).

3.3 | Analytic technique

First, a descriptive analysis of the results is conducted. Then, a two-step methodology was applied using AMOS 28.0: initially, a confirmatory factor analysis (CFA) was conducted to evaluate and validate the measurement model; after that, structural equation modeling (SEM) was employed for hypothesis testing. The analysis initially focused on beer made with organic ingredients. In order to check for significant differences across the different sustainable solutions, the same models were then assessed for beer made with Italian ingredients and local ingredients, with biodegradable packaging, and with recycled packaging.

Given the large sample size and the susceptibility of the chi-square (χ^2) statistic to sample variations, additional indices were utilized to assess the overall model fit (Hu & Bentler, 1998; Tabachnick & Fidell, 2007). These indices included the adjusted goodness-of-fit index (AGFI), goodness-of-fit index (GFI), comparative fit index (CFI), incremental fit index (IFI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA).

4 | ANALYSIS OF THE RESULTS

4.1 | Descriptive analysis

Perceptions about the relevance, during the purchase process, of specific information reported on the beer packaging are shown in Table 2. Consumers highly value transparency regarding the materials used in the packaging and proper disposal methods, followed by information on the origin and type of ingredients used, and information on the use of raw materials alternative to traditional ones (mean higher

TABLE 2 Relevance of information provided on beer packaging.

| When I purchase beer, I think it is very important for the packaging to include: | Mean | Standard deviation |
|---|-------|--------------------|
| Clear information about the materials used for the packaging (bottle or can) and its disposal methods | 4.167 | 1.032 |
| Clear information about the type and origin of the ingredients used | 4.139 | 1.016 |
| Clear information on any use of raw materials alternative to traditional ones | 4.138 | 1.026 |
| Certification attesting that the product is produced sustainably | 3.981 | 1.032 |
| Detailed information on the terms used (e.g., organic and sustainable) and on the initiatives undertaken by the producer in terms of sustainability | 3.796 | 1.056 |
| Certification attesting that the product is organic | 3.770 | 1.128 |
| Clear information on the use of energy derived from renewable sources in the production processes | 3.711 | 1.096 |

TABLE 3 Distribution of responses related to product familiarity for different sustainable solutions.

| | | I have purchased it | I have never purchased it but have heard about it | I have never purchased it, and I have never heard about it |
|----------------------------|---|---------------------|---|--|
| Product familiarity | Produced by an Italian company with Italian ingredients | 87.72% | 8.99% | 3.29% |
| | Local ingredients (e.g., barley cultivated near the production facility) | 53.29% | 32.78% | 13.92% |
| | Packaging (bottle or can) made from recycled material | 47.22% | 32.78% | 20.00% |
| | Ingredients from organic farming | 44.05% | 41.65% | 14.30% |
| | Alternative ingredients (e.g., the use of stale bread to replace part of the cereals) | 14.81% | 36.08% | 49.11% |
| | Biodegradable packaging (e.g., bottle made of wood fiber or bioplastic, cap made of bioplastic or cork) | 10.38% | 31.39% | 58.23% |

than 4). While still important, the relevance of other types of information is lower, suggesting that consumers might prioritize other aspects over the certification attesting that the product is produced sustainably, detailed information on the terms used (e.g., organic and sustainable) and on the initiatives undertaken by the producer in terms of sustainability, certification attesting that the product is organic, and clear information on the use of energy derived from renewable sources in the production processes. The relatively low standard deviation suggests that there is a relatively consistent agreement among respondents on the importance of different pieces of information on the packaging.

Concerning *product familiarity* (Table 3), an overwhelming majority of respondents (87.72%) have purchased beer produced by an Italian company with Italian ingredients, while around 9% declare an indirect experience with the product. More than half of respondents (53.29%) have purchased beer with local ingredients, indicating a preference for locally sourced components, and almost one-third of respondents (32.78%) declare an indirect experience with the product. A significant portion (47.22%) has purchased beer with packaging made from recycled material; almost one-third of respondents (32.78%) declare an indirect experience with the product. Moreover, consumers express their experience with beer with ingredients from organic farming (44.05% have purchased it and 41.65% have heard about it, but they have never purchased the product). A very limited number of consumers declared a direct experience with beer made with alternative ingredients (14.81%) and biodegradable packaging (10.38%); More than 50% of respondents have never purchased these products.

Table 4 shows the distribution of responses related to perceived quality, green perceived utility, and purchase intention for the different types of eco-sustainable beer (from 1 = strongly disagree to 5 = strongly agree).

Concerning *perceived quality*, in comparison to conventional beer, most of the respondents believe that general quality is slightly higher for all types of eco-sustainable beer. The percentage of respondents agreeing or strongly agreeing varies across the different solutions,

being higher for ingredients-related (with the highest one for beer with local ingredients—60.89%) compared to packaging-related ones (with the lowest one for biodegradable packaging—40.76%). Additionally, a moderate percentage of respondents adopted a neutral stance, ranging from 29.62% for Italian ingredients to 38.86% for recycled packaging. In terms of taste, a significant portion of respondents agreed or strongly agreed that eco-sustainable beer characterized by ingredients-related solutions has a better taste (50.38% for organic ingredients, 54.05% for local ingredients, and 49.24% for Italian ingredients); a large portion of respondents remained neutral for recycled packaging (51.65%) and biodegradable packaging (48.61%). These results highlight that the quality of eco-sustainable beer, with regard to ingredients-related solutions, is generally perceived as superior compared to conventional beer.

With regard to *green perceived utility*, most respondents believe that eco-sustainable beers are good for the environment and reduce pollution. Particularly high percentages of “strongly agree” responses were observed for beer made with biodegradable or recycled packaging, exceeding 60%.

Referring to purchase intention, a majority of respondents (more than 66% per each type of sustainable solution) expressed intention to buy eco-sustainable beer (declaring to either “agree” or “strongly agree”), with the greatest percentages referring to beer made with local and Italian ingredients (91.27% and 89.75%, respectively—item PI2).

