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The Impact of Financial and Ecological Knowledge on Student Consumption Decisions: A Comparative Study of Greenwashing Perceptions

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Department of Marketing, Operations and General
Management

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Love you all – This is the end folks!

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Sumário

O comportamento sustentável do consumidor é essencial para enfrentar os desafios ambientais, embora muitos consumidores tenham dificuldade a tomar decisões de compra informadas devido a lacunas no conhecimento financeiro e ecológico. A literacia financeira está conectada a hábitos de consumo mais conscientes em termos de gastos, que podem levar a compras sustentáveis. Por outro lado, o conhecimento ecológico está diretamente ligado ao comportamento pró-ambiental – os consumidores com uma maior compreensão da sustentabilidade são mais propensos a escolher produtos amigos do ambiente. Infelizmente, identificar opções verdadeiramente sustentáveis tornou-se cada vez mais um desafio devido a falsas práticas de marketing. O greenwashing – definido como “o ato de enganar os consumidores relativamente às práticas ambientais de uma empresa ou aos benefícios ambientais de um produto ou serviço” – afeta de forma negativa o comportamento dos consumidores em relação aos produtos verdes e baixa a confiança nas marcas genuinamente amigas do ambiente. Este estudo pretende explorar como o conhecimento financeiro e ecológico influencia a capacidade dos alunos para identificar e combater as táticas de greenwashing. Ao criar uma abordagem qualitativa comparativa, serão analisados grupos de estudantes universitários de cursos financeiros e ambientais para obter insights das suas perspetivas sobre afirmações de sustentabilidade nas embalagens de produtos. Ao comparar estes dois grupos focais com um questionário validado, vamos determinar como a área académica afeta a consciência do consumidor e as suas decisões. Estes resultados vão dar noção das respostas cognitivas e emocionais ao greenwashing e aos principais fatores associados ao consumo pró-sustentável. Além disso, esta investigação contribuirá para identificar lacunas de conhecimento e servirá como um guia claro para o desenvolvimento de políticas destinadas a reduzir o impacto do greenwashing.

Palavras-chave: conhecimento financeiro, conhecimento ambiental, decisões, greenwashing

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Abstract

Sustainable consumer behavior is essential for addressing environmental challenges; however, many consumers struggle to make informed purchasing decisions due to gaps in financial and ecological knowledge. Financial literacy is associated with more conscious spending habits, which can lead to sustainable purchases. On the other hand, ecological knowledge is directly linked to pro-environmental behavior—consumers with a greater understanding of sustainability are more likely to choose environmentally friendly products. Unfortunately, identifying truly sustainable options has become increasingly challenging because of deceptive marketing practices. Greenwashing—defined as "the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service"—negatively affects consumer attitudes toward green products and weakens trust in genuinely eco-friendly brands. This study aims to explore how financial and ecological knowledge influence students' ability to identify and respond to greenwashing tactics. By employing a comparative qualitative approach, we will analyse focus groups of university students from financial and environmental courses to gain insights into their perspectives on sustainability claims in product packaging. By comparing these two focus groups with a validated questionnaire, we will determine how educational background affects consumer awareness and decision-making. These findings will shed light on cognitive and emotional responses to greenwashing and key factors associated with pro-sustainable consumption. Furthermore, this research will contribute to identifying knowledge gaps and serve as a clear guide for developing policies aimed at reducing the impact of greenwashing.

Key-words: financial knowledge, ecological knowledge, consumer behaviour, greenwashing

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Chapter 1

Introduction

Environmentally sustainable consumer behaviour plays an important role in addressing sustainability challenges, as purchasing decisions directly influence the environment and society (Black & Cherrier, 2010; Halder et al., 2020). However, the ability to make informed and sustainable choices is often limited by gaps in ecological and financial knowledge. The correlation between ecological knowledge and effective actions is still weak (Silva & Pålsson, 2022).

According to the Eurobarometer 2024 (European Commission, 2024a), European consumers are increasingly concerned about pollution, with 94% expressing worries about environmental issues. This has pushed brands to adopt “green” marketing strategies to improve the perception of their products. Yet, some companies engage in deceptive practices, creating a false impression of sustainability—a tactic known as “greenwashing” (Dahl, 2010; Romero, 2008). Introduced in 1986 by New York environmentalist Jay Westervelt (Nguyen et al., 2019), Parguel et al. (2011) define greenwashing as “the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service.” Research indicates that the perception of greenwashing not only damages trust in individual brands but also negatively impacts consumer attitudes toward green products as a whole (Wang et al., 2019). Ultimately, greenwashing undermines societal benefits, even though it may attract significant interest from existing stakeholders (Yang et al., 2020).

Financial knowledge, defined as the ability to manage economic resources effectively (Costa et al., 2024), is another key factor influencing consumer behaviour. Previous studies have demonstrated that higher financial knowledge translates into better control over consumption decisions, avoiding impulsive behaviors, and promoting a more sustainable future (Fariana et al., 2021; Lyon & Montgomery, 2015). However, there is limited evidence regarding the impact of financial knowledge on overconsumption behavior and its environmental consequences, such as pollution and ecological damage.

In Portugal, despite efforts to integrate environmental education into school curricula and promote sustainability, the recycling rate remains at 30%, and only 2.8% of materials are reintegrated into production cycles (PORDATA, 2024a, 2024b). Portugal also faces significant challenges in financial literacy, ranking among the lowest in Europe (European Commission, 2024b), due to factors such as low prioritization of financial education in schools, the complexity of the financial system, and services that encourage impulsive consumption (Tavares et al., 2022).

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Considering that greenwashing is a widespread issue that continues to mislead consumers and contribute to environmental harm. Educational programs aimed at raising ecological awareness, especially in schools, are often inadequate and leave students with only basic knowledge. As adults, consumers are left to navigate unclear packaging, vague eco-labels, and non-transparent manufacturing processes. This research is crucial because it addresses how greenwashing affects consumer trust and the environment, from contamination of natural resources to health concerns. By exploring the impact of ecological knowledge on consumer behavior, this study aims to help reduce the influence of greenwashing and encourage more sustainable purchasing decisions. The findings could guide policymakers, educators, and businesses in combating deceptive practices and promoting genuine sustainability.

