

# Understanding Consumer Perception of Eco-Designed Products: Proposal of a Conceptual Framework - A Study Among French Students

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*In response to global environmental challenges, companies are increasingly offering "sustainable" products labeled organic, eco-designed, or produced through circular economy practices. This shift aligns with principles of sustainable development outlined in the 1987 Brundtland Report, aiming to meet current needs without compromising the ability of future generations to meet their own needs. Regulatory frameworks such as the EU's 2009 ecological label and France's 2020 anti-waste law have further propelled responsible production practices. Despite this growing eco-friendly sentiment, consumer behaviors regarding purchases and repurchases of these products remain inconsistent. This study investigates the factors influencing consumer behavior towards eco-designed products through qualitative analysis of three focus groups involving 25 university students. Findings reveal that while there is generally positive regard for eco-design, factors like price, quality, and current trends significantly influence purchasing decisions. Education and age emerge as pivotal in fostering eco-conscious consumer behavior. The study underscores the potential for collaborative value co-creation between companies and consumers, emphasizing the integration of ecological considerations in product development. Limitations include the study's focus on young, university-level participants, warranting further research across broader demographics for comprehensive insights.*

**Keywords:** *ethical consumption, consumer behavior, ecological products, sustainability, eco-conception*

## Introduction

More and more companies are offering products that can be described as "sustainable," either because they are labeled organic or eco-designed, or because the production process follows a circular economy approach. Sustainable development (SD), highlighted by the 1987 Brundtland Report, emphasizes balancing current needs without compromising the ability of future generations to meet their own. Since then, French and European regulations have pushed companies to produce according to responsible standards, such as the regulation establishing the EU ecological label in 2009 and the anti-waste law for a circular economy in 2020<sup>1</sup>. Consumers are increasingly sensitive to this approach: according to a study by Bain

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<sup>1</sup>Regulation (EC) no 66/2010 of the European Parliament and of the Council of November 25, 2009 establishing the EU Ecolabel (Text with EEA relevance), LOI no 2020-105 du 10 février 2020 relative à la lutte contre le gaspillage et à l'économie circulaire

in 2024<sup>2</sup>, 76% of consumers believe that a sustainable lifestyle is important because their actions have an impact and do it by recycling (67% of interviewees), limiting purchase of disposable products (68%) or composting food waste (66%). However, although these products follow a strong sustainability approach (modifying packaging, additives, reducing CO2 impact), purchases or repurchases are not always consistent. We can question the factors limiting this consumption: is it the price (as with organic products); is it the form that no longer suits (too lightweight, as with water bottles...)? Consequently, it is interesting to identify the barriers and motivations of consumers facing a so-called responsible offer, particularly an eco-designed product. Berneman et al. (2013, p.76) define eco-design as "*the design mode of a product that integrates environmental factors throughout its life cycle, namely the choice of raw materials, the manufacturing process, transport and storage, its use and disposal.*" In another definition, "Eco-design is more focused on the upstream while the circular economy places greater importance on the downstream and the future of the product" (Brodhag 2014, p. 33). In this research, we chose to focus on the upstream part and the perception consumers had of the product rather than the company's overall approach. Moreover, we've decided to focus on young people because they appear to be more concerned with sustainable products (Dabija et al. 2019). Consequently, we conducted 3 focus group meetings with 25 students to better define eco-design and identify factors that can influence their behavior and propose a conceptual framework at the end of this qualitative study.

## Literature Review and Theoretical Background

According to Macrotrends statistics<sup>3</sup>, global consumption spending for 2022 reached a staggering \$55,971.23 billion, marking a notable increase of 4.52% from the previous year 2021. This substantial surge in consumption presents a formidable challenge, compounding long-standing issues such as population growth, environmental degradation, and sustainable development (Liu et al. 2017). In response to these pressing concerns, consumer consciousness regarding environmental impacts, sustainability, ethical considerations, and the social repercussions of their purchases has markedly intensified (Yue et al. 2020).

### *Role of Consumers*

According to studies by Jaiswal and Kant (2018) and Kumar et al. (2017), environmental knowledge and awareness have a major influence on consumers' decisions to buy environmentally friendly products. Others demonstrate how environmental consciousness is influencing consumer behavior progressively, especially regarding green consumption (Sun and Yoon 2022). It also emphasizes the growing importance of sustainability to customers and the influence of ethical and environmental factors on their choices. Their findings reveal that consumers who are more conscious about

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<sup>2</sup><https://www.bain.com/insights/what-do-consumers-really-want-ceo-sustainability-guide-2024>.