4.2 | Confirmatory factor analysis

The measurement model was assessed by performing a CFA. The baseline model adopted for the analysis is that of beer made with organic ingredients. The model comprises the six latent variables identified in the theoretical framework: Perceived Quality (PQ), Green Perceived Utility (GPU), Environmental Concern (EC), Perceived Consumer Effectiveness (PCE), Social Influence (SI), and Purchase Intention (PI). In line with Mulaik et al. (1989), the CFA reveals a good

TABLE 4 Distribution of responses related to perceived quality, green perceived utility, and purchase intention.

| | | | 1 | 2 | 3 | 4 | 5 |
|--------------------------------|--|-------------------------|--------|--------|--------|--------|--------|
| Perceived quality | PQ1) I think the quality of beer with the following characteristics is higher than that of conventional beer | Organic ingredients | 5.70% | 6.46% | 30.76% | 31.65% | 25.44% |
| | | Local ingredients | 4.68% | 4.68% | 29.75% | 35.95% | 24.94% |
| | | Italian ingredients | 4.81% | 7.72% | 29.62% | 31.65% | 26.20% |
| | | Recycled packaging | 8.73% | 10.00% | 38.86% | 21.27% | 21.14% |
| | | Biodegradable packaging | 10.76% | 12.15% | 36.33% | 21.27% | 19.49% |
| | PQ2) I think beer with the following characteristics has a better taste than conventional beer | Organic ingredients | 8.10% | 6.08% | 35.44% | 29.87% | 20.51% |
| | | Local ingredients | 5.95% | 4.81% | 35.19% | 33.42% | 20.63% |
| | | Italian ingredients | 6.58% | 6.08% | 38.10% | 28.86% | 20.38% |
| | | Recycled packaging | 12.53% | 12.15% | 51.65% | 12.78% | 10.89% |
| | | Biodegradable packaging | 13.80% | 15.32% | 48.61% | 11.01% | 11.27% |
| Green perceived utility | GPU1) I think beer with the following characteristics is good for the environment | Organic ingredients | 4.43% | 3.29% | 16.20% | 36.46% | 39.62% |
| | | Local ingredients | 1.52% | 3.54% | 23.42% | 38.23% | 33.29% |
| | | Italian ingredients | 2.78% | 6.46% | 30.00% | 33.16% | 27.59% |
| | | Recycled packaging | 1.39% | 0.51% | 5.06% | 28.48% | 64.56% |
| | | Biodegradable packaging | 1.77% | 1.27% | 5.70% | 24.05% | 67.22% |
| | GPU2) I think beer with the following characteristics can effectively reduce pollution | Organic ingredients | 5.19% | 6.58% | 21.01% | 34.94% | 32.28% |
| | | Local ingredients | 2.53% | 5.32% | 23.42% | 37.22% | 31.52% |
| | | Italian ingredients | 3.67% | 6.33% | 31.14% | 32.78% | 26.08% |
| | | Recycled packaging | 1.65% | 1.39% | 5.06% | 28.73% | 63.16% |
| | | Biodegradable packaging | 2.15% | 1.39% | 5.32% | 25.44% | 65.70% |
| Purchase intention | PI1) I am likely to buy beer with the following characteristics | Organic ingredients | 3.92% | 3.92% | 25.57% | 37.34% | 29.24% |
| | | Local ingredients | 1.39% | 2.03% | 11.65% | 37.47% | 47.47% |
| | | Italian ingredients | 1.01% | 2.66% | 10.51% | 34.94% | 50.89% |
| | | Recycled packaging | 2.66% | 3.16% | 19.62% | 34.68% | 39.87% |
| | | Biodegradable packaging | 4.56% | 5.44% | 20.25% | 32.15% | 37.59% |
| | PI2) I am willing to buy beer with the following characteristics | Organic ingredients | 2.78% | 1.01% | 14.43% | 32.78% | 48.99% |
| | | Local ingredients | 0.63% | 0.76% | 7.34% | 32.78% | 58.48% |
| | | Italian ingredients | 1.01% | 0.51% | 8.73% | 28.99% | 60.76% |
| | | Recycled packaging | 1.39% | 1.01% | 11.65% | 32.15% | 53.80% |
| | | Biodegradable packaging | 2.03% | 4.18% | 13.67% | 29.62% | 50.51% |

fit in terms of adaptation of the competing model to the data, in particular $\chi^2/df = 2.111$ ($p = .000$). To address the sensitivity of chi-square statistics to sample size, we also calculate alternative fit indices

that consider both model fit and sample size (GFI, AGFI, IFI, and CFI) (Hu & Bentler, 1998; Tabachnick & Fidell, 2007). All these indices have high values (close to one) (GFI = 0.947, AGFI = 0.959,

TABLE 5 Summary of the measurements' model (beer made with organic ingredients).

| Constructs | CR | AVE | Cronbach's alpha/Spearman–Brown's coefficient ^a | Items | Factor loadings |
|------------|-------|-------|--|-------|-----------------|
| PQ | 0.847 | 0.735 | 0.844 | PQ1 | 0.908 |
| | | | | PQ2 | 0.804 |
| GPU | 0.833 | 0.714 | 0.833 | GPU1 | 0.828 |
| | | | | GPU2 | 0.862 |
| EC | 0.858 | 0.676 | 0.858 | EC1 | 0.816 |
| | | | | EC2 | 0.882 |
| | | | | EC3 | 0.765 |
| PCE | 0.893 | 0.743 | 0.893 | PCE1 | 0.865 |
| | | | | PCE2 | 0.868 |
| | | | | PCE3 | 0.852 |
| PI | 0.750 | 0.600 | 0.749 | PI1 | 0.743 |
| | | | | PI2 | 0.805 |
| SI | 0.920 | 0.795 | 0.920 | SI1 | 0.85 |
| | | | | SI2 | 0.927 |
| | | | | SI3 | 0.896 |

^aSpearman–Brown's coefficient is reported for the two-item scale (PQ, GPU, and PI).

