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Green Purchase Determinants in a Peripheral Region of Europe: How Can Green Marketing Influence Consumers' Decisions? The Mediating Role of Green Awareness of Price

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Abstract: As environmental concerns continue to arise, companies are increasingly turning to green marketing strategies and promoting green purchasing decisions to meet consumer demand for sustainable products and services. Peripheral regions, often overlooked in discussions about sustainability, have a unique opportunity to position themselves as leaders in environmentally responsible practices through green marketing strategies. This can represent an opportunity to boost economic growth while protecting the environment for future generations. This paper studies the influencers of consumer purchasing decisions in a country located in the periphery of Europe. One thousand two hundred fifty-five responses were collected. A multiple linear regression analysis was conducted. It was found that the decision to purchase green products seems to be influenced by factors such as environmental awareness, the perceived quality of green products, the desire to purchase them, and the prospect of a greener future. This study's key findings indicate that price awareness acts as a mediator, amplifying the influence of environmental concerns, perceived quality, willingness to purchase, future estimations, and perceived benefits on consumers' green purchasing decisions. This underscores the importance of consumers' awareness of the pricing for green products. Understanding the factors influencing green purchasing behavior in peripheral regions of Europe is crucial for businesses and policymakers seeking to promote sustainable consumption practices. The current study offers insights for promoting more sustainable consumption practices in these regions.

Keywords: green purchasing decisions; sustainable consumer behavior; green consumer; peripheral region of Europe; green product

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1. Introduction

As environmental concerns grow, understanding green marketing and green purchasing decisions (GPD) is critical in the 21st century. Green marketing emerged as a response to these concerns, promoting products and services that have less environmental impact and contribute to sustainable development (Boztepe 2012; Parhizgar and Vesal 2016). In addition, sustainability has become a growing concern for consumers, who are increasingly paying attention to how companies absorb and market their products (Ferreira et al. 2023), so companies need to invest in green marketing to meet consumer demands and promote a more sustainable future (Gomes et al. 2023).

GPD is a way for consumers to demonstrate their commitment to sustainable development. Studies have shown that environmental concerns significantly impact consumers' purchasing decisions (Chen et al. 2022). Research carried out by Chen et al. (2022) examined how environmental concerns affect consumers' decisions to buy green products. This study

identified five key factors that have an impact on this behavior. The authors found that consumers more concerned about the environment are more likely to make eco-friendly purchasing decisions (Chen et al. 2022).

Similarly, research by Zhang and Dong (2020) on the influence of individual factors on green purchasing behavior shows that environmental knowledge and awareness play a crucial role in influencing consumer behavior. According to Zhang and Dong (2020), individuals with greater knowledge about environmental issues tend to make more sustainable choices when purchasing. Another study by Zhuang et al. (2021) also supports the idea that environmental knowledge is critical in influencing consumers' behavior. The authors found that as consumers accumulate environmental knowledge, they pay more attention to purchasing green products, thus supporting the view that environmental issues significantly impact consumers' purchasing decisions (Zhuang et al. 2021). These studies provide compelling evidence that environmental issues are critical in influencing consumer behavior; therefore, companies that address these issues through eco-friendly products and sustainable practices are more likely to attract environmentally conscious consumers (Gomes et al. 2023).

In addition to environmentally conscious consumers, the perception of a product's environmental benefits is an essential factor affecting consumer decision-making (Nekmahmud and Farkas 2020). Implementing green marketing strategies considering GPD is essential to face environmental challenges and achieve sustainable development goals (Gomes et al. 2023). Environmental degradation threatens human well-being and the achievement of these goals. In addition, consumers' lack of awareness of environmental issues can lead companies to make the wrong purchasing decisions and greenwashing behaviors (Mondini et al. 2018).

Although companies' behaviors are not always desirable, green products have been increasingly valued worldwide; however, it is important to remember that not all regions have the same access to products and services. Difficulties are accentuated in peripheral regions (Gomes et al. 2021; Lopes et al. 2023). Peripheral regions refer to areas that are geographically, economically, or socially on the fringes relative to central, more developed, or economically dominant areas (Gomes et al. 2021; Lopes et al. 2022). In peripheral regions, there may be some added difficulties concerning green products. According to Ferraz et al. (2016) and Colares and Mattar (2016), some of the possible difficulties in peripheral regions are (1) Limited availability: often, companies that offer green products are located in more central and urban areas, which can make access to these products more difficult in peripheral regions; (2) High price: some green products may be more expensive than conventional products, making them inaccessible to low-income people living in peripheral regions; (3) Lack of awareness: many people are still not familiar with the importance of green products and their benefits for the environment and human health, and this can lead to a lack of demand for these products in peripheral regions; (4) Lack of infrastructure: in some peripheral regions, there may be a lack of adequate infrastructure to support the production and distribution of green products. What are the main factors affecting consumers' green purchasing decisions in a country located on the periphery of Europe?

Portugal has actively implemented initiatives to boost renewable energy production in line with global sustainable development goals. A key measure includes regulating the injection of renewable gases into existing energy systems (PNEC 2023) and ensuring the efficient integration of renewable energy sources, such as wind and solar, into the national grid. The country also focuses on developing technologies for green hydrogen production from renewable sources, diversifying its energy mix, and supporting reducing carbon emissions (PNEC 2023). In promoting renewable energy, Portugal aims to protect and enhance its natural resources, creating a sustainable energy future (Governo da República Portuguesa 2024). Additionally, Portugal is a pioneer in circular economy practices, demonstrated by its Circular Economy Action Plan, which minimizes dependence on raw materials and reduces waste (APA 2022). This plan includes strategic actions such as encouraging sus-

tainable production processes, implementing green taxes, developing recycling and reuse infrastructure, and fostering a more sustainable economic environment while addressing the challenges of the traditional linear economy (CCDR 2019). In agriculture and fishing, legislation and incentives have been enacted to promote sustainable practices, focusing on organic farming techniques and sustainable fishing methods. The government offers financial incentives to farmers and fishermen adopting eco-friendly practices, ensuring that economic growth aligns with natural resource preservation and long-term sustainability goals (Diário da República 2023).

In Portugal, according to Correia (2021), sustainable products are increasingly present in the shopping cart of Portuguese consumers, with 52% stating that they have already added these products to their purchases several times. In addition, nine out of ten respondents value sustainable products, companies, and brands; however, only 11% mentioned that they chose fully sustainable companies and products when shopping. Nevertheless, 72% of Portuguese participants are optimistic that companies will accelerate their ecological transition measures. Although most people occasionally buy sustainable products, 61% of consumers pay little or no attention to sustainability issues for most products. The most sustainable products include food (62%), school and office supplies (56%), and technology products (52%). Less compliant products include toys, clothing, footwear, and other accessories (56%) and personal care products, cosmetics, and colored cosmetics (51%). These data also show that 76% of consumers surveyed demand that more products and services have environmental protection certificates for better buying options; however, 74% of consumers do not want to pay more for sustainability, and 92% feel that their financial capacity to buy sustainable products/services has decreased (Correia 2021).

In light of the above, understanding the market for green products in Portugal is essential for companies looking to tap into this growing market. As the public's knowledge of environmental issues and desire to reduce their carbon footprint increases (Zhang and Dong 2020), so does their awareness of their purchases and ecological impact (Gomes et al. 2023; Lopes et al. 2024a). Consequently, the demand for eco-friendly products is growing. This favorable trend is providing opportunities for companies to satisfy this developing market. In Portugal's green products market, understanding the factors that affect consumers' purchasing choices is vital to success (Lopes et al. 2024a; White et al. 2019b). Who are the influencers of consumers' purchasing decisions for green products in Portugal? This study analyzes the factors influencing Portuguese consumers' purchasing decisions regarding green products. This paper addressed the influencers of consumers' purchasing decisions in Portugal, a region located on the periphery of Europe.

