The Impact of Eco-Labels and Greenwashing on Generation Z's Sustainable Purchasing Decisions in Fast Fashion.

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Chapter 1

1.1 Introducing the topic

The growing awareness of the negative environmental and social impacts of the fast fashion industry, including water pollution, carbon emissions, and labor exploitation, has led to an increased demand for more sustainable and ethically produced fashion (Niinimäki & Hassi, 2011). In response to this growing demand, fast fashion brands have begun to adopt eco-labels to differentiate their products and demonstrate their commitment to sustainability (Bick et al., 2018). These eco-labels aim to guide consumers toward more environmentally and socially responsible choices, encouraging sustainable consumption (Kim & Kim, 2020).

The relationship between eco-labels and sustainable consumer behavior in the fast fashion industry has become a critical area of research, particularly concerning Generation Z, which consists of individuals born between 1997 and 2012 (Pew Research Center, 2019). This generation is recognized for their heightened environmental awareness and ethical consumption practices. Gen Z is also the generation that has shown to be very active on social media, which exposes them to current environmental issues, such as climate change and pollution. This makes them prioritize sustainable options in their purchasing decisions (Confetto et al., 2023).

However, despite Gen Z's strong commitment to sustainability, they are increasingly skeptical of brands' sustainability claims. The prevalence of greenwashing mainly drives this skepticism. Greenwashing is when companies falsely promote their environmental efforts to appear more sustainable than they are (Banerjee, 2019). As a result, Gen Z has become cautious about trusting eco-labels, which are certifications indicating that a product meets specific environmental standards. While eco-labels are intended to guide consumers toward more sustainable choices, many young consumers question their credibility, suspecting that these labels may be used purely as a marketing tool rather than a real indicator of sustainability. This distrust raises concerns about the effectiveness of eco-labels in influencing sustainable consumer behavior. Given the extensive use of eco-labels by fast fashion brands to attract ethically conscious consumers, it is crucial to examine how greenwashing influences the relationship between eco-labels and sustainable consumer behavior in this industry.

Understanding these dynamics is essential for assessing whether eco-labels influence sustainable consumer behavior. This study investigates the impact of greenwashing on the effectiveness of eco-labels among Gen Z and their purchasing decisions within the fast fashion sector.

1.2 Introduction to Key Concepts

1.2.1 Sustainable Purchasing Behavior of Fast Fashion of Generation Z

Sustainable purchasing behavior refers to environmentally, ethically, and socially responsible decisions. In the context of fast fashion, this means choosing clothing items

produced from eco-friendly materials, such as organic cotton or recycled fabrics, supporting brands with ethical labor practices, extending the lifespan of garments by buying higher quality, and reducing the demand for new production (Thøgersen, 2011; Wiederhold & Martinez, 2018).

Sustainable purchasing behavior encompasses the entire product life cycle, from production to disposal. Consumers who engage in sustainable purchasing tend to research a brand's sustainability initiatives before making a purchase. They favor companies with transparent supply chains and seek items with third-party certifications, such as Fair Trade or the Global Organic Textile Standard (GOTS), to verify the ethical and environmental claims made by fast fashion brands (McNeill & Moore, 2015). This behavior is driven by their increased awareness of the environmental footprint of fast fashion, social justice concerns, and a desire to align their values with consumption habits (Armstrong et al., 2016).

Generation Z

Generation Z is generally considered the most sustainability-conscious generation, often favoring eco-friendly brands (Gazzola et al., 2020). Born between 1997 and 2012, Gen Z represents a significant consumer group to fast fashion brands due to their growing purchasing power and deep familiarity with digital technology (Pew Research Center, 2019). This generation is highly committed to addressing environmental and social issues, often prioritizing sustainability in their purchasing decisions (Lopez et al., 2024).

This generation utilizes social media and digital platforms to research brands and verify sustainability claims. Platforms such as TikTok, Snapchat, and Instagram are used to discover eco-friendly brands but also to hold companies accountable for their misleading claims, which is regarded as a form of digital activism. This has led to Gen Z being referred to as "True Gen," as they have demanded transparency and authenticity from fast fashion brands (Francis & Hoefel, 2018). However, the conflict between their commitment to sustainability and the affordability, availability, and convenience of fast fashion influences their purchasing decisions. Therefore, exploring how they navigate the complex landscape of the fast fashion industry is crucial and will be discussed further in Chapter 2.

Fast fashion

Fast fashion can be described as the rapid production of inexpensive, trend-driven clothing designed for short-term use. Brands like Zara, H&M, Forever 21, and SHEIN replicate high-fashion designs at a rapid pace and an affordable price, making the newest trends accessible to everyone. Although fast fashion is a cost-effective option, it comes with significant environmental and ethical challenges. The fast fashion industry contributes to excessive resource consumption, high carbon emissions, and exploitative labor conditions in developing countries (Bick et al., 2018).