TABLE 6 Discriminant validity (beer made with organic ingredients).

| Constructs | Squared construct correlations off-diagonal; AVE on diagonal | | | | | |
|------------|--|--------------|--------------|--------------|--------------|--------------|
| | PQ | GPU | EC | PCE | PI | SI |
| PQ | 0.735 | | | | | |
| GPU | 0.468 | 0.714 | | | | |
| EC | 0.145 | 0.156 | 0.676 | | | |
| PCE | 0.112 | 0.174 | 0.581 | 0.743 | | |
| PI | 0.540 | 0.462 | 0.220 | 0.198 | 0.600 | |
| SI | 0.069 | 0.070 | 0.188 | 0.142 | 0.067 | 0.795 |

IFI = 0.989, CFI = 0.989) that indicate a reasonable fit (Hu & Bentler, 1998; Tabachnick & Fidell, 2007). We also calculate RMSEA = 0.038 and SRMR = 0.0225, which are lower than 0.05 and indicate an excellent fit (MacCallum et al., 1996).

Constructs' convergent validity and reliability were evaluated through Cronbach's alpha/Spearman–Brown's coefficient, composite reliability (CR), and average variance extracted (AVE) (Eisinga et al., 2013; Fornell & Larcker, 1981; Hair et al., 2006). The findings presented in Table 5 revealed that all factor loadings exceeded 0.50 (being the lowest equal to 0.743) and all factors demonstrated a Cronbach's alpha/Spearman–Brown's coefficient above 0.70 (being the lowest equal to 0.749). Furthermore, CR and AVE values were higher than the recommended thresholds of 0.70 (Hair et al., 2006) and 0.50 (Fornell & Larcker, 1981), respectively (being the lowest CR equal to 0.75 and the lowest AVE equal to 0.60). As a result, all constructs demonstrated strong convergent validity and reliability.

Finally, we tested discriminant validity adopting the Fornell and Larcker (1981) criterion. Table 6 shows the correlation matrix and the

TABLE 7 Structural model (beer made with organic ingredients).

| Paths | Standardized coefficients |
|----------|---------------------------|
| PCE → PI | 0.112 |
| SI → PI | −0.044 |
| EC → PI | 0.139* |
| GPU → PI | 0.315** |
| PQ → PI | 0.644** |

Note: $N = 790$; Model fit ($\chi^2/df = 3.382$ ($p = .000$), [$df = 76$], CFI = 0.976, IFI = 0.976, GFI = 0.959, AGFI = 0.936, RMSEA = 0.055, SRMR = 0.0225).

Abbreviations: EC, environmental concern; GPU, green perceived utility; PCE, perceived consumer effectiveness; PQ, perceived quality; PI, purchase intention; SI, social influence.

* $p < .05$, and ** $p < .01$.

AVE of each construct. Following the criterion, we found that squared construct correlation coefficients (off-diagonal) are smaller than the AVE values (on-diagonal), indicating discriminant validity. Overall, the measurement model displays a good fit.

4.3 | Structural equation modeling

The SEM analyzes the impact of different constructs on the purchase intention of beer made with organic ingredients. Model fit indices indicated a good model fit ($\chi^2/df = 3.382$ ($p = .000$), [$df = 76$], CFI = 0.976, IFI = 0.976, GFI = 0.959, AGFI = 0.936, RMSEA = 0.055, SRMR = 0.0225).

Each coefficient depicted in Table 7 represents the strength and direction of the relationship between the predictor variables and the purchase intention. Results show that PCE and SI do not influence

the intention to purchase beer made with organic ingredients; thus, H1 and H2 are not supported. On the contrary, results show that EC, GPU, and PQ, have a positive and significant effect on purchase intention, providing support to H3, H4, and H5.

4.4 | Alternative sustainable solutions

To assess the effect of alternative sustainable solutions on the robustness of the results, the measurement, and structural models were also tested for beer made with Italian ingredients, local ingredients, and beer with biodegradable packaging and recycled packaging. The measurement models showed a satisfactory model fit, with good convergent validity, reliability, and discriminant validity (Tables 8, 9, 10, and 11). Moreover, the structural models indicated a good model fit for all types of eco-sustainable beer (Tables 12, 13, 14, and 15).

For all the types of sustainable beer, *perceived quality*, *environmental concern*, and *green perceived utility* have proven to be strong predictors of *purchase intention*. Thus, H3, H4, and H5 are fully supported. On the contrary, for all the types of sustainable beer, social influence, and perceived consumer effectiveness do not influence purchase intention; hence, H1 and H2 are not supported.

4.5 | Multi-group analysis

In order to analyze the effect of gender on results, a multi-group SEM analysis was performed. Respondents were categorized into two subgroups based on gender. For conducting a multi-group analysis, we applied the steps outlined by Awang (2012) to test the moderating effect of gender on purchase intention. Initially, an evaluation of the moderation effect was conducted on the overall model, utilizing chi-square (χ^2) values for both the constrained model and the unconstrained model (Table 16). Specifically, we constrained the structural weights of the two groups (male/female) to be equal in turn and evaluated the chi-square difference between the constrained and unconstrained models. The observed difference in chi-square was found to be statistically significant only for the path coefficient PQ → PI for beer made with local ingredients and beer with recycled packaging. The multi-group coefficient analysis for the significant paths is reported in Table 17.

Once the moderation effect is established, we determined in which group (males or females) the relationship between PQ on PI is more pronounced. The analysis of the path coefficient for beer made with local ingredients (Table 17) indicates significant and positive relationships between PQ and PI for both genders, with a more

TABLE 8 Summary of the measurement model (beer made with Italian ingredients).