In this context, this study characterizes the behavior of Portuguese consumers in the context of sustainability and contributes insights about the mechanisms that drive GPD, demonstrated by their substantial effect on guiding sustainable consumer choices. So, this study offers insights into the factors that drive green purchasing decisions, emphasizing the multifaceted nature of consumer behavior in the context of sustainability in a peripheral region of Europe. Moreover, provides insights about the influence, incidence, and role of variables that affect GPD. Thus, it establishes that environmental concerns, the perceived quality of green products, and the willingness to purchase green are fundamental determinants of green purchasing decisions. Additionally, this study highlights the importance of future estimations of green marketing, awareness of green pricing, and perceived benefits of green products in shaping these decisions. Crucially, the research uncovers that the awareness of green pricing significantly enhances the impact of these factors. Specifically, it shows that environmental concerns, perceived quality, willingness to purchase, future estimation, and perceived benefits all positively influence green purchasing decisions to a greater extent when mediated by an understanding of green awareness of price.

2. Literature Review

Signaling theory, a framework rooted in economics and evolutionary biology, has become increasingly relevant in consumer behavior studies, particularly in understanding

green purchasing decisions. This theory explains how sellers convey information about their products' quality or attributes through signals (such as branding, pricing, and certifications) to reduce information asymmetry between buyers and sellers (Zhang and Dong 2020). In the context of green purchasing, signaling theory suggests that consumers rely on signals to identify environmentally friendly products, as these signals help them make informed purchasing choices. Empirical evidence from scientific articles provides a robust link between signaling theory and green purchasing decisions, highlighting the theory's practical implications in consumer markets (Yusoff et al. 2023). Various studies reaffirm the signaling theory by demonstrating how consumers use green signals to assess product quality and environmental impact (Gomes et al. 2023; Le et al. 2024). Groening et al. (2018) indicate that consumers with a high environmental consciousness are more likely to be influenced by eco-labels and certifications, as these signals align with their values and beliefs. Moreover, signaling theory helps explain why consumers might choose products with green certifications even at higher prices, as the perceived benefits outweigh the costs (Gomes et al. 2023). This body of research underscores the critical role of signaling in facilitating informed consumer choices and promoting sustainable purchasing behaviors.

Green purchasing decisions are shaped by various factors, including environmental concerns, green perceived quality, and green willingness to purchase. Other influential elements include green future estimation of green marketing, green awareness of price, and green perceived benefits. These factors contribute to consumers' overall green purchasing decisions, reflecting the complex interplay between individual awareness, perceptions, and future expectations regarding sustainable products (Lopes et al. 2024a). These factors shape consumer behavior regarding green purchasing decisions (Ogiemwonyi et al. 2023). In order to develop effective marketing strategies, it is essential to understand the interaction between these factors and how they influence green purchasing decisions. Thus, it is important to develop a more comprehensive understanding of the complex relationship between green purchasing decisions and consumer behavior (Gomes et al. 2023; Zhang and Dong 2020).

2.1. Green Purchasing Decisions

Green purchasing decisions (GPD) refer to selecting and acquiring products and services with minimal environmental impact (Gomes et al. 2023; Vazifehdoust et al. 2013). These decisions are becoming increasingly important in today's society as consumers become more aware of the negative impact of their consumption habits on the environment (Zhang et al. 2022). Green purchasing decisions can significantly impact the environment, as they can reduce the amount of waste generated, decrease the use of non-renewable resources, and lower greenhouse gas emissions (Correia et al. 2023). Various factors impact consumer attitudes and behavior towards eco-friendly products, affecting their green purchasing decisions. According to a systematic review by Zhang and Dong (2020), the main factors influencing consumers' green purchasing behavior include personal values, environmental awareness, social norms, and product attributes. Furthermore, Joshi and Rahman (2015) identify the main motivations, facilitators, and barriers influencing the decision to purchase green products, including price, availability, and perceived quality. Thus, understanding these factors is critical for companies to effectively market their green products to consumers and encourage green purchasing behavior.

Environmentally friendly products possess considerable social value and have the potential to shape consumers' behavior towards making more sustainable purchasing decisions. Parker et al. (2023) state that emotional and social values are crucial in forming GPD. Zhuang et al. (2021) discovered that consumers' inclination to purchase eco-friendly products is influenced not only by individual factors but also by the social environment and other people. Similarly, Dikici et al. (2022) observed a strong correlation between individuals' values related to green consumption and their green purchasing behavior. Thus, promoting green products' social and environmental benefits can encourage consumers to

make more sustainable purchasing decisions (Alam et al. 2024; Nekmahmud et al. 2022; Reddy et al. 2023).

GPD can significantly impact the environment by reducing the negative environmental impact of products and services (Correia et al. 2023). Mishal et al. (2017) found a link between GPD and measures of environmental consciousness, highlighting the importance of environmental knowledge in influencing consumer behavior. Additionally, Roy (2023) highlighted the significance of consumer knowledge in influencing students' GPD and promoting a better environment. Hussain and Huang (2022) found that GPD can directly and indirectly impact the environment, making it easier for consumers to make sustainable choices.

Green purchase intention, products, and buying behavior have been studied in different contexts worldwide. For example, in Portugal, a study by Correia et al. (2023) explored whether consumers' attention to corporate green marketing communication affects their purchasing behavior. Similarly, Zhang and Dong (2020) found that culture is vital in shaping consumers' green purchasing behavior; therefore, understanding the cultural, social, and psychological factors influencing green purchasing behavior is crucial for companies to promote sustainable consumption and contribute to environmental protection (Lopes et al. 2024a; Sharma et al. 2022; Yener et al. 2023).

2.2. Formulation of Hypotheses

2.2.1. Environmental Concerns

Environmental concerns (ECs) refer to concerns with air, water, and soil quality in the natural environment (Gomes et al. 2023). The ongoing overexploitation and degradation of natural resources pose severe threats to both human life and the environment (Fransson and Garling 1999). The environmental impact refers to any environmental change attributed to a product throughout its life cycle (Ferreira et al. 2023); therefore, addressing ECs is essential to promote the sustainability of natural resources and preserve a healthy environment for future generations.

Consumer awareness and environmental concerns significantly influence their impact on the environment. As consumers become increasingly informed, they are more likely to make environmentally conscious purchasing decisions, reflecting a growing trend toward sustainability (Lopes et al. 2024a; Minton and Rose 1997). A 2021 global survey conducted across 24 countries found that 58% of adults are now more aware of their environmental impact, and 85% expressed willingness to take action (Mastercard 2021); however, barriers such as planned obsolescence, waste levels, and the "awareness-behavior" gap prevent individuals from fully embracing sustainable lifestyles (Restya 2022); therefore, addressing these barriers to environmentally responsible behavior is essential for fostering a sustainable future. ECs have emerged as a key predictor in the analysis of ecological behavior (Chen et al. 2022). Reducing beliefs that justify unsustainable behavior and promoting pro-environmental behaviors are crucial steps (Balundė et al. 2019). Tackling climate change and ECs effectively requires collaborative action from individuals, businesses, and governments, ensuring the preservation of natural resources for future generations (Gomes et al. 2023).

The relationship between ECs, green product purchases, and environmentally conscious actions is complex and sometimes inconsistent. Bamberg (2003) suggested that ECs indirectly influence specific behaviors, meaning that ECs shape actions through situation-specific beliefs and attitudes. Environmental attitudes can partially mediate the effect of ECs on an individual's intent to purchase eco-friendly products and determine their likelihood of adopting more sustainable behaviors (Onurlubaş 2019). ECs are a primary motivator for consumers to purchase organic products (Singh and Verma 2017) and are a significant predictor of intentions to purchase green products (Asif et al. 2018).

H1. *Green purchasing decisions depend on environmental concerns.*

2.2.2. Green Perceived Quality

Green perceived quality (GPQ) refers to consumers' perception of products and services that are ecologically sound based on their environmental attributes and sustainability practices (Gomes et al. 2023; Huang and Chiu 2024). This perception is a critical factor influencing both consumer behavior and corporate strategies, as it can shape consumers' purchasing decisions and brand loyalty. Several factors influence people's GPQ, including product availability, pricing, functional quality, and environmental certifications (Ferraz et al. 2016). Companies prioritizing environmental sustainability in their operations and offerings can positively enhance their GPQ, attracting a larger segment of environmentally conscious consumers. Furthermore, studies have shown that higher GPQ contributes to greater consumer loyalty and a stronger intention to repurchase eco-friendly products (Ansu-Mensah 2021).