<sup>3</sup><https://www.macrotrends.net>.

environmental issues and ethical consumption are more likely to choose eco-friendly products, even at higher prices. It also highlights the role that ethical standards, environmental behavior play in fostering green consumption and defines them as the primary forces behind this change in behavior.

Roberts (1995, p. 98) defines the responsible consumer as ‘an individual who deliberately chooses goods and services based on their perception of having a positive or reduced impact on the environment’. This conscious decision-making process empowers consumers to use their purchasing power as a means to express social and environmental concerns. This shift towards responsible and sustainable consumption is gaining momentum, particularly evident in the growing preference for eco-designed products.

In response to this trend, companies are increasingly incorporating sustainable development principles into their business strategies. They recognize the rising consumer demand for products that align with environmental values and contribute positively to sustainability efforts. This strategic integration is not merely a response to regulatory pressures or market trends but also a proactive approach to meeting the expectations of conscientious consumers (Darnall et al. 2012). Other studies (Luzio and Lemke 2013) highlight how businesses are adapting to consumer preferences by developing and marketing eco-designed products. Such products are designed to minimize environmental impact throughout their lifecycle, from sourcing raw materials to disposal.

Since the 1970s, marketing research has consistently highlighted individuals' growing awareness of impending social and environmental crises (Fisk 1973). This heightened awareness has increasingly influenced consumer purchasing decisions, driven by considerations of a product's environmental impact (Balderjahn et al. 2013) and a preference for lifestyles that promote both personal health and environmental stewardship (Matharu et al. 2020). Even though consumers may care about environmental issues or be well-informed about them, this awareness usually does not translate into consistent sustainable purchasing practices (Margariti et al. 2024).

### *Theoretical Frameworks on Consumers' Behavior*

The theory of Planned Behavior (Ajzen 1991) posits that behavioral decisions are significantly influenced by individuals' attitudes toward the behavior, subjective norms, and perceived behavioral control. This theory suggests that individuals are more inclined to act according to their established intentions and available information, carefully weighing the pros and cons before making a decision. In contrast, the theory of neutralization (Sykes and Matza 1957) describes how individuals rationalize behaviors that contradict their internalized values by employing techniques such as denial of responsibility or condemnation of the condemners. This theory complicates the consumer decision-making process, particularly when their actions deviate from their stated beliefs about sustainability. It is therefore a process of dynamic thinking rather than static judgment, which makes it more difficult for consumers to make decisions, particularly when their behavior contradicts their beliefs about sustainability (Fukukawa et al. 2019).

The relationship between the theory of planned behavior and the theory of neutralization becomes evident when examining how consumers rationalize their purchasing decisions. While the theory of planned behavior asserts that consumers' decisions are based on their attitudes, norms, and perceived control, the theory of neutralization shows that consumers may also use justification techniques to reconcile inconsistencies between their values and actions (Chatzidakis et al. 2007). For instance, a consumer might intend to buy eco-friendly products due to environmental concerns but rationalize the purchase of non-eco-friendly items due to higher costs or lack of availability.

Cognitive dissonance, a psychological theory introduced by Festinger (1957), further complicates this decision-making landscape by highlighting the discomfort individuals experience due to conflicting beliefs or behaviors. This discomfort prompts individuals to seek consistency between their attitudes and actions. Within the context of eco-designed product purchases, cognitive dissonance often becomes significantly apparent. Ethically motivated consumers may encounter challenges such as the high price of sustainable goods, inadequate infrastructure, and a scarcity of environmentally favorable options (Dioba et al. 2024). Rationalization in this context serves to mitigate cognitive dissonance and influences attitudes and intentions, as outlined by the theory of planned behavior. Additionally, some consumers might opt for eco-friendly products not solely based on ethical considerations but also to enhance their social status within their communities (Griskevicius et al. 2010).

The interrelationship between these theories highlights the evolving landscape of consumer behavior towards sustainability. The theory of planned behavior provides a framework for understanding the formation of intentions and subsequent actions, while the theory of neutralization reveals the justifications consumers might employ when their actions contradict their values. Cognitive dissonance plays a crucial role in this interplay, driving consumers to align their behaviors with their beliefs to reduce psychological discomfort.