| Constructs | CR | AVE | Cronbach's alpha/Spearman-Brown's coefficient ^a | Items | Factor loadings | |
|--|--------------|--------------|--|--------------|-----------------|--------------|
| PQ | 0.857 | 0.750 | 0.857 | PQ1 | 0.885 | |
| | | | | PQ2 | 0.847 | |
| GPU | 0.829 | 0.708 | 0.829 | GPU1 | 0.863 | |
| | | | | GPU2 | 0.82 | |
| EC | 0.858 | 0.679 | 0.858 | EC1 | 0.817 | |
| | | | | EC2 | 0.882 | |
| | | | | EC3 | 0.765 | |
| PCE | 0.893 | 0.742 | 0.893 | PCE1 | 0.864 | |
| | | | | PCE2 | 0.87 | |
| | | | | PCE3 | 0.851 | |
| PI | 0.777 | 0.637 | 0.772 | PI1 | 0.735 | |
| | | | | PI2 | 0.857 | |
| SI | 0.920 | 0.795 | 0.920 | SI1 | 0.85 | |
| | | | | SI2 | 0.927 | |
| | | | | SI3 | 0.896 | |
| Squared construct correlations off-diagonal; AVE on diagonal | | | | | | |
| Constructs | PQ | GPU | EC | PCE | PI | SI |
| PQ | 0.750 | | | | | |
| GPU | 0.294 | 0.709 | | | | |
| EC | 0.076 | 0.104 | 0.677 | | | |
| PCE | 0.074 | 0.123 | 0.579 | 0.743 | | |
| PI | 0.384 | 0.247 | 0.146 | 0.130 | 0.637 | |
| SI | 0.046 | 0.081 | 0.188 | 0.142 | 0.052 | 0.795 |

Note: $N = 790$; Model fit ($\chi^2/df = 1.858$ ($p = .000$), [$df = 75$], CFI = 0.991, IFI = 0.991, GFI = 0.977, AGFI = 0.963, RMSEA = 0.033, SRMR = 0.0229).

^aSpearman-Brown's coefficient is reported for the two-item scales (PQ, GPU, and PI).

TABLE 9 Summary of the measurement model (beer made with local ingredients).

| Constructs | CR | AVE | Cronbach's alpha/Spearman–Brown's coefficient ^a | Items | Factor loadings | |
|---|--------------|--------------|--|----------------------|-------------------------|--------------|
| PQ | 0.855 | 0.747 | 0.855 | PQ1 PQ2 | 0.852 0.876 | |
| GPU | 0.832 | 0.712 | 0.831 | GPU1 GPU2 | 0.819 0.868 | |
| EC | 0.858 | 0.676 | 0.858 | EC1 EC2 EC3 | 0.817 0.88 0.766 | |
| PCE | 0.893 | 0.743 | 0.893 | PCE1 PCE2 PCE3 | 0.864 0.868 0.853 | |
| PI | 0.731 | 0.581 | 0.714 | PI1 PI2 | 0.638 0.869 | |
| SI | 0.920 | 0.795 | 0.920 | SI1 SI2 SI3 | 0.850 0.927 0.897 | |
| Squared construct correlations off-diagonal; AVE on diagonal | | | | | | |
| Constructs | PQ | GPU | EC | PCE | PI | SI |
| PQ | 0.747 | | | | | |
| GPU | 0.168 | 0.712 | | | | |
| EC | 0.075 | 0.120 | 0.676 | | | |
| PCE | 0.080 | 0.119 | 0.581 | 0.743 | | |
| PI | 0.252 | 0.171 | 0.201 | 0.152 | 0.581 | |
| SI | 0.035 | 0.066 | 0.188 | 0.142 | 0.064 | 0.795 |

Note: $N = 790$; Model fit ($\chi^2/df = 1.731$ ($p = .000$), [$df = 75$], CFI = 0.992, IFI = 0.992, GFI = 0.978, AGFI = 0.966, RMSEA = 0.030, SRMR = 0.0227).

^aSpearman–Brown's coefficient is reported for the two-item scales (PQ, GPU, and PI).

pronounced effect for males than for females. Differently, analyzing the path coefficient for beer with recycled packaging the relationship between PQ and PI is stronger for females.

Table 18 displays all the hypotheses and the results of hypothesis testing.

5 | DISCUSSION AND IMPLICATIONS

5.1 | Discussion

Through a survey of Italian consumers, this study sheds light on the purchase intention of sustainable beer as well as on its determinants. In particular, several sustainable solutions for beer (referred to as product ingredients and packaging materials) have been considered and the effect of gender analyzed.

Results show that consumers declared to highly value some specific information on the beer packaging, such as the materials used in the packaging and related disposal methods, the origin and type of ingredients used, and the use of raw materials alternative to traditional ones. This underlines that consumers are very sensitive to these aspects.

Further, this study highlights that consumers' levels of familiarity with different sustainable solutions may differ. Specifically, while most respondents have purchased beer produced by an Italian company with Italian ingredients and a great part of them have purchased beer with local ingredients, with packaging made from recycled material, and with organic ingredients (so indicating direct experience with these sustainable solutions), a very limited share of consumers declared having purchased beer made with alternative ingredients and biodegradable packaging.

In terms of the perceived quality of different types of sustainable beer, ingredients-related solutions are perceived by a larger percentage of respondents as better quality than conventional ones, as compared with packaging-related solutions. Alternatively, the packaging-related solutions are perceived by a larger percentage of respondents as beneficial for the natural environment compared to ingredient-related ones.

Regarding purchase intention, most respondents declared intention to buy sustainable beer, with the greatest percentages referring to beer made with local and Italian ingredients.

Results from the SEM highlight that perceived quality, green perceived utility, and environmental concern are significant determinants of the purchase intention of sustainable beer, for all types of

TABLE 10 Summary of the measurement model (beer with biodegradable packaging).

| Constructs | CR | AVE | Cronbach's alpha/Spearman–Brown's coefficient ^a | Items | Factor loadings | |
|---|--------------|--------------|--|----------------------|-------------------------|--------------|
| PQ | 0.844 | 0.731 | 0.837 | PQ1 PQ2 | 0.931 0.772 | |
| GPU | 0.813 | 0.684 | 0.812 | GPU1 GPU2 | 0.805 0.849 | |
| EC | 0.858 | 0.676 | 0.858 | EC1 EC2 EC3 | 0.818 0.882 0.763 | |
| PCE | 0.893 | 0.743 | 0.893 | PCE1 PCE2 PCE3 | 0.863 0.869 0.853 | |
| PI | 0.803 | 0.672 | 0.800 | PI1 PI2 | 0.768 0.868 | |
| SI | 0.920 | 0.795 | 0.920 | SI1 SI2 SI3 | 0.850 0.927 0.896 | |
| Squared construct correlations off-diagonal; AVE on diagonal | | | | | | |
| Constructs | PQ | GPU | EC | PCE | PI | SI |
| PQ | 0.731 | | | | | |
| GPU | 0.116 | 0.684 | | | | |
| EC | 0.125 | 0.281 | 0.676 | | | |
| PCE | 0.116 | 0.269 | 0.579 | 0.743 | | |
| PI | 0.375 | 0.334 | 0.285 | 0.250 | 0.672 | |
| SI | 0.068 | 0.075 | 0.187 | 0.142 | 0.095 | 0.795 |

Note: $N = 790$; Model fit ($\chi^2/df = 1.967$ ($p = .000$), [$df = 75$], CFI = 0.990, IFI = 0.990, GFI = 0.976, AGFI = 0.961, RMSEA = 0.035, SRMR = 0.0222).