The impact of GPQ on consumer behavior is substantial. Research indicates that consumers are more inclined to purchase eco-friendly products when they perceive them as having high quality, both in terms of functionality and environmental impact (Ferraz et al. 2016). Furthermore, GPQ can positively influence consumer satisfaction and trust, essential drivers of repeat purchase intentions (Boueri et al. 2021; Xu et al. 2022).

Companies can also leverage GPQ as a differentiation strategy and competitive advantage. Companies can attract environmentally conscious consumers and position themselves in the marketplace by demonstrating a genuine commitment to environmental sustainability; however, GPQ must reflect authentic environmental benefits rather than serving solely as a marketing tactic (Lozano and Huisingh 2011). Greenwashing, or making false or exaggerated environmental claims, can severely harm GPQ and consumer trust in green products (Alfenas et al. 2018; Gomes et al. 2023).

H2. *Green purchasing decisions depend on the perceived quality of green.*

2.2.3. Green Willingness to Purchase

Green willingness to purchase (GWP) refers to consumers' readiness and desire to buy green and sustainable products, which are often designed to reduce environmental impact (García-Salirrosas et al. 2023; Lopes et al. 2024a; Nekmahmud and Farkas 2020). Various factors, such as green perceived benefits, green awareness of price, and green purchase intention, shape this willingness. These products' perceived value (both positive and negative) directly influences GWP. One of the notable challenges of GWP is the typically higher price point of green products compared to conventional alternatives (Bergamaschi et al. 2022). As a result, consumers often need to weigh the perceived environmental and personal benefits of purchasing green products against the additional costs (Barbu et al. 2022; Kovacs and Keresztes 2022). Moreover, consumers' environmental awareness and sustainable consumption behaviors significantly influence their GWP (García-Salirrosas et al. 2023). Although interest in eco-friendly products is on the rise, research shows that there is a gap between consumers' expressed willingness to purchase green products and their actual purchasing behavior (Lira et al. 2022).

Several factors influence GWP, including environmental concern, green perceived quality, and green perceived benefits (Lopes et al. 2024a; Nekmahmud and Farkas 2020; Roy 2023). Environmentally conscious consumers are typically more inclined to purchase green products, and those who perceive high quality and significant benefits in these products are even more likely to follow through with a purchase (Nekmahmud and Farkas 2020). Additionally, green awareness of price and future projections related to green marketing positively impact GWP (Zhuang et al. 2021). Kamalanon et al. (2022) found a positive and substantial link between green purchase intention and actual green purchasing behavior. Similarly, Zhuang et al. (2021) noted that green perceived value, attitudes, and trust play a critical role in strengthening green purchase intentions. Skepticism about green claims and environmental concerns can also affect consumers' purchase intentions and green purchasing behavior (Junior et al. 2016). Other factors that predict green shopping behavior

include demographic factors such as age, education level, and income (Nekmahmud and Farkas 2020). In this way, GWP is a significant determinant of consumer purchasing decisions, shaping their overall buying behavior (Gomes et al. 2023; Zhang and Dong 2020).

H3. *Green purchasing decisions depend on the green willingness to purchase.*

2.2.4. Green Future Estimation of Green Marketing

Green future estimation (GFE) is a concept that has attracted attention in recent years as a strategic tool to forecast future trends in green marketing. GFE involves predicting shifts in environmental trends and anticipating consumer behavior related to green products (Gomes et al. 2023; Lopes et al. 2024b; Nekmahmud and Farkas 2020). Through GFE, companies can gain insights into the potential demand for green products and adapt their marketing strategies accordingly. This approach enables a more effective allocation of resources, fostering efficiency and helping companies to achieve a competitive edge in the green market (Zandoná et al. 2016).

Both benefits and challenges are associated with implementing GFE in green marketing strategies. On the one hand, GFE can offer companies valuable foresight into emerging trends, enabling them to design proactive marketing campaigns and position themselves favorably in the market (Moravcikova et al. 2017). On the other hand, GFE predictions are not always precise, which may lead companies to invest in product development and campaigns that fail to align with actual consumer behavior. Furthermore, GFE can be costly, resource-intensive, and impractical for all businesses, especially smaller companies with limited budgets.

Despite these potential limitations, green marketing strategies and tools such as GFE are increasingly essential for companies aiming to capitalize on the expanding eco-conscious consumer base. The global green technology and sustainability market is expected to experience substantial growth in the coming years, underscoring the rising demand for eco-friendly products and sustainable practices (Gomes et al. 2023). By incorporating GFE into their green marketing strategies, companies can better meet this demand and secure a competitive advantage in the evolving marketplace (Severo et al. 2020).

H4. *The decision to purchase green depends on the future estimation of green marketing.*

2.2.5. Green Awareness of Price

Green awareness of price (GAP) is a concept that refers to consumers' willingness to pay a premium for environmentally friendly products, reflecting their commitment to sustainability and the perceived value of green attributes. A lack of awareness of the benefits associated with green products can prevent consumers from embracing opportunities for improved quality of life, cost savings, and efficiency gains (Ansu-Mensah 2021; Lopes et al. 2024a). GAP is often used to measure the extent to which consumers are prepared to invest in eco-friendly products, indicating the importance of sustainability over cost (Joshi and Rahman 2015).

The study of GAP has become a prominent research area, with various scholars examining its implications. Ren et al. (2020) conducted a systematic literature review on Green and Sustainable Marketing, highlighting the evolution of GAP and identifying key themes within its knowledge structure. Similarly, Joshi and Rahman (2015) analyzed the disconnect between consumers' favorable attitudes towards green products and their actual purchasing behavior, a phenomenon also influenced by GAP. Moreover, the green purchasing decision process is heavily impacted by GAP, and multiple studies have explored the factors contributing to this discrepancy, including the role of product type in what is known as the "green gap" (Ren et al. 2020). The difference between consumers' environmental attitudes and actual green purchasing behavior is referred to as the "attitude-green behavior gap," a critical challenge for companies aiming to meet corporate and sustainable development goals (Gomes et al. 2023; Kamalanon et al. 2022)

Further research has recognized GAP as a significant predictor of consumers' intentions to buy green products (Nekmahmud and Farkas 2020). Additionally, the literature underscores that GAP can provide insights into the actual purchasing behavior related to green products. It serves as a useful indicator for companies aiming to tailor their strategies to eco-conscious consumers (Ansu-Mensah 2021; Gomes et al. 2023).

H5. *Green purchasing decisions depend on green awareness of the price.*

2.2.6. Green Perceived Benefits

Green perceived benefits (GPB) refer to the positive attributes that consumers associate with using green products or adopting environmentally friendly behaviors (Asl and Khoddami 2023; Wu et al. 2024). GPB encompasses consumers' beliefs about how green products contribute to enhanced personal health, reduced environmental impact, and potential cost savings over time. This concept is critical because it is a primary driver in shaping consumers' decisions to purchase green products (Nekmahmud and Farkas 2020).

The literature on GPB has explored a range of factors that influence how individuals perceive the benefits associated with green products. For instance, research highlights that consumers' environmental concerns, levels of green awareness, and psychological factors play a role in shaping their perceptions of GPB (Kamalanon et al. 2022; Kim and Ha 2022). Additionally, studies show that a company's perceived image and the consumer's awareness of environmental consequences further influence GPB, making it a complex and multi-dimensional construct (Kamalanon et al. 2022). The literature also suggests that GPB is a key predictor of green purchasing decisions, with consumer perceptions of green product benefits influencing their attitudes and purchase intentions (Gomes et al. 2023; Kamalanon et al. 2022; Lopes et al. 2024a; Nekmahmud and Farkas 2020).

Furthermore, research indicates that GPB can be forecasted based on green behavioral intention, as consumers tend to view green products as healthier and of superior quality, associating them with substantial perceived benefits (Asl and Khoddami 2023). A study by Gomes et al. (2023) found that consumers not only evaluate green products more favorably but also link them to significant personal and societal advantages. Consequently, the perception of environmental and social benefits is directly tied to a growing demand for green products, suggesting that as consumers' perceptions of these benefits strengthen, so too does their likelihood of purchasing green products (Lopes et al. 2024a; Machová et al. 2022).