In this context, the present study aims to investigate how financial and ecological knowledge together influence consumers' ability to identify and respond to genuinely sustainable products in Portugal. Specifically, it explores how these two types of knowledge help students recognize and avoid greenwashing tactics while also shaping their adoption of sustainable purchasing behaviors. By focusing on the interplay between these forms of knowledge, this research will provide a clearer understanding of how educational background affects consumer decision-making and their capacity to make informed, environmentally responsible choices.

Chapter 2

Objectives

2.1 - General Objective

To explore how consumers with different ecological and financial knowledge respond to greenwashing strategies

To analyze how financial and ecological knowledge influence young consumers ability to recognize and respond to greenwashing practices.

2.2 - Specific Objectives

To explore the perceptions and experiences of finance and ecological students regarding greenwashing, identifying their decision-making criteria and factors when choosing sustainable products.

To compare the similarities and differences in the emotional, cognitive, and behavioral responses of students from both fields of study to greenwashing practices.

To describe consumers' perceptions of greenwashing practices and their influence on purchasing decisions

To identify product attributes and market conditions that lead even highly conscious consumers to be influenced by greenwashing.

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Chapter 3

Literature review

Environmentally sustainable consumer behavior plays a key role in sustainability challenges. However, there are several individual and contextual factors involved in consumer choices. Eurobarometer 2024 shows that despite 94% of European consumers expressing concern about pollution, many struggle to translate their concerns into sustainable consumption habits. This could happen due to barriers like higher prices. Moreover, greenwashing has weakened consumer trust in sustainable products. That way, financial and ecological understanding are important to influence informed and sustainable purchases, by preventing impulsive, environmentally damaging consumption. Particularly, while young adults may express their support for sustainable measures, they do not always reflect this in their purchasing behaviors. To achieve this, it is crucial to determine how financial knowledge and ecological knowledge affect their consumption choices.

3.1 Consumers' behavior

According to the Oxford Marketing Dictionary, consumer behavior is a process through which an identifiable group of consumers make buying decisions (Doyle, 2016). Similarly, Leon G. Schiffman and Leslie Lazar Kanuk defined consumer behavior "as the behavior that consumers display in searching for, purchasing, using, evaluating, and disposing of products, services, and ideas which they expect will satisfy their needs" (Schiffman & Kanuk, 2008). Consumer behavior encompasses both mental and physical activities involved in these processes (Cole, 2007). The four most important factors that affect consumers' buying behavior are personal factors, economic factors, psychological factors, and social factors (Sheikh, 2020). This definition highlights the complexity of consumer behavior, which is not only influenced by individual preferences but also by several external factors.

As a result, numerous academic models and theories have been developed to understand consumer behavior. These models were based on two different paradigms: the positivist and the non-positivist (Ramya & Ali, 2018). The positivist includes economic, behavioral, cognitive, motivational, trait, attitudinal, and situational perspectives, and it is also referred to as traditional because they were elaborated before the non-positivist (Velumani, 2014). This approach highlights human reason and the belief in a single, objective truth that can be discovered through science. It views the world as rational and ordered, with a clearly defined past, present, and future (Pachauri, 2001). This approach focuses on tangible benefits, aiming to influence marketing practices. In contrast, the non-positivist includes interpretive perspectives. These perspectives focus on the subjective experiences of consumers, claiming that it is shaped by individual and shared cultural experiences, and consequently, there is no single worldview (Rabby, Chimhundu, & Hassan, 2021). This paradigm highlights the symbolic aspects

of consumer choices and seeks to understand consumer behavior without a specific intent to influence it. (Pachauri, 2001).

College students present a unique consumer behavior due to their transition from adolescence to adulthood. Their purchasing decisions are influenced by factors such as peer pressure, budget constraints, brand preferences, technology use, value for money, social responsibility, marketing, and the need for convenience (Rupanagudi, Fareq, & Shivakar, 2024). Understanding these behaviors and identifying how students make decisions, what factors influence them, and how they interact with brands will allow businesses to adapt their marketing strategies to this group.

3.2 Green marketing origins and impact on consumption

A significant shift in consumer behavior has appeared in recent years, primarily driven by increased environmental awareness. Since the first Earth Day in 1990, consumers have become increasingly conscious of their purchasing habits, prompting brands to adapt to evolving market expectations (Aji and Sutikno, 2015). That awareness led to the creation of “ecological marketing,” a term brands use to show their support for environmental issues.

Currently, most consumers prioritize eco-friendly products (Chang & Chen, 2014). Ischen et al. (2022) found that individuals are adopting measures such as reducing consumption and selecting sustainable products to maintain quality of life while minimizing environmental impact. While individuals express concern for environmental issues, their actual buying decisions do not necessarily reflect these values. Delafrooz et al. (2014) observed that some consumers purchase green products primarily to enhance their sense of well-being rather than out of genuine environmental concern.

The rising demand for eco-friendly products places increasing pressure on brands to market themselves as sustainable. Sales of sustainable products increased by 20%, during the years 2014 and 2019, reflecting growing consumer interest in green alternatives (Chladek 2019). Companies benefit from understanding consumer motivations, as this knowledge allows them to effectively target their audience and fulfil their expectations (Solomon et al., 2016; Solomon, 2012; Ramya & Ali, 2016). Additionally, research indicates that consumers exhibit brand loyalty toward companies that implement eco-friendly processes (Wang, Krishna, & McFerran, 2017, Marin, Ruiz, & Rubio, 2009)

This shift in market preference is also influenced by governmental regulations and corporate social responsibility initiatives (Huang, 2016). In response to these new regulations, companies have developed industrial packaging strategies that consider sustainability from the initial design phase to the end of a product’s lifecycle. For instance, the incorrect disposal of packaging is one severe

environmental issue, making it necessary for brands to integrate recyclability and reusability into their product development (Rossi et al., 2015; Silva & Pålsson, 2022). Legislative measures and environmental taxes further incentivize companies to adopt greener alternatives.