^aSpearman–Brown's coefficient is reported for the two-item scales (PQ, GPU, and PI).

sustainable solutions. On the contrary, social influence and perceived consumer effectiveness do not affect purchase intention.

The positive effect of perceived quality on purchase intention is in accordance with previous studies' results referring to sustainable consumer behavior for several categories of products, such as for instance clothing (Dangelico et al., 2022a), meat (de Araújo et al., 2022), wine (Pickering, 2023), and biscuits (Dangelico et al., 2024). The positive influence of environmental concern supports previous studies' results on the purchase intention of sustainable biscuits (Dangelico et al., 2024) sustainable fashion products (Dangelico et al., 2022a; Rausch & Kopplin, 2021), package-free products (De Canio et al., 2024), carbon-labeled products (Sun et al., 2023), or general green products (Alzubaidi et al., 2021), among others, but is in contrast with a study on electronic products deriving from industrial symbiosis (Fraccascia et al., 2023). The positive effect of green perceived utility confirms results found for other product categories, such as electronic products deriving from industrial symbiosis (Fraccascia et al., 2023), hybrid vehicles (Kahn, 2007), and green furniture (Xu et al., 2020) but is in contrast with results found for sustainable biscuits (Dangelico et al., 2024). The non-significant effect of social influence is in accordance with results found for sustainable biscuits (Dangelico et al., 2024) and general green products (Alzubaidi

et al., 2021), whereas it is in contrast with results related to electronic products deriving from industrial symbiosis (Fraccascia et al., 2023), solar panels (Roy & Mohapatra, 2022), and electric vehicles (Kim et al., 2014). Finally, the non-significant influence of perceived consumer effectiveness supports results related to sustainable biscuits (for three out of four sustainable solutions; Dangelico et al., 2024) but is in contrast with results related to general green products (Alzubaidi et al., 2021), as well as several categories of products, such as electronic products deriving from industrial symbiosis (Fraccascia et al., 2023), sustainable clothing (Apaolaza et al., 2023), and green smartphones (Raj et al., 2023), for which it was found to be significant.

Taken together, these results show that the determinants of sustainable purchase behavior vary depending on the product category.

With regard to the moderating effect of gender on the relationships between specific determinants and purchase intention, results show that gender has a moderating effect only on the relationship between perceived quality and purchase intention and only for two types of sustainable solutions. Specifically, for beer made with local ingredients, being female negatively moderates the relationship, in contrast with previous studies on beverage food products (Sharif et al., 2023) and fashion products (Das, 2015). On the contrary, for

TABLE 11 Summary of the measurement model (beer with recycled packaging).

| Constructs | CR | AVE | Cronbach's alpha/spearman-Brown's coefficient ^a | Items | Factor loadings | |
|--|--------------|--------------|--|----------------------|-------------------------|--------------|
| PQ | 0.817 | 0.694 | 0.806 | PQ1 PQ2 | 0.924 0.731 | |
| GPU | 0.798 | 0.664 | 0.797 | GPU1 GPU2 | 0.792 0.837 | |
| EC | 0.858 | 0.676 | 0.858 | EC1 EC2 EC3 | 0.82 0.88 0.763 | |
| PCE | 0.893 | 0.742 | 0.893 | PCE1 PCE2 PCE3 | 0.862 0.866 0.857 | |
| PI | 0.728 | 0.574 | 0.723 | PI1 PI2 | 0.695 0.815 | |
| SI | 0.920 | 0.795 | 0.920 | SI1 SI2 SI3 | 0.850 0.926 0.897 | |
| Squared construct correlations off-diagonal; AVE on diagonal | | | | | | |
| Constructs | PQ | GPU | EC | PCE | PI | SI |
| PQ | 0.694 | | | | | |
| GPU | 0.081 | 0.664 | | | | |
| EC | 0.129 | 0.297 | 0.676 | | | |
| PCE | 0.110 | 0.318 | 0.581 | 0.742 | | |
| PI | 0.279 | 0.348 | 0.362 | 0.576 | 0.574 | |
| SI | 0.0610 | 0.060 | 0.187 | 0.143 | 0.113 | 0.795 |

Note: $N = 790$; Model fit ($\chi^2/df = 2.287$ ($p = .000$), [$df = 75$], CFI = 0.986, IFI = 0.986, GFI = 0.976, AGFI = 0.961, RMSEA = 0.040, SRMR = 0.0222).

^aSpearman-Brown's coefficient is reported for the two-item scales (PQ, GPU, and PI).

TABLE 12 Summary of the structural model (beer made with Italian ingredients).

| Paths | Standardized coefficients |
|----------|---------------------------|
| PCE → PI | 0.066 |
| SI → PI | -0.032 |
| EC → PI | 0.229** |
| GPU → PI | 0.227** |
| PQ → PI | 0.738** |

Note: $N = 790$; Model fit ($\chi^2/df = 4.423$ ($p = .000$), [$df = 76$], CFI = 0.950, IFI = 0.964, GFI = 0.948, AGFI = 0.918, RMSEA = 0.066, SRMR = 0.0365).

* $p < .05$, and ** $p < .01$.