#### *Proposal of a Conceptual Framework*

As mentioned earlier, the theory of cognitive dissonance, in the context of responsible consumption, suggests that when individuals experience conflicting thoughts—such as consuming non-ecological products while criticizing their production—it creates mental discomfort. This discomfort motivates individuals to reduce the contradiction and can influence the intention to change behavior (Séré de Lanauze and Siadou-Martin 2019). Notably, the reluctance to consume green products contributes more to this mental discomfort than rejecting the production of such products. Individuals strive to make choices consistent with their values, and the perceived consequences of consumption, particularly those related to the environment, have less impact than personal values (Carrington et al. 2010).

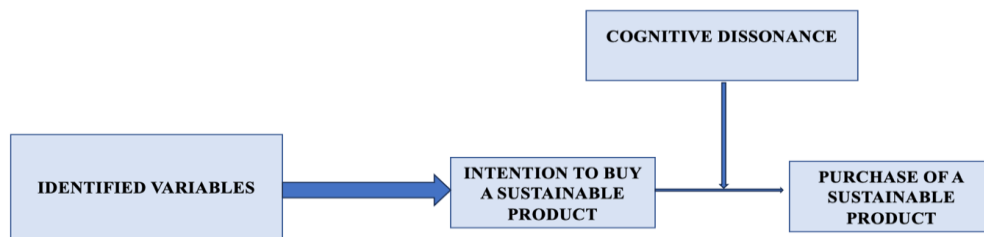
Research has recently shown how cognitive dissonance can induce changes in behavior in response to unfavorable information. Séré de Lanauze and Siadou-Martin (2019) studied how psychological discomfort caused by dissonant cognitions leads people to modify their beliefs or behaviors in order to overcome this internal conflict. Their findings showed that when people are exposed to conflicting

information, their behavior as consumers changes significantly, as they try to align their behaviors with their ideals. This aligns with the models of planned behavior proposed by Ajzen & Fishbein (2000). This reinforcement of mental discomfort is a gradual process that slowly drives individuals to want to change their behavior.

To expand our understanding of this process, we propose conducting a qualitative study to identify the relevant explanatory variables. This study will not only highlight existing variables but also explore and identify additional factors pertinent to our research. By focusing on cognitive dissonance, the study aims to explore the conflict between non-ecological consumption and critical attitudes towards production, examining how this conflict creates mental discomfort and drives behavior change. Additionally, the study will emphasize the role of credible information and personal empowerment in promoting responsible consumption behaviors.

Integrating the insights from cognitive dissonance theory with the theory of Planned behavior and the theory of neutralization, we will develop a comprehensive research model. This model will serve as the foundation for our qualitative study, aiming to better explain and understand the factors influencing responsible consumption behavior. By analyzing how these theories interrelate, the model (see Figure 1) will provide a structured framework for examining consumer decisions towards ecological products.

**Figure 1.** *Research Model*



Ultimately, this conceptual framework underscores the importance of aligning corporate strategies with societal expectations for environmental responsibility and ethical consumption practices. As consumer awareness continues to grow, companies must integrate sustainable practices into their core business strategies to meet the increasing demand for eco-friendly products and transparent ethical standards. By understanding and addressing the psychological mechanisms driving consumer behavior, companies can more effectively engage with eco-conscious markets and foster sustainable consumption patterns.

## Methodology

A qualitative study was conducted between November 2021 and January 2022 in the eastern region of France, focusing on master's students in marketing and engineering disciplines. The study employed a convenience sample method, chosen for its efficiency in quickly identifying pertinent variables within the young

population, known for both their reluctance and potential as early adopters of new eco-designed products.

### *Interview Guidelines*

The primary objective of the interviews was to gain deeper insights into consumer attitudes and behaviors towards ecological products. The topics covered in the interviews were broad ranging, encompassing criteria used to assess the ecological credentials of products, participants' attitudes towards eco-friendly products across different categories, their environmental concerns, and perceptions of these products' efficacy.

To ensure consistency and depth in data collection, a semi-structured interview guide was meticulously crafted. The guide was structured in four phases: defining eco-design, providing examples of products, discussing product choices and purchasing behaviors, and finally addressing functional aspects and environmental criteria. During each focus group session, discussions were recorded, transcribed verbatim, and subsequently analyzed using a thematic coding framework. This qualitative data analysis approach enabled the researchers to systematically categorize and interpret the rich data obtained from the interviews.