3.3 Ecological Knowledge Impact on consumers' behavior

Environmental knowledge influences pro-environmental behavior. (UNESCO, 2005; Heimlich & Ardoin, 2008). The effect of knowledge on behavior remains uncertain, as research indicate a positive correlation (Hines et al., 1987; Kaiser & Frick, 2002; Frick et al., 2004; Meinhold & Malkus, 2005), and others emphasize inconsistencies, suggesting that only knowledge does not ensure behavioral change (Kollmuss & Agyeman, 2002; Roczen et al., 2013; Braun & Dierkes, 2017; Otto & Pensini, 2017). Studies suggest that individuals with higher environmental understanding are more likely to engage in sustainable consumption, like purchasing eco-friendly products or minimizing waste (Flamm, 2008; Gram-Hanssen, 2011), but there is a disparity between intention and actions (Witek & Kuźniar, 2021). Obstacles reduce environmentally positive decisions, such as high cost in comparison with the standard option, accessibility, and skepticism toward ecological certifications (Khan et al., 2019; Paço & Lavrador, 2020). Additionally, creating emotional engagement as an example for future generations or having individual responsibility is crucial in motivating population behavior (Polonsky et al., 2012), underlining the importance of pro-environment education that integrates both cognitive and emotional aspects.

Studies show that developed countries are more able to have environmental awareness, which reflects on green consumption (Kuźniar et al., 2021). For this reason, education should be taken as essential for promoting pro-environmental behavior (Escher & Petrykowska, 2019). Hence, education must be complemented by supportive policies, financial incentives, and corporate responsibility initiatives to create an environment where sustainable behavior is both encouraged and made easier (Gordon et al., 2011).

3.4 Financial knowledge impact on consumer behaviour

Financial knowledge is part of financial literacy, which Lusardi and Mitchell (2014) described as “the ability to process economic information and make informed decisions about financial planning, wealth accumulation, debt, and pensions.” As well, Huston (2010) states the difference of financial knowledge from financial literacy, defining it as “the acquisition and retention of financial facts and concepts” that serve as effective financial decision-making.

A more sustainable society and economy require responsible consumption, which depends on financial literacy. Research claims that financial education fosters sustainable financial behavior,

ultimately contributing to a more stable economy and society (Suri & Jindal, 2022). In line with this, Almeida et al. (2022) found that individuals with financial knowledge are more attentive and concerned about their financial behavior than those lacking such knowledge.

On the other hand, Gutter and Copur (2011) found that students who received financial education in high school were more likely to save and pay off their credit cards responsibly compared to those who learned financial concepts outside of school. Similarly, Lyons (2008) demonstrated that financial education can lead to more responsible credit card use among college students, within a study (n=26,759) across 10 Midwest universities that showed students who took a financial education course were less likely to accumulate over \$1,000 in credit card debt, miss payments, reach their credit limit, or carry a balance each month. Peng et al. (2007) found that students who took a college personal finance course increased their investment knowledge and were more likely to save, with long-term effects observed years after the course. Likewise, Wagner and Walstad (2016) found that financial education significantly improved behaviors such as maintaining an emergency fund, saving for retirement, and managing investments. This suggests that financial education at the college level is especially effective for investment-related behaviors, as older students take financial topics more seriously and retain knowledge for future use, highlighting that proactive financial decisions are best learned through education rather than experience (Peng et al., 2007; Wagner & Walstad, 2016).

3.5 Greenwashing perceptions by consumers

Greenwashing is common when brands mislead consumers about their sustainable internal policies, production, and efforts to meet environmental standards and gain or maintain a competitive advantage. Greenwashing was specified by Parguel et al. (2011) as "the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service." It comes from the disparity between superficial green commitments and genuine environmental actions that have a future impact (Truong et al., 2021). Common tactics include false claims, selective disclosures, misleading certifications, persuading for weaker regulations, and partnerships with environmentally harmful companies (Nemes et al., 2022).

Greenwashing damages consumer trust, making it harder to assess the environmental impact of products (Delmas & Burbano, 2011; Ramus & Montiel, 2005). It extends beyond marketing ethics, influencing consumer confidence in sustainability claims (Dahl, 2010). In consequence, industries or brands that were practicing greenwashing damaged their credibility, created scepticism among customers, and their financial performance will have consequences (Davis, 1992; Du et al., 2018). After discovering greenwashed practices, consumers become sceptical of all brands within an industry,

reducing their willingness to purchase green products again (Wang et al., 2019). Additionally, misleading claims in B2B marketing further fuel consumer distrust (Vangeli et al., 2023).

Social media plays a key role in greenwashing, allowing brands to maintain a sustainable image while prioritizing profits (Sailer et al., 2022). However, informed consumers can differentiate between genuine and false sustainability efforts, leading to a refusal to take part in misleading brands (Correa et al., 2018). People with higher environmental awareness are particularly likely to recognize greenwashing and adjust their purchases (Choi & Johnson, 2019; Klabi, 2022).