Despite these challenges, fast fashion remains popular due to its affordability, accessibility, convenience, and trend appeal. The increasing awareness of its environmental impact has led consumers to explore more sustainable alternatives to fast fashion, such as thrifting, slow fashion, and ethical brands.

1.2.2 Eco-labels in the fast fashion industry

As more people become aware of the harm caused by the fast fashion industry, eco-labels have emerged to address pollution, waste, and unethical labor practices (Kim & Kim, 2020). Eco-labels promote sustainability in the fast fashion industry. These labels are designed to guide consumers toward responsible choices by certifying brands that meet specific sustainability standards (Bick et al., 2018). Notable eco-labels include the Global Organic Textile Standard (GOTS), OEKO-TEX Standard 100, and Fair Trade, which ensure that products are made from organic materials, free from harmful chemicals, and produced under fair labor conditions (Niinimäki & Hassi, 2011).

Many fast-fashion brands, however, use vague eco-labels or self-declared eco-labels without any third-party verification, which could result in accusations of greenwashing (Delmas & Burbano, 2011). This erodes consumer trust and raises doubts about the validity of eco-labels, particularly among younger consumers, such as Generation Z, who demand greater transparency regarding these labels (Banerjee, 2019).

1.2.3 Greenwashing

Greenwashing is a misleading marketing strategy in which companies overstate or fabricate their environmental efforts to appear more sustainable than they are (Delmas & Burbano, 2011). This strategy is commonly used in the fast fashion industry, where brands may claim to use eco-friendly materials or implement ethical production processes without providing substantial proof or verifiable evidence.

When companies engage in greenwashing, they mislead consumers into believing they are making environmentally responsible choices when, in reality, their sustainability claims are either overstated or false. This undermines the brands' integrity and creates confusion in the marketplace. Research suggests that when consumers feel misled by sustainability claims, they become more skeptical of all environmental certifications, even those from legitimate sources (Torelli et al., 2020).

As a result, greenwashing diminishes the motivation to make sustainable purchases, creates uncertainty in environmental and ethical decision-making, and fosters frustration with sustainable fashion. Consumers feel misled and skeptical about the authenticity of brands' sustainability claims, which undermines their trust in the entire sustainable fashion movement (Nyilasy et al., 2014). This, in turn, poses a significant challenge for both consumers and brands trying to promote genuine sustainability in the fashion industry. Therefore, it is crucial to determine whether Generation Z can effectively distinguish between legitimate eco-labels and deceptive marketing practices, as these influence their trust in sustainability claims and their sustainable purchasing behavior.

1.3 Conceptual Model and Explanation

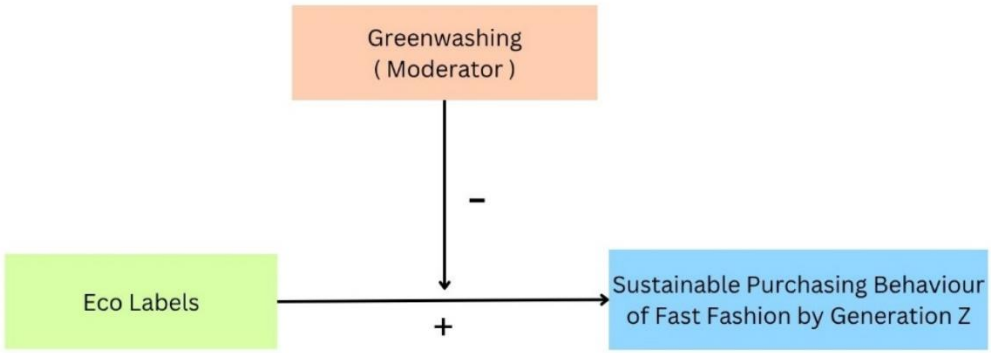
This research is structured around three key variables: the independent variable, the dependent variable, and the moderating variable.

- Eco-labels (Independent Variable): Certifications signaling sustainable practices.

- Sustainable Buying Behavior of fast fashion by Generation Z (Dependent Variable): Purchasing actions that align with sustainability goals.
- Greenwashing (Moderating Variable): Misleading marketing tactics that can influence the perceived credibility of eco-labels.

1.3.1 Problem statement

How effective are eco-labels in promoting sustainable purchasing behavior among Gen Z consumers in the fast fashion industry, and does greenwashing affect the relationship between eco-labels in promoting sustainable purchasing behavior among Gen Z consumers in the fast fashion industry?



The model hypothesizes that eco-labels positively influence the sustainable purchasing decisions of Gen Z in the fast fashion industry. However, greenwashing can moderate this relationship, reducing the effect of eco-labels on Generation Z's sustainable purchasing behavior.