H6. *Green purchasing decisions depend on green perceived benefits.*

2.2.7. The Mediation Role of Green Awareness of Price

The green awareness of price can act as a mediator between environmental concerns, green perceived quality, green willingness to purchase, green future estimation, green perceived benefits, and the decision to buy green. Green price awareness functions as a critical mediator by influencing how environmental concerns translate into green purchasing decisions. Consumers with heightened environmental concerns are more likely to develop a stronger intention to purchase green products when they are aware of green pricing strategies and can contextualize the price as a reflection of quality and environmental benefits (Kim and Lee 2023). Informed consumers are inclined to interpret the costs of green products as an investment, considering the advantages not only for the environment but also in terms of long-term personal and financial well-being (Lopes et al. 2024a). Consequently, framing the pricing of green products within a cost–benefit perspective can enhance sustainable consumer behavior, bridging the gap between environmental concerns and purchasing intentions.

H7. *Environmental concerns positively influence green purchasing decisions when mediated by green awareness of price.*

The mediating role of green awareness of price significantly influences the intersection of green perceived quality and green purchasing decisions. Green price awareness serves as an essential mediator by shaping how consumers' perceptions of green product quality influence their purchasing intentions. Studies have shown that when consumers perceive high quality in green products, their willingness to purchase these products is strengthened if they also understand the premium price associated with them and view it as justified (Lopes et al. 2024a). This awareness of price, combined with perceived quality, enhances consumers' assessment of the overall value of green products, emphasizing the benefits of choosing green options over non-green alternatives. The relationship between green perceived quality and purchasing decisions reveals that consumers evaluate both the intrinsic qualities of the product and the perceived price–quality ratio, particularly when these products align with principles of environmental sustainability (Medeiros et al. 2016). This dual awareness supports the idea that green perceived quality, when mediated by price awareness, positively influences green purchasing decisions.

H8. *Green perceived quality positively influences green purchasing decisions when mediated by green price awareness.*

The intricate relationship between a consumer's green willingness to purchase and their actual green purchasing decisions is significantly mediated by their awareness of the price of green products. This mediation shows that consumers with a strong inclination to make environmentally friendly purchases are more likely to follow through with these decisions when they are aware of the pricing strategies associated with green products (Kumar et al. 2021). This awareness enhances the perceived value of green products, reinforcing the consumer's initial willingness and making the higher price more acceptable as it aligns with their environmental priorities. Even though environmentalism may not directly affect some social behaviors, such as collectivism, it does have a significant impact on environmentally friendly purchasing behaviors (Lopes et al. 2024a). This suggests that a consumer's green price awareness serves as a crucial intermediary, bridging the gap between green purchasing intentions and actual purchasing decisions by making the price seem more justified and acceptable.

H9. *Green willingness to purchase positively influences green purchasing decisions when mediated by green price awareness.*

The mediation effect of green awareness of price on the relationship between green future estimation and green purchasing decisions cannot be overstated. Green price awareness plays a critical role in translating consumers' positive expectations of a sustainable future into actual purchasing decisions. Gomes et al. (2023) indicate that consumers who recognize the long-term price benefits of green products—including cost savings and positive environmental impact—are more likely to develop a stronger commitment to purchase such products. This effect is particularly evident among young consumers, who often represent a demographic that is both price-sensitive and environmentally conscious (Lopes et al. 2024a). When consumers understand the value of green pricing in the context of future sustainability, the influence of green future estimation on purchasing decisions becomes significantly stronger, as they perceive green products as an investment in both environmental and financial well-being.

H10. *Green future estimation positively influences green purchasing decisions when mediated by green price awareness.*

The mediating role of green awareness of price significantly influences the intersection of green perceived benefits and green purchasing decisions. Green price awareness acts as a crucial mediator by enhancing the effect of green perceived benefits on purchasing intentions. Wu et al. (2024), examining the green purchasing behaviors of automotive

consumers, found that when individuals are informed about the environmental benefits of green vehicles and understand the premium pricing associated with these greener options, their likelihood of choosing green products significantly increases. This indicates that while green perceived benefits positively influence green purchasing decisions, this influence is considerably strengthened when consumers recognize that the price of the product reflects its environmental value and long-term benefits.

H11. *Green perceived benefits positively influence green purchasing decisions when mediated by green awareness of price.*

Considering what was indicated above, in Figure 1, we can visualize the research model.

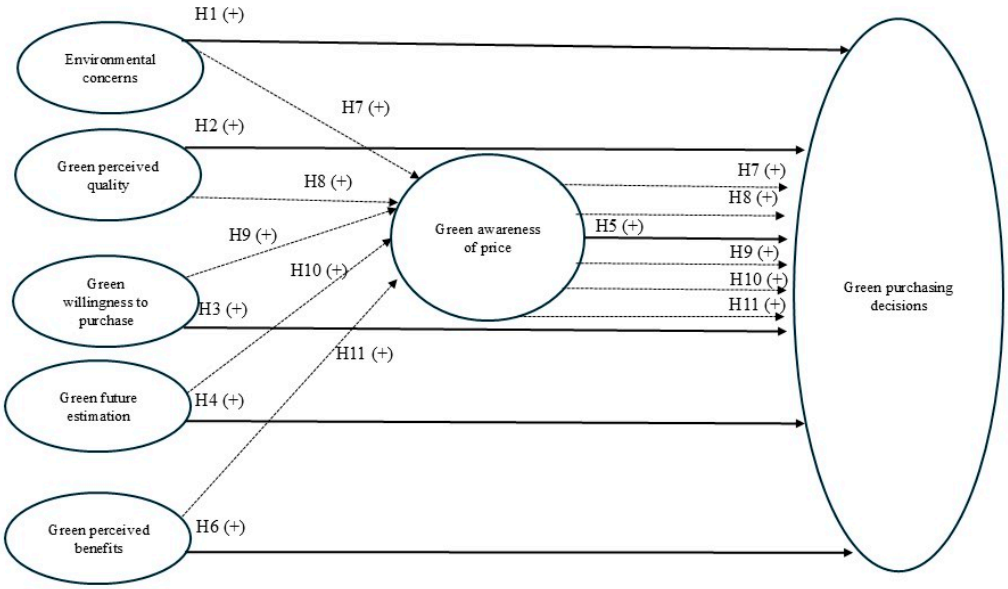

Figure 1. Research model. Note: Direct effects (→) and mediating effects (⇢).

3. Method

3.1. Participants

The sample comprises 927 participants, 584 women (63%), and 343 men (37%), who answered that they usually buy green products and are distributed across 15 districts of Portugal. The participants showed a mean age of 25.78 (SD = 10.99) years old. Concerning employment status, 493 (53.8%) reported being students, 245 (26.7%) were employed, 119 (13%) were working students, 40 (4.4%) were self-employed, 11 (1.2%) unemployed, and 9 (1%) were retired. Concerning years of education, 449 (49%) participants completed secondary/high school, 336 (36.6%) had a bachelor's degree, 78 (8.5%) had a master's degree, 9 (1%) a doctoral degree, 8 (0.8%) had completed six years of education, and 4 (0.4%) participants had completed four years of education. The more endorsed monthly income ranged between 0 and 665 euros (n = 491; 53.5%), followed by the interval between 666 and 850 euros (n = 129; 14.1%) and between 1001 and 1500 euros, and 38 participants (4.1%) mentioned having a monthly income higher than 2000 euros.

3.2. Instruments

A sociodemographic questionnaire described the participants' demographic characteristics (gender, age, employment status, salary level, and education level).