3.6 Research gaps

The connection between environmental knowledge and actions is complex and influenced by various elements, including attitudes, emotions, and external limitations. While knowledge provides a foundation for pro-environmental actions, it is not the sole predictor of action. Studies focus on the need for more objective measures of environmental knowledge and a greater comprehension of how different types of knowledge relate to other behavioral influences. Additionally, future studies should investigate the role of contextual factors, such as economic and cultural factors, that influence the development of sustainable behaviors. Moreover, studies on financial literacy are mainly conducted through quantitative analysis, while qualitative studies remain scarce in this area (Suri & Jindal, 2022). Future research could gain from conducting empirical tests on greenwashing strategies and their possible impacts on companies' value, which would help assist in solving some of today's recognized limitations (Bernini & La Rosa, 2024). Likewise, many consumer behavior theories assume that consumers can process information to make informed purchasing decisions. However, currently the internet provides consumers a greater access to information and a wide range of choices. With the overwhelming amount of information, consumers rely on others to make decisions, leading to changes in buying behavior. Based on these findings, academics and policymakers recognize the importance of financial education in promoting sustainable economic decisions (Kadoya & Khan, 2020). However, despite its recognized value, the absence of a universally accepted definition makes it challenging to measure financial knowledge and implement effective educational programs (Knoll & Houts, 2012; Li, 2020; Fernandes, Lynch, & Netemeyer, 2014). Addressing these gaps will contribute to a more nuanced and effective approach to environmental education and policy-making.

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Chapter 4

Contextualization

Facing increasing environmental awareness, it stands a must for sustainable and intelligent consumption. However, Greenwashing has increased distrust about genuine green markets and sustainable practices. Consumers are not so naive anymore about genuine green markets and sustainable practices, due to their previous bad experiences with misleading marketing practices.

Portugal remains one of the countries with the poorest sustainable behaviour, with a recycling rate that remains below the European average, and a limited circular use of materials. Although environmental and financial education are present in school curricula, they are often insufficient to prepare consumers to assess claims associated with product sustainability. Consumers who do not spend enough time searching for different sources to have a good knowledge basis could be misled by false marketing strategies that do not show all aspects of a product's life.

University students represent a key demographic for studying how knowledge influences consumer behavior. To determine how academic background shapes perceptions of greenwashing and its influence on consumer behaviour allows the identification in educational gaps and pinpoints the main downsides of greenwashing in consumer perceptions.

Overall, this study addresses an urgent societal issue by exploring how financial and ecological knowledge contribute to students' ability to recognize greenwashing tactics and make more sustainable choices. This research aims to promote consumer protection policies and corporate transparency efforts.

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Chapter 5

Methodology

5.1 Study design

This study employed a qualitative approach to explore how financial and ecological knowledge influence students' ability to recognize and respond to greenwashing tactics.

Interviews allowed to understand how consumers think, the criteria and requirements that are most relevant at different stages of the purchasing process (Black & Cherrier, 2010), and which brand actions, labels, or processes they tend to dismiss from their choice.

This approach explored the greenwashing awareness and influence among those with a high level of knowledge in different fields of study: ecological and financial.

5.2 Participant selection

A convenience sampling method was used. The participants involved 10 students from financial and environmental courses in their final year of undergraduate studies or master's studies. This selection was made due to their already acquired knowledge and ability to form opinions depending on their field of study. Participants were recruited through online platforms and social media as LinkedIn and Reddit. Informed verbal consent was obtained from all participants, with assurances of confidentiality and anonymity in handling their data.

Interviews were conducted between February and March 2025 through Google Meet or at ISCTE, with an approximate duration of 20 minutes.

Convenience sampling - non probability sample.

Inclusion criteria:

- Portuguese participants
- Aged 20 to 30
- Studying last year at an undergraduate or master's studies
- Population that has acquired specific academic knowledge that is exposed to greenwashing strategies

Exclusion criteria

- Subjects working directly with packaging processes
- Policymakers related to the field of environment or packaging
- Environmental activists

5.3. Data Collection Methods

Semi-structured interviews were conducted with a subset of 10 participants (5 from each group: financial and environmental courses). Each participant took part in a one-on-one semi-structured interview lasting 20–30 minutes. The interview covered six thematic areas:

1. Personal Understanding of Greenwashing
2. Financial and Ecological Decision-Making
3. Personal Exposure to Greenwashing
4. Psychological and Behavioral Responses
5. Decision-Making Challenges and Strategies
6. Policy and Solutions

All interviews were audio-recorded and transcribed for analysis.

5.4. Data analysis

The collected data were analyzed using Braun and Clarke's (2006) six-step thematic analysis framework, which includes familiarization, coding, theme development, reviewing, defining, and reporting. Interview transcripts were processed, organized, and coded in data sheets from Google. Familiarization involved thoroughly reviewing the transcripts to identify initial key ideas. Inductive and deductive coding approaches were applied to recognize patterns related to trust in eco-labels, financial decision-making, and emotional responses to sustainability claims. Categorical analysis (Bardin, 2002) was used to determine the frequency of different topics during the interviews among different groups of participants. Finally, a word cloud analysis was conducted using the Free Word Cloud Generator (MonkeyLearn, n.d.) with the interview transcripts of each group of participants.

5.5. Ethical Considerations

The study followed the ethical guidelines set by ISCTE Business School. Informed consent will be obtained from all participants, ensuring they understand the purpose of the study, their right to withdraw at any time, and the confidential nature of their responses. Participants will be assured that all data will be anonymized and stored securely.

5.6. Limitations

The use of convenience sampling means that the findings may not be entirely representative of broader populations. Another limitation of this study was the reliance on self-reported data, which may be subject to biases such as social desirability bias or recall bias. However, this study provides

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valuable insights into how different knowledge backgrounds influence consumer responses to greenwashing.

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Chapter 6

Results

The convenience sampling allowed the interview of 5 students from each different areas of study: finance and environment. The age range of the participants was 22-25 with a median of 23.; this allowed the focus on a homogeneous population. Of the 10 participants, 6 were females (60%). Finance studies had 40% female participants, while environment studies had 80%. Most of them were master's students (60%), and the remaining 40% were bachelor's students.

The questionnaire consisted of several categories to assess the familiarity and exposure to environmental issues and greenwashing, as well as to open a discussion about a deeper understanding of the issue, its consequences, and possible solutions.