### *Sample*

To foster interactive discussion and obtain a variety of perspectives, the study organized three focus groups that included a total of 25 students. The first two groups consisted of master's students from a French university, while the third group comprised engineering students in training. This methodology was chosen for its speed of implementation and its ability to explore a non-sensitive topic conducive to open exchange. The use of focus groups enabled in-depth discussions between participants, allowing the researcher to gather rich qualitative data on attitudes and perceptions. By engaging students from different academic backgrounds, the study aimed to ensure a wide range of viewpoints and experiences, thereby enhancing the reliability and validity of the results. Additionally, the educational setting offered participants a comfortable and familiar environment, encouraging frank and insightful contributions.

Through this methodological approach, the study aimed to uncover nuanced insights into how young consumers perceive, evaluate, and engage with eco-designed products. By exploring these dimensions through qualitative research, the study contributes valuable perspectives on the evolving landscape of sustainable consumption behaviors among the younger demographic. These insights are pivotal for businesses and policymakers seeking to understand and effectively cater to the preferences and values driving consumer choices towards more environmentally responsible products.

Each focus group was recorded, filmed, and transcribed. We then carried out a thematic content analysis following the methodology proposed by Braun and Clarke (2006) and Alves de Castro (2023). We subsequently constructed a coding grid by selecting broad categories that corresponded to the main themes of the interview

guide. The interviews were then analyzed by two coders to guarantee the reliability of the data. The main results are presented below.

## Results and Discussion

The results of this study highlight the crucial importance of three main themes and demonstrate that some variables exert a more profound influence than others. Detailed analysis and discussion of the results is reported in this section, focusing on the key variables and associated contextual implications.

### *Perception of Eco-Designed Product*

#### Definition of Eco-Design

Most respondents (12 out of 22) provided precise definitions of eco-design and eco-responsible consumption (see Table 1).

**Table 1.** *Definition of Eco-design by Consumers*

Definition of eco-design	Verbatims
Circular economy	<i>"I see a link between eco-design and the circular economy"</i> (G2)
Environment	<i>"Eco-design is all products manufactured with ecology in mind, in a sustainable way recyclable stuff..."</i> (H2) <i>either we focus directly on the product and try to improve, well reduce its environmental impact, and so we're really going to eco-design it in a way "</i> (B3)
Sustainability	<i>"It has to be done in a sustainable way"</i> (A2)
Recycling	<i>"Any manufacturing where recycled materials and products are used"</i> (B1) <i>"Eco-design is about recyclable packaging, like glass. When you recycle it, it produces more energy than creating new packaging"</i> (G1)
Less consuming	<i>"Eco-design also depends on the manufacturing process, i.e., manufacturing in such a way as to produce less waste and consume less energy"</i> (I1) <i>"improving its energy efficiency or whatever, and then it's an eco-design more focused on use."</i> (B3)

We observed that participants in the third group, who had received prior training in eco-design, demonstrated a deeper understanding and offered more sophisticated

definitions compared to the other groups. Their exposure to eco-design principles equipped them with insights into integrating environmental considerations throughout a product's lifecycle, from sourcing raw materials to disposal. This group articulated eco-design not merely as a practice but as a strategic approach that aligns sustainability with innovation and market differentiation.

Moreover, several participants viewed eco-design through the lens of innovation, perceiving it as a catalyst for developing novel products and services that meet both environmental standards and consumer expectations. They recognized eco-design as an opportunity to pioneer new solutions that minimize ecological footprints while enhancing product quality and performance. This perspective underscores how education and training in eco-design can inspire creative thinking and foster entrepreneurial spirit among future professionals.

### The Importance of Eco-Designed Product

Overall, students held a positive perception of eco-design, emphasizing its critical role in integrating environmental considerations from the very inception of product development. They recognized the significance of designing products that minimize environmental impact across their entire lifecycle—from raw material extraction and production to distribution, use, and disposal. Participants in the study consistently highlighted the importance of eco-design in addressing pressing environmental challenges. They viewed eco-design not merely as a regulatory requirement but as a proactive approach to sustainability. By embedding environmental criteria into the design process, students believed that companies could mitigate ecological footprints and contribute to global efforts towards sustainability goals. However, opinions were divided: "*Honestly, yeah, for everything like Nutella, palm oil, for everything... really big companies that have huge impacts on the environment. So yeah, for those we know really have big impacts, I think it will impact my purchase decision, but for others where we don't have our eyes open, I don't think so, not for me*" (A2); "*For me personally, the environmental criterion is important because I am aiming to reduce my personal environmental impact*" (A3).

### *Factors Influencing the Purchase Behavior of an Eco-Designed Product*

We've identified 3 main factors that can influence the intention to buy a sustainable product: individual factors, personal factors and the eco-designed product.