TABLE 13 Summary of the structural model (beer made with local ingredients).

| Paths | Standardized coefficients |
|----------|---------------------------|
| PCE → PI | 0.017 |
| SI → PI | 0.023 |
| EC → PI | 0.451** |
| GPU → PI | 0.241** |
| PQ → PI | 0.600** |

Note: $N = 790$; Model fit ($\chi^2/df = 3.900$ ($p = .000$), [$df = 76$], CFI = 0.968, IFI = 0.968, GFI = 0.955, AGFI = 0.929, RMSEA = 0.061, SRMR = 0.0374).

* $p < .05$, and ** $p < .01$.

beer with recycled packaging, being female positively moderates the relationship, so proving support to the results of previous studies (Sharif et al., 2023 and Das, 2015).

These results suggest that the moderating effect of gender on the relationship between determinants and purchase intention is limited to one specific determinant: perceived quality. Further, the significance and the type of moderating effect (positive or negative) depend on the specific type of sustainable solution.

5.2 | Implications

5.2.1 | Theoretical implications

This article presents several elements of novelty and contributes to the literature on sustainable consumer behavior in several ways.

First, while the number of studies on sustainable consumption for other food and beverage product categories, such as wine, is rapidly

TABLE 14 Summary of the structural model (beer with biodegradable packaging).

| Paths | Standardized coefficients |
|----------|---------------------------|
| PCE → PI | 0.065 |
| SI → PI | 0.002 |
| EC → PI | 0.174** |
| GPU → PI | 0.440** |
| PQ → PI | 0.602** |

Note: $N = 790$; Model fit ($\chi^2/df = 4.265$ ($p = .000$), [$df = 76$], CFI = 0.966, IFI = 0.965, GFI = 0.950, AGFI = 0.920, RMSEA = 0.064, SRMR = 0.0329).

* $p < .05$, and ** $p < .01$.

TABLE 15 Summary of the measurement model (beer with recycled packaging).

| Paths | Standardized coefficients |
|----------|---------------------------|
| PCE → PI | 0.129 |
| SI → PI | 0.042 |
| EC → PI | 0.259** |
| GPU → PI | 0.445** |
| PQ → PI | 0.456** |

Note: $N = 790$; Model fit ($\chi^2/df = 3.651$ ($p = .000$), [$df = 76$], CFI = 0.971, IFI = 0.971, GFI = 0.956, AGFI = 0.930, RMSEA = 0.058, SRMR = 0.0333).

* $p < .05$, and ** $p < .01$.

growing (e.g., Cobelli et al., 2021; Sgroi et al., 2023; Vecchio et al., 2023), sustainable consumer behavior for beer has so far been an under-investigated topic, with a limited number of studies (e.g., Carley & Yahng, 2018; Lee et al., 2020). This research sheds light on sustainable consumer behavior in a so far little investigated product category.

Second, with regard to the determinants of purchase intention, this study proposes an extension of the TPB through the integration of perceived value, in accordance with some previous studies (e.g., Fraccascia et al., 2023; Dangelico et al., 2022a). Results show that perceived value factors play a major role in determining purchase intention compared to the TPB factors, among which only environmental concern plays a significant role. These results are consistent across the different types of sustainable solutions.

Third, a comparison of this study's results with extant literature suggests that the determinants of sustainable purchase behavior may vary depending on the product category.

Fourth, this study also contributes to the discourse about gender differences regarding environmental attitudes and pro-environmental behavior. Specifically, it shows that gender has a moderating role only in the relationship between perceived quality and purchase intention.

Fifth, this study highlights that being female moderates the relationship between perceived quality and purchase intention only for beer made with specific types of ingredients (local) and packaging

TABLE 16 Multi-group analysis χ^2 significance.

| Organic ingredients | | | |
|--|------|---------------------|------------|
| Unconstrained model ($\chi^2 = 276.062$; $df = 150$; $p = 0$) | | | |
| Model comparison | df | χ^2 difference | p -value |
| Constrained model SI → PI | 1 | 0.046 | 0.829 |
| Constrained model PCE → PI | 1 | 0.208 | 0.648 |
| Constrained model EC → PI | 1 | 0.139 | 0.710 |
| Constrained model GPU → PI | 1 | 0.172 | 0.678 |
| Constrained model PQ → PI | 1 | 1.268 | 0.260 |
| Italian ingredients | | | |
| Unconstrained model ($\chi^2 = 210.580$; $df = 150$; $p = .001$) | | | |
| Model comparison | Df | χ^2 difference | p -value |
| Constrained model SI → PI | 1 | 0 | 0.991 |
| Constrained model PCE → PI | 1 | 0.152 | 0.152 |
| Constrained model EC → PI | 1 | 0.981 | 0.981 |
| Constrained model GPU → PI | 1 | 0.332 | 0.332 |
| Constrained model PQ → PI | 1 | 2.540 | 0.111 |
| Local ingredients | | | |
| Unconstrained model ($\chi^2 = 217.209$; $df = 150$; $p = 0$) | | | |
| Model comparison | df | χ^2 difference | p -value |
| Constrained model SI → PI | 1 | 0.490 | 0.484 |
| Constrained model PCE → PI | 1 | 0 | 0.985 |
| Constrained model EC → PI | 1 | 1.148 | 0.284 |
| Constrained model GPU → PI | 1 | 1.474 | 0.225 |
| Constrained model PQ → PI | 1 | 4.261 | 0.039 |
| Biodegradable packaging | | | |
| Unconstrained model ($\chi^2 = 234.105$; $df = 150$; $p = 0$) | | | |
| Model comparison | df | χ^2 difference | p -value |
| Constrained model SI → PI | 1 | 1.397 | 0.237 |
| Constrained model PCE → PI | 1 | 0.165 | 0.684 |
| Constrained model EC → PI | 1 | 1.714 | 0.190 |
| Constrained model GPU → PI | 1 | 0.445 | 0.505 |
| Constrained model PQ → PI | 1 | 3.600 | 0.058 |
| Recycled packaging | | | |
| Unconstrained model ($\chi^2 = 241.007$; $df = 150$; $p = 0$) | | | |
| Model comparison | df | χ^2 difference | p -value |
| Constrained model SI → PI | 1 | 0 | 0.985 |
| Constrained model PCE → PI | 1 | 0.973 | 0.324 |
| Constrained model EC → PI | 1 | 0.939 | 0.332 |
| Constrained model GPU → PI | 1 | 1.723 | 0.189 |
| Constrained model PQ → PI | 1 | 4.102 | 0.043 |