According to the questionnaire, all the participants presented awareness and expressed concern about environmental issues. Furthermore, 80% of the participants from environmental studies reported involvement in one or more activities to contribute to the environmental problem. Regarding familiarity with greenwashing, 40% of finance participants and 60% of environmental studies participants were familiar with the term and were able to provide an example. The most mentioned brand associated with greenwashing was Nestle, which shows a notable negative perception of the brand by young consumers due to the industry's bad practices. One of the participants shared: *"In the long term, taking care of the planet means ensuring a better future for those who come after us... I buy store-brand products that are cheaper but try to avoid big brands known for environmental exploitation. For example, I don't consume chocolate often, but when I do, I avoid brands under Nestlé due to their involvement in unethical cacao sourcing, including child labor and modern slavery in some African and South American regions."*

Concerning industry sectors, 60% of finance participants were able to identify at least one industry prone to greenwashing. Two of them highlighted the food industry, while the retail sector was also mentioned. All participants from environmental studies identified one different industry, including the automobile, textile, food, cosmetics, and technology sectors. One participant elaborated: *"I believe it's the technology sector, particularly with the rise of artificial intelligence. It's becoming increasingly evident that data centers and other AI-related services have a massive environmental cost, especially in terms of water consumption. We're being sold the idea that this technology is innovative and beneficial for society, but in reality, it is one of the sectors consuming more and more resources."*

Regarding product preferences, overall, most participants preferred ecological products, but only when the price was not a deciding factor. Price was the most influential factor for the product

selection, which correlates with the current financial situation of the interviewed population, which ultimately determines their purchase decision and consumer behaviour. In addition, most of the participants recognize that it is hard for them to determine whether the additional paid cost is due to the sustainable effect of the product or just profits for the business, and even harder to determine if the product claims are true or false. Among factors influencing the choice of sustainable products, packaging was the most significant (50%), followed by labeling (20%), price (20%), and advertising (20%). Even one participant emphasized the importance of reliable certifications when evaluating product labels: *“The small 'eco-friendly' or 'green' logos on the front of a package mean nothing unless they are backed by official certifications, like ISO standards or EU eco-labels. Those are the indicators I now trust.”* Another participant highlighted the visual impact of packaging as an indicator of commitment to sustainability: *‘I think packaging speaks louder than words. For example, let’s take Coca-Cola again. It’s still plastic, even if it’s recycled, and that’s fine. But if I see a company that always used plastic packaging suddenly switching to cardboard, that catches my attention more. That makes me think they put in more effort than just using recycled plastic, but still selling it in the same way. Seeing a brand that used a lot of plastic suddenly switch to fully recyclable or biodegradable materials stands out more to me. It makes me more inclined to buy from them because I can see the change clearly.’*

Regarding previous experiences with greenwashing, 60% describe disappointment and frustration from these practices. Disappointment and frustration were collective emotions among participants, who described increased skepticism in products labeled as ecological. Nevertheless, 70% of them acknowledge their responsibility to increase their awareness about the business practices by researching more information. One of them stated: *“For example, in one of my university courses, some colleagues conducted a lifecycle analysis of various products sold by Sonae. They discovered that many dishwashing detergents, shampoos, and soaps labeled as eco-friendly could not actually be verified as sustainable. The problem is that companies are allowed to put misleading labels on their products without rigorous oversight. That made me realize that I had previously bought products based purely on the distributor’s claims, without real verification.”*

When discussing the change of public opinion when a brand that claims to be sustainable does greenwashing, participants considered that due to the media exposure, there is a big impact in public opinion when this happens, influencers and public figures play a key role in this, as well as people who share their bad experiences on social media. One of them mentioned: *“I think awareness is growing, especially among younger people, like university and high school students. However, many consumers still make decisions based on price and convenience. A deeper shift in perception would likely be reflected in election trends (support for green political parties) or market changes favoring sustainable products.”*

Overall, all participants agree that companies should be penalized for greenwashing practices. Most of the finance students present a pragmatic and market-driven opinion, pointing out that while penalization is fine, this should be according to the size of the company, and that the most significant consequence for a company is the negative impact on its brand and investor confidence. Further emphasizing this issue, one participant stated: “...*the fines should be significant. Right now, the fines are often laughable compared to the profits these companies make, completely insignificant. So, to what extent is regulation really effective?*”

Similarly, environmental studies students advocate for the necessity of fines according to the penalty of the company and its size, furthermore highlighting the importance of stronger governmental intervention, emphasizing the need to remove deceptive products from the market, enforce necessary changes, and increase regulatory oversight to ensure stricter compliance. Reinforcing this idea, a participant from this group remarked: “*Fines alone won’t work because large corporations can easily afford them. Instead, there should be penalties that actually impact their business, such as temporary shutdowns, restrictions on distribution, or mandatory reductions in production. For example, major oil companies could be forced to halt production for a certain number of hours. Supermarkets engaging in misleading greenwashing practices could be temporarily prohibited from selling certain products.*”

There were several interesting and creative options proposed to demonstrate genuine sustainability from businesses and products. All of the participants acknowledged that transparency with the fabrication process and the company initiatives, more explicit and clearer information, would solve the skepticism issue and help people to build trust. Some participants mentioned the development of a ranking system of sustainability or an index value to be able to measure the product’s ecological impact, similar to the NutriScore table present in food products. A standard certification easily recognized by consumers and an improved regulation were also taken into account.



Figure 1.- Word cloud from financial studies interviews. Each answer transcription from financial studies participants was merged into one Word document, where articles and connectors were removed.



Figure 2.- Word cloud from environmental studies interviews. Each answer transcription from environmental studies participants was merged into one Word document, where articles and connectors were removed.

Regarding sustainable education, most participants (90%) agreed that more education and raising awareness are needed, not just within schools. Participants also highlighted the need to make this information more appealing to the general public. Expanding on this point, a participant stated: *“Environmental education shouldn’t be limited to specialized courses like Environmental Engineering.*

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Topics such as circular economy and corporate sustainability should be part of general education, so future consumers and professionals are better equipped to make informed decisions.”