The questionnaire is adapted from Nekmahmud and Farkas (2020). The questionnaire consists of 21 items encompassing seven dimensions: environmental concern (ECs; four items; e.g., "*I am a strong believer in the preservation of nature and wildlife*"), green perceived benefits (GPB; two items; e.g., "*I think green products are good for health*"), green perceived quality (GPQ; three items; "*Green products have an acceptable standard of quality*"), green

awareness of price (GAP; two items; e.g., "*I would choose environmentally friendly goods and services, campaigns or companies if the price were the same*"), green willingness to purchase (GWP; two items; e.g., "I'm *willing to pay more for environmentally friendly products*"), green future estimation (GFE; four items; e.g., "*I think that green product will be popular in our country*"), and green purchase decision (GPD; four items; e.g., "*I would like to increase the purchase/use of green products for me*"). The first six constructs are independent variables, while the last construct is the dependent variable. The items are scored using a 5-point Likert scale, ranging from *strongly disagree* (1) to *strongly agree* (5), was used. In the original study (Nekmahmud and Farkas 2020), Chronbach alpha values ranged from 0.73 (GPB) to 0.88 (ECs). In the current study, these values ranged from 0.38 (GPB) to 0.80 (ECs and GPD).

3.3. Procedures

The questionnaire adapted from Nekmahmud and Farkas (2020) was translated from English to European Portuguese. The original questionnaire instructions and items were translated from English to Portuguese by a native English speaker fluent in Portuguese. In the second step, the research team back-translated this Portuguese version to English and inspected each item's content correspondence (Erkut 2010). Slight modifications were made to match the original version. In a succeeding pilot study, 15 undergraduate students completed the Portuguese version and commented on the items' clarity and comprehensibility. These students did not describe difficulties or inconsistencies. The International Test Commission (2017) guidelines were considered in these procedures.

The Google Forms platform link for participation was disseminated through social media platforms such as WhatsApp, Facebook, and Instagram. This study's scope and aims were provided to the participants in an information sheet. Participation was voluntary, and anonymity and confidentiality of data were guaranteed. Informed consent was requested. Online data collection occurred between September 2023 and December 2023. A total of 1255 responses were collected, 328 of which were excluded because participants did not have the habit of buying green products; therefore, the sample comprised 927 valid responses. This study's dissemination and recruitment tried to ensure the inclusion of participants' diversity, particularly regarding various social and economic backgrounds, thus minimizing potential bias. Although the snowball sampling technique has limitations, the sample includes participants from different geographic regions, ages, genders, education levels, and other relevant demographic characteristics.

3.4. Statistical Analysis

Data were analyzed using the IBM SPSS Statistics 28 and the JASP software package version 0.16.4 (JASP Team 2022). The participants' mean age and standard deviation were calculated to characterize the sample, and frequencies and percentages were computed for gender, employment status, education, and monthly income.

A CFA was conducted using the Weighted Least Square Mean and Variance (WLSMV) estimation method (Li 2016) to examine whether the questionnaire Portuguese version would fit a six-factor model comparable to the one found in the original version. Structure Equation Model (SEM) analysis was conducted. The following goodness-of-fit indices assessed the model fit: CMIN/*df* (values between 2 and 5 demonstrating good fit; Comparative Fit Index (CFI) and Tucker and Lewis Index (TLI) indicating an adequate model fit with values ranging from 0.90 to 0.95; and the Standardized Root Mean Square Residual (SRMR) showing an acceptable fit with values lower than 0.08 (Hu and Bentler 1999). Additionally, the Root Mean Square Error of Approximation (RMSEA) was computed (IC = 90%; values between 0.05 and 0.08 suggest an acceptable fit (Kline 2005). Items' local adjustment was inspected using standardized regression weights and squared multiple correlations. Standardized regression weights greater than 0.40 and squared multiple correlations greater than 0.25 were defined as acceptable (Tabachnick and Fidell 2013). The questionnaire items analyses included the computation of means, standard deviations, and item-total correlations. Cronbach alpha was calculated to assess the questionnaire's reliability. Values

higher than 0.70 indicate good reliability (Field 2013). The average variance extracted (AVE) was computed to establish discriminant validity. The AVE formula (Fornell and Larcker 1981) was used to compute AVE results. Pearson correlations were calculated as a preliminary analysis for conducting multiple linear regression. The green purchasing decision dimension (GPD) was the dependent variable for the regression analysis. In multiple linear regression, an adjusted R-squared was used, indicating the prediction's strength (Hays 1963). Regression was calculated after confirming the fulfillment of assumptions (adequate sample size and multicollinearity). Multiple regression analyses were computed using the six questionnaire scales as independent variables and the Green Purchasing Decision as the dependent variable. The absence of multicollinearity issues (VIF < 5) was assessed by the computation of the Variance Inflation Factor (VIF) (Tabachnick and Fidell 2013). The significance level considered was less than 0.05 for all the analyses.

4. Results

4.1. Confirmatory Factor Analysis

Confirmatory factor analysis was performed to test the adequacy of the six correlated factors model found in the original version. This model revealed a very good fit to these data: CMIN/*df* = 2.33; $\chi^2_{(104)}$ = 242.02, $p < 0.001$; CFI = 0.99; TLI = 0.99; RMSEA = 0.04 [0.03–0.04]; SRMR = 0.05. Standardized regression weights varied from 0.39 (item 6) to 0.66 (item 3). These weights indicate the strength of the relationship between each item and the corresponding factor, with higher values denoting a greater association between the item and the factor. A weight of 0.66 (item 3) suggests a strong relationship, while a weight of 0.39 (item 6) indicates a weaker association, although still significant; therefore, CFA results support the six-factor model, confirming its adequacy and validity in analyzing green purchasing behavior.

4.2. Questionnaire Reliability and Item Analysis

The Cronbach's Alpha internal consistency was calculated to address the reliability of data collected through the questionnaire. Cronbach alpha values found for the questionnaire factors were as follows: ECs = 0.80; GPB = 0.38; GPQ = 0.79; GAP = 0.73; GWP = 0.47; GFE = 0.82. A Cronbach alpha value of 0.90 was found for the questionnaire's total score.

The means, standard deviations, item-total correlations, and Cronbach alpha if the item was deleted from the questionnaire are displayed in Table 1.

Table 1. Questionnaire items Mean (M), standard deviation (SD), corrected item-total correlations, and Cronbach α if item deleted and factor loadings (N = 927).

Items	*M*	*SD*	*Corrected Item-Total r*	*Cronbach α If Item Deleted*	EC	GPB	GPQ	GAP	GWP	GFE
1	4.51	0.72	0.56	0.90	0.47					
2	4.32	0.82	0.64	0.90	0.63					
3	4.12	0.91	0.61	0.90	0.66					
4	4.03	0.82	0.57	0.90	0.54					
5	4.46	0.73	0.58	0.90		0.48				
6	3.89	1.04	0.35	0.91		0.39				
7	4.23	0.75	0.65	0.90			0.58			
8	3.90	0.92	0.59	0.90			0.63			
9	4.24	0.77	0.68	0.90			0.62			
10	4.55	0.71	0.52	0.90				0.54		
11	4.53	0.77	0.52	0.90				0.59		
12	4.45	0.73	0.69	0.90					0.54	
13	3.50	1.11	0.43	0.91					0.50	
14	4.44	0.74	0.65	0.90						0.57
15	4.00	0.94	0.57	0.90						0.63
16	4.08	0.87	0.62	0.90						0.64
17	4.27	0.76	0.61	0.90						0.56

Item-total correlations varied from 0.35 (item 6) to 0.69 (item 12). Cronbach alpha would increase by removing items 6 and 13; however, this increase would be minimal.

Discriminant validity was evaluated by comparing the AVE of each factor with the factors' squared correlations. The AVE results ranged from 0.11 (GPB) to 0.47 (GFE). The factors' squared correlations varied from 0.14 to 0.35. Except for the GPB, AVE results were greater than the squared correlations.

4.3. Associations Between the Questionnaire Factors and the Green Purchase Decision (GPD)

Table 2 presents the correlations between the dimensions of green marketing, as measured by the questionnaire; all were statistically significant. Significant positive correlations between GPD and ECs (r = 0.62; $p < 0.001$), GPB (r = 0.39; $p < 0.001$), GPQ (r = 0.56; $p < 0.001$), GAP (r = 0.39; $p < 0.001$), GWP (r = 0.71; $p < 0.001$), and GFE (r = 0.64; $p < 0.001$) were found. The variance inflation factor (VIF) analysis was conducted, and values ranged from 1.47 (GAP) to 2.06 (GPQ), which are below the indication value of VIF < 5.