(recycled) in two opposite directions (negatively and positively, respectively). These results further strengthen what was suggested by Dangelico et al. (2022a) and (Dangelico et al., 2024) that sustainable

TABLE 17 Multigroup path coefficient analysis.

| Ingredient-related solutions | | | | | | |
|------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Local ingredients | | | | | | |
| | General | | Female | | Male | |
| Path | Std coefficient | <i>p</i> -value | Std coefficient | <i>p</i> -value | Std coefficient | <i>p</i> -value |
| PQ → PI | 0.600 | ** | 0.354 | ** | 0.660 | ** |

| Packaging-related solutions | | | | | | |
|-----------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Recycled | | | | | | |
| | General | | Female | | Male | |
| Path | Std coefficient | <i>p</i> -value | Std coefficient | <i>p</i> -value | Std coefficient | <i>p</i> -value |
| PQ → PI | 0.456 | ** | 0.613 | ** | 0.473 | ** |

TABLE 18 Summary of hypotheses and results.

| Hypotheses | Results—organic ingredients | Results—Italian ingredients | Results -local ingredients | Results—biodegradable packaging | Results—recycled packaging | Overall results |
|--|-----------------------------|-----------------------------|----------------------------|---------------------------------|----------------------------|-----------------|
| H1: Perceived consumer effectiveness positively influences the consumer's intention to purchase sustainable beer. | Not supported | Not supported | Not supported | Not supported | Not supported | Not supported |
| H2: Social influence positively influences the consumer's intention to purchase sustainable beer. | Not supported | Not supported | Not supported | Not supported | Not supported | Not supported |
| H3: Environmental concern positively influences the consumer's intention to purchase sustainable beer. | Supported | Supported | Supported | Supported | Supported | Fully supported |
| H4: Green perceived utility positively influences the consumer's intention to purchase sustainable beer. | Supported | Supported | Supported | Supported | Supported | Fully supported |
| H5: Perceived quality positively influences the consumer's intention to purchase sustainable beer. | Supported | Supported | Supported | Supported | Supported | Fully supported |
| H1a: Gender moderates the relationship between perceived consumer effectiveness and purchase intention—The effect is stronger for females than males | Not supported | Not supported | Not supported | Not supported | Not supported | Not supported |
| H2a: Gender moderates the relationship between social influence and PI—The effect is stronger for female consumers than males | Not Supported | Not Supported | Not Supported | Not Supported | Not Supported | Not supported |
| H3a: Gender moderates the relationship between environmental concern and purchase intention—The effect is stronger for females than males | Not Supported | Not Supported | Not Supported | Not Supported | Not Supported | Not supported |

TABLE 18 (Continued)

| Hypotheses | Results—organic ingredients | Results—Italian ingredients | Results -local ingredients | Results—biodegradable packaging | Results—recycled packaging | Overall results |
|---|-----------------------------|-----------------------------|--|---------------------------------|----------------------------|-----------------|
| H4a: Gender moderates the relationship between green perceived utility and purchase intention—The effect is stronger for females than males | Not Supported | Not Supported | Not Supported | Not Supported | Not Supported | Not supported |
| H5a: Gender moderates the relationship between perceived quality and purchase intention—The effect is stronger for females than males | Not Supported | Not Supported | Partially supported (<i>gender does moderate, but the effect is stronger for males than for females</i>) | Not Supported | Supported | Mixed results |

consumer behavior may be affected by the specific type of sustainable solution that is considered. Thus, when studying sustainable consumer behavior, it should be avoided considering general “green” or “sustainable” products in a specific product category; rather, it is very important to be clear about the sustainable characteristics of products.

Sixth, this study contributes to the literature on sustainable marketing and green consumer behavior for fast-moving consumer goods (FMCGs) (e.g., Niedermeier et al., 2021a, 2021b; Reddy et al., 2023), highlighting consumer perceptions, purchase intention, and its determinants for an FMCG product, beer, that is characterized by a fast-growing market (Fortune Business Insights, 2024).

5.2.2 | Managerial implications

This study offers several managerial implications.

First, marketers should be very careful in providing, on products' packaging, information about the materials used in the packaging and proper disposal methods, the origin and type of ingredients used in the beer, and the use of raw materials alternative to traditional ones, since consumers believe finding these pieces of information when purchasing beer as very important.

Second, given the limited familiarity among consumers with certain sustainable solutions, such as alternative ingredients and biodegradable packaging, marketers should aim at increasing consumers' familiarity with sustainable beer through promotion activities, such as free trials at the points of sale or advertising.

Third, marketers may highlight, either through advertising campaigns or packaging labels, the superior quality and environmental benefits associated with various sustainable solutions, so as to increase consumers' perceived quality and green perceived utility of these solutions and, consequently, consumers' purchase intention.

Fourth, the moderating effect of gender on the relationship between perceived quality and purchase intention, despite being limited to only two out of the five considered sustainable solutions, suggests that gender can be an effective segmentation variable for sustainable beer, which may be used together with psychographic or

behavioral segmentation variables (Kotler et al., 2020). Companies should, thus, develop marketing strategies characterized by a differentiated targeting approach, addressing each market segment with a specific marketing mix.

5.2.3 | Policy implications

Some implications for policy makers can also be drawn from this study. Since environmental concern emerged to be a driver of purchase intention of sustainable products, specific marketing campaigns may be developed by governments in order to raise awareness and sensitivity about environmental problems, so as to encourage consumers' preference for more environmentally-friendly products compared to traditional ones.

6 | LIMITATIONS, FUTURE RESEARCH DIRECTIONS, AND CONCLUSION

This research is characterized by some limitations that are presented in the following. First, this study used a non-probabilistic sample of Italian consumers that is, thus, not representative of the whole country's population. However, the large size of the sample reduces the risks of sampling biases (Atkinson & Flint, 2001). Second, this study is focused on a single country, since national cultural aspects may affect consumer behavior, caution should be made in generalizing the obtained results to other national contexts. Third, the set of sustainability options that have been considered in this study is not meant to be exhaustive of all possible options to make beer more sustainable; for instance, practices referred to production processes have not been considered. Fourth, since consumers' perceptions about sustainable solutions may largely vary based on the product category, caution should be exercised in generalizing results to other product categories.