Overall, each group presented similar opinions and perspectives on greenwashing. Word frequency analysis (**Fig. 1, Fig. 2**) showed similarity between groups. However, environmental studies participants showed more involvement and concern about this issue. It is also worth mentioning that the length of each interview was noticeably shorter within the finance group vs the environmental group.

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Chapter 7

Discussion

This study examines the impact of financial and ecological knowledge on young consumers' ability to recognize and respond to greenwashing, demonstrating that both domains significantly contribute to sustainability awareness. These findings align with prior research showing that disciplinary background shapes the depth and scope of environmental engagement, with environmental studies participants displaying broader sector knowledge and more critical evaluations of green marketing claims (Seyfi et al., 2025; Ribeiro et al., 2025). At the same time, consistent with Casalegno et al. (2022), the results highlight the influence of contextual factors, particularly price sensitivity, emotional responses, and trust in product labelling, in purchase decisions. The contrast between the more nuanced perspectives of environmental studies participants and the comparatively limited reflections from finance participants underscores the importance of cross-disciplinary sustainability education. Combating greenwashing will require dialogue between businesses and policymakers to translate consumer expectations into regulatory frameworks that ensure credibility and promote sustainable market choices.

In recent decades, public concern for environmental issues has grown significantly, as seen in global social movements, climate activism led by figures such as Greta Thunberg, and political initiatives like the European Green Deal (European Commission, 2023). Since research reveals that age is determinant in choosing green and/or socially friendly products (Casalegno et al., 2022), Gen Z (i.e., individuals born between 1997 and 2012), having grown up in a context marked by environmental crises, is aware that they will face the long-term consequences of environmental collapse as concerns that will directly affect their future (Borah et al., 2024; Gomes et al., 2023; Ham et al., 2022). Their digital fluency also exposes them to a wider range of global environmental and social challenges, contributing to an increased sense of responsibility. (Filimão et al., 2023; Nzau et al., 2022). The study results evidenced this, since all the participants were familiar with environmental issues, greenwashing, and presented genuine concern about their consequences. Furthermore, previous research shows that this generational cohort expresses its identity through distinctive sustainability-oriented behaviors. Gen Z consumers actively seek and choose eco-friendly product options (Seemiller and Grace, 2018; Djafarova and Fouts, 2022; Prayag et al., 2022), considering their carbon footprint before purchasing a product (Skeiryte et al., 2022). They demonstrate a willingness to boycott non-sustainable brands (Wee, 2019; Seyfi et al., 2023), in contrast with baby boomers, who emphasize community responsibility, tend to trust institutions, and whose actions are often justified more in economic than ethical terms

(Dacunto et al. 2025). This highlights the structural role of education and long-term awareness-raising initiatives in enabling responsible consumption. However, most discussions about Gen Z consumers' environmentalism are conceptual, and empirical research has not yet demonstrated their actual behavior in sustainable development (Haddouche and Salomone, 2018; Salinero et al., 2022; Seyfi et al., 2023). Previous studies describe that while sustainability represents one important consideration in Gen Z consumers' purchase decisions, it operates alongside other key factors such as price, convenience, and quality (Casalegno et al., 2022). This study's results show that, despite possessing environmental knowledge, it does not necessarily translate into familiarity with greenwashing, as only 50% of respondents were able to recognize the term and provide an accurate example. Similarly, D'Acunto et al.'s findings suggest that Gen Z customers lack introjected sustainability values; instead, most of them probably follow a fashion/trend superficially. These findings highlight the existing attitude-behavior gap in sustainable consumption. This gap has also been noted in labeling contexts, where most consumers do not fully understand food label information, suggesting that literacy, rather than motivation, is often the limiting factor in sustainable choices (Silva et al. 2022).

Regarding the greenwashing examples, the most mentioned was Nestlé, which participants pointed out as unethical and responsible for child labor and modern slavery. This negative reputation has been confirmed through many news reports. Since 2000, Nestlé has been publicly accused of fostering poor working conditions by buying cocoa from suppliers that did not respect workers' rights (Watson et al. 2016). In addition, it was named the world's top plastic polluter for the third year in a row in the Break Free From Plastic's 2020 annual report, along with Coca-Cola and PepsiCo (Bowen 2018). Similarly, a report by Oxfam found that Nestlé was one of the worst-performing companies in terms of transparency and addressing water-related risks in its operations and supply chain (Robbinson 2024). Beyond environmental and labor concerns, Nestlé has also been criticized for using various Corporate Political Activity (CPA) strategies to influence public health policies in ways favorable to the company. A study that documented 438 examples of CPA practices within the infant food sector showed that Nestlé frequently employed discursive strategies, such as stressing its good intentions through education programs or advocating voluntary instead of mandatory regulations, to frame the debate on diet and health. These were often combined with instrumental strategies like information management, where Nestlé provided nutrition materials and free health professional advice to parents, raising concerns about conflicts of interest. Moreover, the company built coalitions with health professionals, researchers, and civil society organizations, creating platforms that enhanced its credibility while potentially undermining the WHO Code of Marketing of Breastmilk Substitutes (Tanrikulu et al., 2020). Such practices may help to delay stricter regulations, shape dietary guidelines, and ultimately protect corporate interests at the expense of public health. In response to its declining reputation, Nestlé has recently adopted green initiatives to mitigate its