Table 2. Correlations between the questionnaire dimensions and the dependent variable GPD.

	EC	GPB	GPQ	GAP	GWP	GFE	VIF
EC							1.93
GPB	0.46 **						1.48
GPQ	0.58 **	0.53 **					2.06
GAP	0.46 **	0.38 **	0.50 **				1.47
GWP	0.57 **	0.37 **	0.51 **	0.39 **			1.72
GFE	0.57 **	0.44 **	0.59 **	0.48 **	0.56 **		1.92
GPD	0.62 **	0.39 **	0.56 **	0.39 **	0.71 **	0.64 **	

** $p < 0.001$.

Multiple linear regression was calculated to explore the predictors of green purchasing decisions (QGPD) after confirming the fulfillment of assumptions (adequate sample size and multicollinearity). The model explained 62% of the total variance of the green purchasing decision (GPD) (Table 3).

It should be noted that the model was significant, and the significant predictor variables were green willingness to purchase (GWP) (ß = 0.81; $p < 0.001$), green future estimation (GFE) (ß = 0.29; $p < 0.001$), environmental concerns (ECs) (ß = 0.24; $p < 0.001$), and green perceived quality (GPQ) (ß = 0.14; $p < 0.001$).

However, the results exhibited in Table 4, calculating the indirect effects mediated by green awareness of price, revealed statistically significant relationships between constructs. Environmental concerns, green perceived benefits, green perceived quality, green willingness to purchase, and green future estimation, when mediated by green awareness of price, positively influence green purchasing decisions despite its marginal effect (β = 0.023; β = 0.075; β = 0.035; β = 0.035 and β = 0.020, respectively).

Table 3. Multiple linear regression analysis of predictors of green purchasing decision (GPD).

Predictors	*r*	R^2 *Adjusted*	*F*	*p*	*B*	*t*	*p*
Model	0.79	0.62	248.76	<0.001			
EC					**0.24**	**7.19**	**<0.001**
GPB					−0.21	−0.39	0.695
GPQ					**0.14**	3.32	**<0.001**
GAP					−0.75	−1.33	0.185
GWP					**0.81**	**15.44**	**<0.001**
GFE					**0.29**	**8.93**	**<0.001**

Note: Bold values indicate the presence of statistical significance.

Table 4. Indirect effects on endogenous variables.

Indirect Effects on Endogenous Variables	Path (β)	t Value (Bootstrap)	p-Value	95% Confidence Interval		Hypothesis Support
				Lower	Upper	
EC→GAP→GPD	0.023	4.435	<0.001	00.013	0.035	Yes
GPB→GAP→GPD	0.075	7.264	<0.001	0.053	0.099	Yes
GPQ→GAP→GPD	0.035	4.568	<0.001	0.019	0.052	Yes
GWP→GAP→GPD	0.035	5.132	<0.001	0.021	0.051	Yes
GFE→GAP→GPD	0.020	3.870	<0.001	0.009	0.031	Yes

Additionally, a structural equation model (SEM) was tested to examine the relationships between all dimensions and GPD. The fit indices used to assess the model's adequacy included CMIN/df = 7.50; $\chi^2_{(137)}$ = 1028.56, $p < 0.001$, CFI = 0.89, TLI = 0.87, RMSEA = 0.09 [0.07–0.08], and SRMR = 0.05.

5. Discussion of Results and Implications

5.1. Discussion of Results

This research paper aims to study the influencers of green purchasing decisions (GPD) in Portugal—a peripheral region of Europe—as environmental concerns (ECs), green perceived quality (GPQ), green willingness to purchase (GWP), green future estimation (GFE), green awareness of price (GAP) and green perceived benefits (GPB), in accordance to the association hypotheses considered in the proposed model. This topic is vital because nowadays, the issues of pollution, climate, and survival constitute a big focus of preoccupation for several governments and institutions regarding the deterioration of the Earth's planet and human life; therefore, preserving the environment is crucial to human life and can benefit firms and consumers through green attitudes and behaviors about their purchasing decisions, as argued by Boztepe (2012), Gomes et al. (2023), and Parhizgar and Vesal (2016). In this vein, it is important to identify the main factors that affect green purchasing decisions in Portugal and understand Portuguese consumers' awareness and commitment to sustainability. Hence, this study allows us to understand the behavior of Portuguese consumers and the factors they value when deciding to purchase green products. Consequently, the companies that intend to deal business with Portugal can access market information about the environmental awareness of Portuguese consumers and the factors that affect their behavior regarding green purchasing decisions, which can contribute to increasing the efficiency of their business development in this peripheral region of Europe.

Our empirical results demonstrated that ECs positively influence GPD; therefore, hypothesis H1 is supported. This evidence showed that ECs have a positive impact on ecological purchasing decisions about green products and influence consumers' green purchasing behavior, which complements other studies about green products performed in other countries different from Europe (Chen et al. 2022; Colares and Mattar 2016) adding a perspective about different regions in the world, in the specific case about Portugal. On the other hand, green purchasing behavior can contribute to resolving environmental problems, as Balundė et al. (2019) and Gomes et al. (2023) argued.

Next, it was verified that GPQ positively influences GPD, which supported hypothesis H2. This suggests that Portuguese companies must identify and perceive customer needs to promote green products according to customers' quality expectations, as mentioned in a study by Chen et al. (2015) about Taiwanese companies and in other studies carried out by Boueri et al. (2021) and Ferraz et al. (2016). Consequently, Portuguese companies must develop and promote manufacturing processes and products that customers will perceive as having a higher environmental quality. Moreover, the information about products that include environmental considerations can enhance customers' perception of quality and influence GPD.

The GWP impacts GPD, which supports hypothesis H3 and means that consumers are willing to pay a higher value for green products. Consequently, willingness to purchase

can determine a positive consumer intention toward green products, as Kamalanon et al. (2022), Nekmahmud and Farkas (2020), and Zhang and Dong (2020) argued; however, to encourage the purchase of green products in Portugal, companies must offer fair prices and provide clear information about their benefits (e.g., the added value of green products, impact on consumers' lives, advantages, and social image). In addition, it is crucial to enlarge the offer of green products in Portugal to make their purchase more convenient to consumers.

It was also found that GFE, hypothesis H4, positively influenced GPD. This implies that Portugal has an environment conducive to promoting positive behavior towards green products, which aligns with the studies of Gomes et al. (2023) and Nekmahmud and Farkas (2020). Consequently, companies must understand the market trend and adjust marketing strategies to continuously inform consumers about the characteristics of green products compared to regular products. In this vein, companies that develop campaigns with valuable information about the advantages of green products enhance their competitive market advantage, according to the studies of Moravcikova et al. (2017), Severo et al. (2020) and Zandoná et al. (2016). Consequently, the green products trend could represent Portuguese companies an excellent opportunity to grow their market share and allow consumers to satisfy their needs at a high level regarding quality and eco-friendly purchase decisions. On the other hand, Portuguese consumers suppose that green products benefit the environment.

On the other hand, the results of this study showed that GAP and GPB do not directly influence GPD—there is no statistical significance on the predictors of GPD. This means that hypotheses H5 and H6 are unsupported in this study applied to Portugal. Given that this evidence contradicts other studies about the influence of GAP on GPD (Ansu-Mensah 2021; Gomes et al. 2023; Nekmahmud and Farkas 2020; Ren et al. 2020) and the influence of GPB on GPD (Gomes et al. 2023; Kamalanon et al. 2022; Kim and Ha 2022), one may also hypothesize that its poor reliability may influence the current study results regarding GPB in our sample; therefore, companies and governments must create favorable economic conditions to reduce the difference in price between green products and conventional products to eliminate some barriers to accessing green products (Colares and Mattar 2016; Ferraz et al. 2016) and use persuasive strategies to increase the GAP and promote a sustainable purchase attitude. It was also verified that the relationship between the attitude towards eco-benefits and green purchasing decisions in Portugal is still reduced. This scenario reveals the necessity to increase advertising and emphasize the environmental benefits of green products (Correia et al. 2023; Dikici et al. 2022), in particular, their quality, brand image, utility, impact, and added value, which influences the awareness of consumers to pay a premium price by using green products.