#### Individual Factors

Nevertheless, there is increasing awareness among students about environmental issues and the need to promote more ecological behavior through their purchasing choices. Consumer behavior varies between eco-friendly and non-eco-friendly products, and their intention towards an eco-designed product differs between the pre-purchase phase and the post-purchase phase: "*For me, I would say yes, we would pay more attention actually to the product that has been eco-designed, precisely to use it longer, to pay attention to the environment, than another, no, we use it and then we throw it away*" (I2). The criterion of environmental impact occupies a central place in their consumption choices. For example, individual B3, like A3,



emphasized the importance of organic food products and mentioned the special attention paid to organic certification and local dimensions: "*The first thing, on food, I pay a lot of attention to whether it's organic or not, and that doesn't... it's not very related to the environment, well of course it's related to the environment, but it's more about health, on food I pay particular attention to whether it's organic or not. After that, health, organic certification, non-organic, there's also everything that is environmental, there's the local*" (A3). The responses also reveal that consumers' behavior towards eco-designed products differs from that towards non-eco-designed products, primarily due to the idea that eco-designed products are generally more expensive, more fragile, but of better quality. This bias determines how consumers assess and interact with these products. Consumer behavior following the acquisition of products labeled as "eco" or "organic" tends to exhibit significant differences compared to conventional products. Our interviews revealed that eco-conscious consumers perceive these products as requiring more responsible management than their traditional counterparts.

#### Personal Factors

For eco-conscious consumers, the decision to purchase eco-labeled products is often driven by a desire to align their consumption habits with environmental values. They believe that choosing eco or organic products signifies a commitment to sustainability and ethical consumerism. Indeed, in the study, I2 addressed this change by stating: "*For me, I would say yes, we would pay more attention actually to the product that has been eco-designed, precisely to use it longer, to pay attention to the environment, than another, no, we use it and then we throw it away.*" Furthermore, H2 stated a preference for eco-designed services, explaining that: "*Compared to services, I will prioritize an eco-designed service, because I know that the purpose is to help something.*"

#### Impact of the Eco-Designed Product

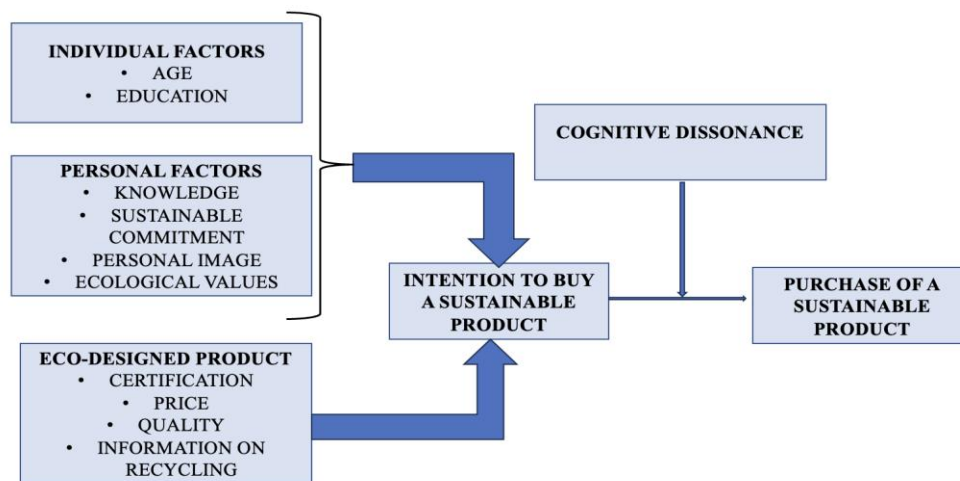
Firstly, price is a fundamental element in their purchasing decisions, as evidenced by the responses of several participants (B2, H2, I2, C, and A3) who all mentioned its importance. This finding is significant in the current context where consumers are increasingly cautious in their purchasing decisions and consider both financial and environmental factors.