negative reputation among consumers. Nevertheless, a recent study in India (Singh, 2025) on Nestlé consumer perception shows that while most respondents are aware of Nestlé's sustainable packaging efforts, just 62% fully trust Nestlé's environmental commitment. This ambivalence reflects the broader tension described by Santos et al. (2024), where greenwashing not only diminishes reputation but can also trigger "brand hate," leading to long-term erosion of consumer loyalty in digital environments. The findings indicate a notable difference in sector identification between participants from finance and environmental studies. Among finance participants, 60% were able to identify at least one industry perceived as prone to greenwashing, with examples concentrated in the food and retail sectors. Similarly, Belim and Baptista's study (2025) shows that despite the participants' understanding of greenwashing, 40% of them were either unaware of the concept or could not define it. This finding is consistent with existing literature that identifies a gap in public awareness and understanding of greenwashing (Álvarez García and Sure da Negre, 2023). In contrast, all environmental studies participants identified at least one sector, covering a broader range that included the automobile, textile, food, cosmetics, and technology industries. This divergence may be linked to differences in disciplinary exposure: environmental studies curricula often emphasise sustainability challenges across multiple domains, whereas finance participants appeared to focus on industries with high public scrutiny in Environmental, Social and Governance (ESG) reporting and consumer markets. The study further reveals that environmental participants not only named more sectors but also provided more nuanced justifications. For instance, one participant highlighted the environmental costs of the technology sector, particularly the water consumption associated with artificial intelligence and data centres, which is a recent growing concern, since according to the recent U.S. data center energy report, the total annual on-site water consumption by U.S. data centers in 2028 could double or even quadruple the 2023 level, reaching approximately 150 – 280 billion liters and further stressing the water infrastructures (Li et al. 2025). Results suggest that, in addition to frequency, the depth and diversity of awareness may be shaped by the participants' educational and professional orientation, with implications for how greenwashing is understood and addressed across fields.

When it comes to sustainable product choices, most participants expressed a preference for ecological products but only when price was not the deciding factor, reflecting that budget constraints often outweigh environmental considerations. The prominence of price as a deciding factor in purchasing decisions can also be understood within the current economic context. As Yeboah et al. (2025) note, the post-pandemic period in Europe has been marked by persistent inflation, leading to price increases and adjustments in interest rates aimed at restoring stability. This situation has reduced purchasing power for many households, particularly among younger generations, and made affordability a stronger determinant of consumer behaviour. Amores et al. (2024) further highlight that Portuguese families, in particular, have experienced greater losses in purchasing power compared to

other European countries. These pressures help explain why, in this study, even participants with strong environmental values prioritised price over sustainability when choosing products. While some government measures and fiscal policies have cushioned the impact of inflation in certain contexts, the ongoing strain on household budgets means that sustainable consumption choices are often constrained by economic realities. Even when willing to pay more for a sustainable product, participants expressed uncertainty about whether the higher cost reflected genuine sustainability efforts or increased profit margins. This aligns with the challenge of verifying green claims in the marketplace. Packaging emerged as the most influential factor in product selection, followed by labeling, price, and advertising. Some participants placed strong trust in recognised certifications, such as ISO standards or the EU eco-label, highlighting the role of institutional credibility in building consumer trust. Others emphasised visible changes in packaging materials as stronger indicators of commitment. Notably, the example of switching from plastic to biodegradable materials was perceived as a stronger signal of authenticity than recycled plastic packaging.

The accounts of previous experiences with greenwashing reveal a strong emotional component in how young consumers engage with sustainability claims. Sixty percent of participants described feelings of disappointment and frustration when discovering that products marketed as ecological were not truly sustainable. These emotions translated into greater scepticism toward eco-labels, suggesting that repeated exposure to misleading claims can erode trust in sustainability branding. At the same time, 70% of participants recognised their responsibility in verifying claims, acknowledging the need to actively research company practices rather than relying solely on product labels. This aligns with existing literature showing that direct exposure to the mechanics of product assessment, such as lifecycle analysis, can shift purchasing behaviour from passive acceptance to more critical evaluation. However, these findings also point to a structural gap: without rigorous oversight and standardised certification, the burden of verification continues to fall disproportionately on consumers, which may not be sustainable in the long run.

Overall, all participants supported penalising companies engaged in greenwashing, though their reasoning reflected differences in disciplinary perspective. Finance students tended to adopt a pragmatic, market-oriented view, recognising fines as necessary but arguing that they should be proportional to company size and emphasising reputational damage and investor confidence as the most impactful deterrents. Environmental studies participants agreed on the need for proportional fines but placed greater emphasis on stronger governmental intervention. Their suggestions went beyond financial penalties to include measures such as product removal, enforced operational changes, and temporary restrictions on production or sales. This correlates with previous literature highlighting that fines alone may be insufficient for large corporations, which can absorb them as a cost of doing business (Zhou et al. 2024). The emphasis on more disruptive measures, such as halting

oil production for set periods or restricting supermarket sales, reflects a belief that only penalties that materially affect operations can drive meaningful change.

Beyond penalization and stricter oversight, participants emphasized the need for clear, standardized tools that could help consumers identify genuinely sustainable products. This aligns with institutionalist perspectives described by Culot et al. (2021), where certifications and transparent labeling systems not only guide consumer choices but also enhance corporate reputation among stakeholders such as employees, suppliers, investors, and customers. One such initiative is the Eco-Score, already adopted in France for apparel and textile products, which rates environmental impact from A (most eco-friendly) to E (most harmful), supported by a color scale from green to red for quick recognition. The scoring is based on 16 indicators, including carbon emissions, water consumption, and sustainable production processes. Although voluntary in 2025, it will become mandatory in 2026, compelling companies across the value chain, from manufacturers to logistics providers, to adapt (Wordly, 2025). Comparable to the Nutri-Score used in food labeling, the Eco-Score offers a direct and accessible benchmark for sustainability, potentially reducing consumer reliance on vague marketing claims. When combined with internationally recognized certifications such as ISO standards, which are widely accepted as proof of organizational commitment to transparency, quality, and sustainability, these measures can serve as both a decision-making tool for consumers and a reputational asset for companies. However, according to Silva (2022), most consumers do not fully understand the information provided through food labeling due to the lack of knowledge regarding the concepts and terminology present on these. Nevertheless, color systems facilitate the understanding of the information transmitted.