Moreover, as previously mentioned, it is noteworthy that the GAP and GPB dimensions did not reveal acceptable reliability, which may compromise their ability to measure the underlying constructs. Nevertheless, as the perceived benefits do not have an individual impact, they may influence the decision and awareness of green purchasing. Consumers increasingly prefer sustainable products and tend to have positive attitudes towards environmentally friendly products and services; however, there is a paradox in the green business, probably associated with prices and purchasing power. According to White et al. (2019a), although consumers may have positive attitudes toward environmentally friendly products and services, they cannot always purchase them. These authors state that 65% of participants assumed they wanted to buy brands with sustainability objectives, but only 26% bought said products; therefore, improved purchasing power, social influence, and changes in habits could alter ecological awareness and the effectiveness of perceived benefits in purchasing decisions.

Last, our results showed the mediating role of GAP in the interaction mechanisms between the independent variables ECs, GPB, GPQ, GWP, and GFE and the GPD dependent variable, despite no significance being found in the direct effect of GAP in GPD. This evidence supported hypotheses H7, H8, H9, H1, and H11 and contributed to increasing the

knowledge about the role of the influencers of GPD (Ansu-Mensah 2021; Gomes et al. 2023; Nekmahmud and Farkas 2020) by demonstrating that GAP can impact on GPD through its indirect effect. In particular, it is interesting to verify that GAP activates the influence of GPB on GPD and reinforces the influence of GPQ in GPD through its mediator effect. This evidence showed the strong indirect effect of GAP, which has been proved through the significant effects of the endogenous variables; therefore, Portuguese consumers are willing to pay for eco-friendly products when they perceive their quality, benefits, and environmental impact positively. Consequently, the price of the green products associated with their cost–benefit and the environmental consciousness can influence GPD.

In summary, our findings show that the antecedents of the GPD are GWP, then the GFE, ECs, and GPQ, and finally, the GPB mediated by the GAP effect. In addition, our findings show that GAP assumes the mediating role in the interaction mechanisms that link the independent variables analyzed with the GPD dependent variable. A SEM analysis revealed that CFI and TLI results were suggestive of a poor fit between the hypothesized model and observed data. Nevertheless, other fit indices (RMSEA and SRMR) showed a good fit to these data. The model may not fit as well on an incremental level, according to CFI and TLI, but RMSEA and SRMR indicate that it fits well on an absolute level; therefore, to completely capture the hypothesized structure, it may be necessary to expand the model further, even while it fits these data well in terms of absolute residuals.

5.2. Theoretical Implications

This study contributes to extending the existing literature about green consumer behavior and green consumer decision drivers.

First, this study complements the literature with a systematized perspective about the determinates of GPD in Portugal, a peripheral region of Europe. This study's outcomes highlight the fundamental influencers of GPD, such as GWP, GFE, ECs, GPQ, and GPB, the last one mediated by the effect of GAP, and also point to the significant mediating effect of GAP to leverage these decisions. This perspective helps researchers to understand the behavior of Portuguese consumers in the context of sustainability, offering insights about the mechanisms that drive green purchasing decisions, demonstrated by their substantial effect, incidence, and role in guiding sustainable consumer choices. Hence, as consumer behaviors are region-specific, according to the different demographic, social, and cultural characteristics (Colares and Mattar 2016; Ferraz et al. 2016), this study contributes to enlarging the knowledge about green consumption in different regions, adding insights to studies carried out on other regions about the incidence and the influence patterns of variables that affect GPD, which can contribute to mapping those variables and performed comparative research on topics related to green products and consumer behavior.

From another point of view, this study contributes to enriching the literature about green marketing by aiming for an understanding of the green drivers to which Portuguese consumers are sensitive regarding GPD—individual factors, product attributes, and marketing (Zhang and Dong 2020)—and complements prior studies about green marketing performed in different regions (Boueri et al. 2021; Ferraz et al. 2016) about the incidence and role of the mechanisms that affect GPD.

In addition, this research contributes to the development of knowledge about green product marketing in Portugal by suggesting the promotion of green products' attributes—quality, brand, price/benefits (Gomes et al. 2023; Kovacs and Keresztes 2022; Lira et al. 2022; Zhang and Dong 2020)—should be enlarged to reduce the information asymmetry between buyers and sellers about the additional value of the green products. In this vein, researchers and educators can better perceive the important elements that should be considered in the theoretical design of campaigns for green products, which must include signal information about product attributes, such as eco-labels, because consumers agree to pay more for certified products (Groening et al. 2018; Le et al. 2024; Yusoff et al. 2023). This insight about the use of signals in the promotion of the associated attributes of green products supports the signaling theory (Zhang and Dong 2020) and can encourage new researchers

to deepen the empirical evidence of the link between signaling theory and green purchasing decision drivers.

Finally, this study allows researchers to explore if a greater willingness to purchase green products can generate a more propitious and favorable ecosystem for green consumption. Environmental concerns play an essential role in the GPD of the (more) environmentally conscious populations that prioritize a sustainable lifestyle; therefore, the (greater) knowledge about green marketing plays a crucial influence on the population and their decisions about sustainable products (Lopes et al. 2024a). Thus, this study provides insights for the continuous research about Portuguese consumers' behavior and to understand whether there is natural eco-behavior, which may influence the consumer's propensity to purchase green products.

5.3. Practical Implications

Several studies on green products have been performed in different international regions; however, this study contributes to characterizing Portuguese consumers' behavior, complementing international research in this field by adding a perspective of GPD in Portugal. Hence, this study has several practical implications for companies, marketers, and general society by pointing out the main determinants that affect the GPD of Portuguese consumers—environmental concerns, perceived quality, willingness to purchase, future estimations, perceived benefits, and price awareness; the last one acts as a mediator. In addition, it addresses issues related to ecological concerns and sustainability.

First, these determinants help managers of companies in defining "ecological marketing" strategies that promote more responsible consumption (Gomes et al. 2023; Nekmahmud and Farkas 2020) and contribute to a more sustainable future (Migheli 2021). On the other hand, it contributes to increasing "green value" in business and ensures that environmental obligations are respected throughout the supply chain, influencing the behaviors of suppliers and customers and promoting new commercial opportunities through the stimulated demand for green products. To highlight the green product's value and environmental benefits, companies can disclose information about their sourced components and contribution to the improvement of the environment, providing clear data information about the effect of green products on the environment (e.g., the percentage of reduction in pollution and saving waste) and certifications (e.g., eco-components, energy class). This persuasive information can stimulate green consumption and constitutes a great commercial opportunity for companies. Hence, selling green products is a sustainable practice that can promote economic pro-environmental behavior and a competitive way for companies to achieve their commercial objectives. On the other hand, companies' investment in new production methods concerning environmental trends can increase their economic efficiency (Zandoná et al. 2016) with repercussions on the final (lower) price of green products. This phenomenon can imply companies' greater competitiveness and social responsibility (Severo et al. 2020) in the economic system through the generation of new niches of the market, new production technologies, new raw materials, and new management practices. The companies' advertising based on "ecological marketing" variables—benefits of green products, quality, social impact, and consumption trends (Ferraz et al. 2016; Moravcikova et al. 2017; Zhuang et al. 2021)—can affect the consumer's GPD. These campaigns can stimulate "ecological consumption" and contribute to society's normalized trend of green product acceptance. To encourage eco-friendly consumer behavior, companies can promote certified information about green products that highlight their quality, warranty, safety, and benefits (Gomes et al. 2023; Zhang and Dong 2020), which undoubtedly leads consumers to be willing to pay a higher price for a high-value product. Moreover, information about the return on investment of green products can influence consumers in their GPD and promote the add-value of green products through the dissemination of information about the environmental benefits as well as the long-term personal and financial gains (Lopes et al. 2024a).