Consumers also consider the quality of a product when making their purchasing decisions, which is a crucial factor in product choice: participant D2 highlighted the importance of quality as well as the "*quality-price ratio*" (E1 and D2) in the purchasing process. A3 also stated that quality was very important to him when making purchases, "*I pay much more attention to quality.*" Participant G1 added that the durability of a product influences his opinion on quality: "*if it's a product that will last over time, I will pay more attention to quality, whereas when it's something to be discarded quickly, I pay less attention.*" Regarding consumers' ecological choices, it can be observed that trends also play a significant role: "*Afterwards, it depends on trends,*" as indicated by individual E1, and participant I2 stated, "*We talk about it all the time in fact, we hear about it everywhere, so we start to pay more attention.*" This notion generally refers to the communication involved in adopting

a lifestyle that aligns with the image the consumer perceives and wishes to project, such as engaging in sustainable practices (Sarkar et al. 2023). Being fashionable has positive effects on consumers, particularly in terms of reputation and concern for sustainable practices (Griskevicius et al. 2010). In addition, the Nutri-Score and the composition of products were mentioned by several participants, including G1, who stated that he pays attention to: "*the Nutri-Score, the ingredients and components of products (food and cosmetics)*"; "*the components of cosmetic products,*" or C2 added: "*The materials used.*" Packaging and brand awareness are also factors taken into account, as participant G1 mentioned: "*Yes, on the packaging, the recycling symbol.*"

We summarize the different variables identified in this study in the proposed conceptual framework (see Figure 2).

**Figure 2.** Proposed Research Model



## Conclusion

This study aimed to delve into consumers' perceptions of eco-design and pinpoint various factors influencing their behavior towards these products. Our findings underscore the critical roles of education and age in shaping consumer attitudes and behaviors.

Education emerges as a pivotal factor in ecological purchasing decisions, as highlighted by prior research (Roberts 1996, Akehurst et al. 2012, Jaiswal and Kant 2018). Well-informed consumers tend to be more sensitive to environmental issues, influencing their intent to purchase and actual buying behavior (Eze and Ndubisi 2013). Conversely, a lack of knowledge can influence the intention and hinder consumers' decision-making regarding eco-friendly purchases (Kaur and Bhatia 2018). In our study, participants who had received specific eco-design training (third group) demonstrated heightened awareness and sensitivity towards ecology and eco-designed products. This finding underscores the societal significance of integrating sustainable development and ecological awareness into educational curricula—

from schools to universities. By sensitizing students early on to eco-design principles, educational institutions can play a pivotal role in fostering a generation of consumers who prioritize sustainability in their purchasing decisions. This not only supports environmental conservation efforts but also cultivates a market demand for eco-friendly products, thereby encouraging businesses to adopt more sustainable practices.

The second significant finding of our study highlights the crucial role of age in shaping consumer behavior towards sustainable practices. According to existing literature, younger generations exhibit a stronger inclination towards adopting lifestyles grounded in sustainability principles (Valentine and Powers 2013). Generation Z, in particular, distinguishes itself by openly declaring their intention to integrate sustainability into various aspects of their lives, setting them apart from previous generations (Dabija et al. 2019). This generation shows a growing preference for environmentally friendly products and demonstrates an inherent drive to act in an environmentally responsible manner<sup>4</sup>. Members of Generation Z are characterized by their elevated levels of education and a profound understanding of how human activities impact the environment. They firmly believe that businesses bear a responsibility to actively address contemporary environmental challenges (Adnan et al. 2017). This heightened environmental awareness among young consumers not only influences their purchasing decisions but also fosters expectations for corporate accountability and sustainability efforts. Understanding the distinct preferences, values, and expectations of younger consumers can guide businesses in aligning their product offerings and corporate strategies with sustainability goals. By catering to the values and concerns of Generation Z and younger cohorts, companies can effectively cultivate brand loyalty and contribute meaningfully to global sustainability initiatives.

This research is subject to limitations due to its focus solely on young adults and university students holding bachelor's degrees or higher. Consequently, the findings cannot be generalized to broader demographics within the young adult population or across the entire French populace. To enhance the validity and applicability of the results, it would be beneficial to replicate this study among individuals aged 30 and older. By including older consumers in the study, we could gain insights into how perceptions and behaviors towards eco-design products vary across different age groups. Older demographics may possess different life experiences, priorities, and environmental attitudes that could significantly influence their views on sustainable products compared to younger cohorts. This comparative analysis would provide a more comprehensive understanding of consumer preferences and decision-making processes concerning eco-design products.

Moreover, expanding the study to include a broader age range would allow for a more robust assessment of the factors influencing sustainable consumption behaviors across generations. This could potentially reveal unique insights into how age-related variables such as life stage, generational values, and environmental awareness impact consumer choices. Therefore, future research endeavors should consider diversifying the participant pool to encompass a wider age demographic, thereby enriching the understanding of consumer behavior in relation to eco-design and fostering more inclusive and representative findings.

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<sup>4</sup><https://www.nielsen.com/insights/2019/understanding-malaysias-gen-z/>.

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