Several avenues for future research can be suggested. First, with regard to the product category, it would be interesting to test the

developed model referring to other beverage products, such as wine or non-alcoholic drinks, so as to understand whether consumer behavior is consistent across the different product categories of the beverage industry or if there are product-related specificities. Further, future research should investigate whether and to what extent the obtained results are generalizable to other products of the food & beverage industry or to other FMCG product categories. Second, cross-country studies should be conducted in order to understand the influence of national culture on sustainable consumer behavior in the beverage industry and the influence of gender on it. Third, future studies should delve into whether and how sustainable consumer behavior in the beverage industry is affected by recent events, such as the COVID-19 pandemic and geo-political conflicts that have been highlighted as potentially impactful on consumer behavior³ (Dangelico et al., 2022b).

In conclusion, this study highlights that

- the determinants of purchase intention of sustainable beer are environmental concern, perceived quality, and green perceived utility;
- the determinants of purchase intention are not affected by the type of sustainable solution related to the product (ingredients or packaging materials);
- gender moderates the relationship between perceived quality and purchase intention (for two sustainable solutions); and
- the moderating effect of gender depends on the type of sustainable solution.

Thus, can conclude that both consumer gender and type of sustainable solution do matter in explaining consumer behavior toward sustainable beer. We hope that this study stimulates further investigations on the topic of sustainable consumer behavior in a wider and wider set of industries.

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³<https://www.weforum.org/agenda/2022/06/how-inflation-and-the-conflict-in-ukraine-are-impacting-european-consumers/>

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APPENDIX 1: SCALES

| | Type of ingredients | Local | | | Organic | | | Italian | | |
|---|--|---------------|--------------------|------------------------------|----------|--------------------|------------------------------|---------|--------------------|------------------------------|
| | | Mean | Standard deviation | Spearman-Brown's coefficient | Mean | Standard deviation | Spearman-Brown's coefficient | Mean | Standard deviation | Spearman-Brown's coefficient |
| Perceived quality (PQ) | PQ1) I think the quality of beer with the following characteristics is higher than that of conventional beer | 3.718 | 1.038 | 0.855 | 3.647 | 1.100 | 0.844 | 3.667 | 1.091 | 0.857 |
| | PQ2) I think beer with the following characteristics has a better taste than conventional beer | 3.580 | 1.054 | | 3.486 | 1.127 | | 3.504 | 1.084 | |
| Green perceived utility (GPU) | GPU1) I think beer with the following characteristics protects the environment | 3.982 | 0.920 | 0.831 | 4.035 | 1.043 | 0.833 | 3.763 | 1.015 | 0.829 |
| | GPU2) I think beer with the following characteristics can effectively reduce pollution | 3.899 | 0.990 | | 3.825 | 1.111 | | 3.713 | 1.037 | |
| Purchase intention (PI) | PI1) I am likely to buy beer with the following characteristics | 4.276 | 0.850 | 0.714 | 3.841 | 1.017 | 0.749 | 4.320 | 0.842 | 0.772 |
| | PI2) I am willing to buy beer with the following characteristics | 4.477 | 0.720 | | 4.242 | 0.932 | | 4.480 | 0.760 | |
| | Type of packaging | Biodegradable | | | Recycled | | | | | |
| | | Mean | Standard deviation | Spearman-Brown's coefficient | Mean | Standard deviation | Spearman-Brown's coefficient | Mean | Standard deviation | Spearman-Brown's coefficient |
| Perceived quality (PQ) | PQ1) I think the quality of beer with the following characteristics is higher than that of conventional beer | 3.266 | 1.215 | 0.837 | 3.361 | 1.174 | 0.806 | | | |
| | PQ2) I think beer with the following characteristics has a better taste than conventional beer | 2.906 | 1.122 | | 2.973 | 1.089 | | | | |
| Green perceived utility (GPU) | GPU1) I think beer with the following characteristics protects the environment | 4.537 | 0.807 | 0.812 | 4.543 | 0.740 | 0.797 | | | |
| | GPU2) I think beer with the following characteristics can effectively reduce pollution | 4.511 | 0.836 | | 4.504 | 0.796 | | | | |
| Purchase intention (PI) | PI1) I am likely to buy beer with the following characteristics | 3.928 | 1.097 | 0.800 | 4.059 | 0.979 | 0.723 | | | |
| | PI2) I am willing to buy beer with the following characteristics | 4.224 | 0.971 | | 4.359 | 0.832 | | | | |
| | General | Mean | Standard deviation | Cronbach's α | | | | | | |
| Perceived consumer effectiveness | PCE1) It is worth it for the individual consumer to make efforts to preserve and improve the environment. | 4.456 | 0.809 | 0.893 | | | | | | |

| | General | Mean | Standard deviation | Cronbach's α |
|-----------------------------------|--|-------|--------------------|---------------------|
| (PCE) | PCE2) Since each individual can have any effect on environmental problems, what I do can make a meaningful difference | 4.266 | 0.962 | |
| | PCE3) By purchasing products made in an environmentally friendly way, each consumer's behavior can positively affect the environment and society | 4.387 | 0.813 | |
| Environmental concern (EC) | EC1) I am very concerned about the environment | 4.478 | 0.776 | 0.858 |
| | EC2) I would be willing to reduce or change my consumption to help protect the environment | 4.373 | 0.812 | |
| | EC3) Protecting the natural environment increases my quality of life | 4.437 | 0.865 | |
| Social influence (SI) | SI1) People who are important to me think that I should use environmentally friendly products. | 3.466 | 1.052 | 0.920 |
| | SI2) People who influence my behavior think that I should use environmentally friendly products | 3.392 | 1.056 | |
| | SI3) People whose opinions I value prefer that I use environmentally friendly products | 3.524 | 1.025 | |