In addition, this study has pointed out a set of potential determinants of GPD which can help marketers to concept assertive green marketing strategies that encourage sustainable consumption of Portuguese consumers. Thus, marketers need to develop environmental approaches to influence green behavior, using effective information disclosure about the attributes and benefits of green products to ensure that consumers are better informed to make sustainable purchasing decisions. Compelling storytelling about sustainable practices can be used to promote the high value of green products and to attract consumers and the general public who are more sensitive and concerned about environmental issues. Accordingly, marketers should develop suitable campaigns to promote green marketing based on the disclosure about the product components and manufacturing process, quality, design, brand, eco-packing, and eco-labels (Le et al. 2024; Zhang and Dong 2020). Moreover, advertising must apply the add-value of green products while emphasizing their environmental benefits. Thus, information on campaigns must emphasize the genuine environmental benefits of green products through transparent information about benefits for consumers and to general environment. The use of persuasive messages about the eco-processes used to manufacture green products could create an effective and emotional connection with consumers who care about sustainability. On the other hand, clearly and transparently disclosing the most notable sustainability initiatives carried out by companies and brands, such as the climate transition of the business model and social proofs, can attract customers and encourage more responsible consumer behavior. Thus, marketers must prioritize sustainability content in their campaigns to attract more environmentally conscious consumers; therefore, marketers have an important role as influencers of the more sustainable behavior of Portuguese consumers.

The insights of this study may imply society's decisions toward green products. Analyzing Portuguese consumers' behavior allows us to verify that GPD is affected by awareness of the benefits of green products. Hence, this study can influence the consumer's perception of the expected social benefits derived from the (more) responsible and "ecological consumption" and its positive environmental impact. Additionally, these insights can generate a "green consumption culture" in society that promotes the sustainability of the environment and ensures favorable living conditions for future generations (Gomes et al. 2023). Moreover, this study also contributes to influencing governments to stimulate green consumption and encourage society to change from conventional products. Governments can develop policies to encourage green production and sustainable consumption to foster a more environmentally conscious society that reduces pollution and preserves the environment, which impacts human life (Nekmahmud and Farkas 2020). In this vein, governments can create laws and incentives that promote the transition from conventional products to the consumption of eco-friendly products. On the other hand, governments can develop educational campaigns about the effective benefits and add-value of green products to encourage and involve society in sustainable practices. Partnerships with environmental organizations can increase credibility and spread green social awareness. Hence, governments, organizations and companies can work together to improve the information about green products benefits to all society and encourage the massification of green purchase.

5.4. Limitations and Future Research

In forthcoming studies, there is potential to investigate certain constraints of this research.

First, the results of this research cannot be generalized to the population because data collection only referred to Portugal. Thus, other studies can analyze if these results can be replicated in other regions and contribute to developing a comparative study in various countries or regions through cross-regional analysis that can identify and characterize the predictors of GPD and customer behavior towards green products. In addition, several control variables can be included in the model (e.g., gross national income per capita, age, gender, education level, etc) to verify its effect on the influencers of GPD considered in this study. As a result of these limitations, new researchers can determine and map, through a data panel, the incidence and the coherence patterns of variables that affect GPD

according to the economic, demographic, cultural, and social behaviors in different regions and analyze what predictors have a (high) direct and indirect impact on green products perception and stimuli consumers' decision-making in different societies. This approach can encourage researchers to identify what regions are most prone to the consumption of green products through an explanation of the effect and the role of the drivers of this phenomenon.

The research method used in this study—questionnaire—does not allow direct observation and, as such, does not inform about the circumstances in which it was realized. So, future studies based on observation methods (field research or laboratory experiments) can then be used to provide more direct evidence about green purchase behavior by exploring the reasons and motivations of consumers about their GPD. Additionally, this study's reliability of key constructs, such as GPB and GWP, is weak. This limitation may lead to increased measurement error, reduced statistical power, underestimation of effect sizes, and lower reproducibility; therefore, we consider that in future studies, the adaptation of these items could be improved (e.g., evaluate the ambiguity or inadequacy of the items, irrelevance or redundancy).

Furthermore, this study is limited to the analysis of customers' perspective—upstream focal analysis. Hence, future studies may analyze companies—downstream perspectives—thereby contributing to understanding both perspectives about the GPD drivers.

On the other hand, this investigation analyzed the general theme of GPD and did not particularize any industry. Thus, future research about GPD can be performed in several industries (e.g., home appliances, textiles, food, packaging, furniture, automobiles) to observe particular characteristics and compare different industry scenarios.

This study does not analyze the possibility of consumers rebuying green products, motivated by their benefits. Accordingly, future studies can analyze whether consumers' (positive) experience with green products encourages repurchase.

6. Conclusions

The environmental concerns, sustainability, and green purchase decisions have attracted the attention of researchers, governments, companies, and consumers in recent years. Green marketing emerged to respond to and influence consumer behavior, contributing to more future sustainable consumption (Boztepe 2012; Gomes et al. 2023; Parhizgar and Vesal 2016; Zhang and Dong 2020); therefore, green purchase behavior is a way to demonstrate how consumers are committed to sustainability. Accordingly, as environmental benefits are an essential factor affecting consumer decision-making, governments and companies need to develop green marketing mechanisms to stimulate GPD and respond to environmental challenges (Zhuang et al. 2021). According to the trend of green marketing, this study is supported by a research model to explore the influence, incidence, and role of the determinants of GPD in Portugal, a peripherical region of Europe, and to understand how sustainable consumer choices of Portuguese consumers are guided. The results of this study allow us to validate that GWP, GFE, ECs, GPQ, and GPB, the last one by the mediator role of GAP, all positively influence the GPD of consumers located in Portugal. The results also allow us to validate that GAP shapes the impact of those factors in GPD.

According to those results, GWP influences Portuguese consumers' GPD. Green products' perceived benefits and value must be justified, and companies intending to persuade green purchases must promote more accessible consumption.

On the other hand, this study concluded that the GFE influences Portuguese consumers' green purchase intention, which indicates that the greater perception of future environmental trends influences behavior and, consequently, the consumption of green products. The tendency for green products is to be standardized. Consumers are receptive to green products, influenced by environmental concerns and the responsible consumption trend. In this vein, companies must increase production efficiency to gain a competitive advantage and make consumption more accessible.

In addition, the findings conclude that ECs positively influenced GPD, meaning consumers are informed about ECs, and their purchasing decisions are more responsible and ecological. Thus, Portuguese consumers agree to purchase green products because they benefit health and the environment, which also demonstrates that environmental awareness highly influences Portuguese consumers' decisions about green productsThis study also found that GPQ influenced the Portuguese purchase decisions. Therefore, companies must enlarge the information about the benefits of green products to enhance (more) the perception of customers about the quality of green products compared with conventional products, to turn the purchase decision of the firsts always a priority concerning the seconds.

Finally, this study reveals GAP's important mediator role in GPD. It has been observed that GAP stimulates the influence of GWP, GFE, ECs, GPQ, and GPB on Portuguese consumers' behavior towards green products. In particular, we observe that perceived benefits are related to the willingness to pay for green products, which seems to influence GPD. This evidence allows us to validate that the greater awareness of the price of green products associated with their attributes, quality, benefits, and environmental concerns has a strong impact on GPD.

Governments and companies can play a crucial role in this domain by encouraging change from conventional products. To accomplish this, they can stimulate the consumers' preference for green products with "high value" through persuasive information that emphasizes their quality certification and associated benefits to influence consumers' purchase intentions. Advertising of green products may include (not only) psychological elements but also differentiation attributes (e.g., design, brand, composition, color, performance) to attract consumers' attention and preference about them.

Generalizing, the outcomes of this study lead to the conclusion that the high awareness of Portuguese consumers about the price of green products can stimulate their purchase decisions when they perceive its quality, benefits, and eco-friendly effect. Thus, this study provides insights into the substantial effect, incidence, and role of the mechanisms that drive Portuguese green purchasing decisions. Moreover, this study corroborates the signaling theory by concluding that consumers can choose green-signal products even at higher prices if they perceive that their benefits outweigh the acquisition cost.

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