The strong consensus among participants regarding the importance of sustainability education underscores its role as a long-term strategy for countering greenwashing. This aligns with prior research indicating that environmental literacy must extend beyond specialized academic fields and become a permanent component of both formal and informal education (Bezi et al. 2024). Several participants emphasized that such education should not be limited to early schooling but should be updated and reinforced throughout life stages, ensuring that knowledge remains relevant to evolving environmental challenges. As one participant observed, environmental education is already being implemented in higher education through both practical and theoretical approaches. The Eco-Schools program in Portugal exemplifies this process: from 1996 to 2021, the number of municipalities involved more than quadrupled, fostering environmental awareness not only within schools but also at the community level (Sousa, 2022). Such initiatives show how continuous exposure can create critical spirits capable of resisting misleading campaigns and promoting sustainable lifestyles. Rahmat et al. (2025) highlight that integrated ecological programs, particularly when targeted toward Generation Z, can cultivate independent critical thinking and equip young people to actively challenge unsustainable

practices. Scholars also emphasize that sustainable consumption education should be incorporated into teacher training to ensure long-term behavioral change (Durmaz & Gündüz, 2021), while others argue that university curricula must go beyond rhetorical commitments and integrate substantive sustainability practices (Duarte et al., 2023; Álvarez-García & Sureda-Negre, 2023). This has been implemented by universities and polytechnics across Portugal, which have started developing courses exclusively dedicated to sustainability to change the behavior.

The similarity in perspectives between finance and environmental studies participants in this study suggests that awareness of greenwashing is increasingly pervasive across disciplinary backgrounds. Nonetheless, the longer interview duration and greater depth of engagement within the environmental studies group may reflect the influence of domain-specific knowledge in fostering more critical evaluation and nuanced discussion. This reinforces the notion that while broad, accessible sustainability education can raise baseline awareness, sustained and specialized learning opportunities are key to developing a public capable of resisting misleading environmental claims and supporting authentic corporate sustainability efforts.

Recent empirical evidence from Portugal lends further support to these conclusions. Shabani Shojaei et al. (2024) found that perceived greenwashing exerts a strong negative impact on consumer attitudes toward eco-friendly products, while its influence on purchase intention is indirect, mediated by attitude. The practical implications of the findings highlight that effective sustainability strategies require more than simply promoting eco-friendly products; they demand transparent communication, credible certifications, and differentiation that consumers can clearly perceive.

Taken together, the two studies illustrate that knowledge alone is insufficient. Even among informed and environmentally concerned consumers, credibility remains decisive for bridging the attitude–behavior gap. For both policymakers and businesses, this implies that strengthening regulatory frameworks, standardizing sustainability labels, and mitigating perceptions of risk are essential steps toward changing environmental concern into consistent, sustainable consumption.

Chapter 8

Conclusion

This study shows the interplay between financial and ecological knowledge in young consumers' ability to recognize greenwashing. While Gen Z participants demonstrated concern for environmental issues and willingness to engage in sustainable consumption, the findings reveal persistent barriers, notably the influence of price, emotional responses, and limited literacy in interpreting sustainability claims. The observed attitude-behavior gap confirms that awareness alone is insufficient to guarantee consistent, sustainable choices.

Differences between finance and environmental studies participants show that disciplinary background influences not only greenwashing recognition but also the depth of critical evaluation. Environmental studies participants displayed more nuanced and cross-sectoral reflections, while finance students emphasized pragmatic and market-oriented considerations. These contrasts highlight the importance of interdisciplinary sustainability education that integrates ecological literacy into broader academic and professional contexts.

Independent of the field of studies, it is unequivocal that greenwashing provokes bad feelings and disappointment. Moreover, brand transparency is highly valued by customers and that is how trust is built. As the case of Nestle illustrates, companies may continue to experience the consequences of misleading practices in previous years.

Beyond individual responsibility, the study highlights the structural need for transparent regulatory frameworks, standardized labeling systems such as the Eco-Score, and stronger governmental oversight to reduce consumer vulnerability to misleading claims. Hence, addressing greenwashing requires a multi-level approach: informed consumers, accountable corporations, and robust institutional frameworks.

Further quantitative investigation is required to examine whether Gen Z's stated willingness to pay more for sustainable products persists after they enter the workforce and measure the difference between previous generations.

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Annex

Annex A

Questionary:

- 1 - What is your level of awareness or involvement in environmental issues?
- 2 - Can you give an example of greenwashing practices you remember?
- 3 - Which industry sector or type of product might be easiest to create a greenwashing campaign for?
- 4 - What is your preference between eco-friendly products and regular alternatives?
- 5 - What factors influence your choice?
- 6 - When choosing a product marketed as "green," how do you recognize whether the additional cost is due to its sustainable aspect and not to increase profits?
- 7 - How do you make the final assessment of the product's advantages in terms of financial and ecological claims on the packaging before buying it?
- 8 - Have you ever bought a product that turned out not to be as environmentally friendly as it claimed to be, after learning more about it? Can you describe it?
- 9 - What measures did you take regarding your perception of the brand or product?
- 10 - What emotions did you feel when you realized the product you bought was not as eco-friendly as advertised (anger, disappointment, frustration)?
- 11 - Did you take any action after discovering you had purchased greenwashed products?
(Did this experience make you more cautious before buying a "green" product? If so, how?)
- 12 - What factors most influence your choice of a product marketed as sustainable? (packaging, labels, advertising)
- 13 - Is it difficult for you to distinguish between a greenwashing strategy and a genuinely sustainable product? Why or why not?
- 14 - In your opinion, does greenwashing change public opinion about a brand that claims to be sustainable?
- 15 - In your view, how should companies be penalized for greenwashing?
- 16 - If you could change one thing about "green" products to demonstrate a genuine commitment to environmental issues, what would it be?

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17 - In your opinion, how can consumers identify genuine products and protect themselves from greenwashing?

18 - Do you believe environmental movements and education in schools should be more frequent and in-depth?