By examining the dynamic between eco-labels, greenwashing, and Gen Z's sustainable consumption habits, this study aims to enhance our understanding of the factors shaping purchasing decisions in the fast fashion industry. It will also provide valuable insights for brands seeking to establish trust and promote responsible consumption (Ellen MacArthur Foundation, 2017; Testa et al., 2013).

1.4 Research Relevance and Importance

This research holds significant social relevance; it contributes to raising public awareness about greenwashing, empowering consumers to make informed choices, and encouraging fast fashion brands to adopt genuine sustainable practices. Scientifically, it enhances our understanding of how eco-labels function within the fast fashion industry, offering insights into consumer psychology and corporate responsibility. Academically, it fills a research gap

by analyzing the intersection of eco-labels and greenwashing, contributing to the broader discourse on sustainable consumption and ethical marketing. Furthermore, the findings can guide policymakers in developing stricter transparency regulations, ensuring that eco-labels effectively promote sustainable consumer behavior while discouraging deceptive marketing tactics (Atkinson & Rosenthal, 2014; Lyon & Montgomery, 2015; Testa et al., 2013).

1.4.1 Policymakers

For policymakers, this study provides a basis for introducing stricter regulations on eco-labelling and anti-greenwashing policies. Such regulations should ensure that sustainability claims made by brands in the fast fashion industry become transparent and verifiable, and protect consumers from deceptive marketing practices. Policymakers can utilize these findings to establish stronger consumer protection measures and promote reliable sustainability standards in the fast fashion industry (Testa et al., 2013).

1.4.2 Brands

For businesses, this research highlights the critical role of authenticity in sustainability claims and eco-labels. With growing skepticism surrounding eco-labels due to greenwashing, brands must adapt their sustainability initiatives to be more transparent, verifiable, and genuinely impactful. By adopting third-party certifications, communicating their sustainability efforts, and improving supply chain traceability, companies can rebuild consumer trust in eco-labels and foster long-term relationships with Gen Z. Brands that demonstrate genuine dedication to sustainability, rather than just marketing spin, are more likely to earn the trust and loyalty of this generation. By prioritizing integrity and accountability, they can strengthen their reputation and drive lasting change in the fast fashion industry (Atkinson & Rosenthal, 2014).

1.4.3 Consumers

For consumers, particularly those in Generation Z, the research provides valuable insights into recognizing and avoiding misleading sustainability claims. This study raises awareness about greenwashing and helps young consumers learn to distinguish between genuine and misleading eco-labels. In doing so, it empowers them to make more informed and sustainable purchasing decisions. This increased awareness can drive more sustainable consumption practices and empower Gen Z to hold brands accountable for their environmental and social impact (Lyon & Montgomery, 2015).

By examining these dynamics, the study aims to provide actionable insights for brands, policymakers, and consumers to enhance the credibility and effectiveness of eco-labels. This, in turn, can encourage Generation Z to make more informed choices and adopt genuinely sustainable practices in the fast fashion industry.

Chapter 2

2.1 Sustainable Purchasing Behavior

Sustainable purchasing behavior refers to the informed decision-making of consumers who prioritize environmental and ethical responsibility. It involves selecting environmentally friendly, ethically sourced products that are produced with fair labor practices. This aligns with the broader concept of sustainable consumption, which aims to meet the current needs of consumers without compromising the needs of future generations. Consumers can reduce pollution, conserve resources, and foster societal equality by selecting sustainable products. However, impulse buying and overconsumption are significant problems that lead to environmental and social harm (Joshi & Rahman, 2017)

Despite growing commitment to sustainability, there is often a disconnect between consumer intentions and actual purchasing habits. Studies have shown that fashion consumption is a significant contributor to environmental degradation, underscoring the need for more environmentally conscious purchasing decisions (Young et al., 2010). While many consumers support eco-friendly initiatives, factors such as cost, accessibility, and convenience often hinder them from making fundamental behavioral changes. This gap between sustainable attitudes and purchasing actions, called the "attitude-behavior gap," highlights the challenges in translating awareness into consistent sustainable choices, which we will discuss later in this chapter (Tanner & Wölfing Kast, 2003; Vermeir & Verbeke, 2006). This disconnect underscores the complexity of promoting sustainable consumption and highlights the need for strategies that bridge the gap between intention and action.

2.1.1 Sustainable purchasing behavior of Generation Z

Generation Z, born between the mid-1990s and early 2010s, has been labelled the most sustainability-conscious generation, advocating for sustainable consumption. They are commonly referred to as "digital natives" due to their extensive knowledge gathered from the internet and their technological skills. Besides using these skills to participate on social media platforms, they also use platforms to investigate brands, confirm sustainability claims, and inspire others to make more sustainable purchasing choices. (World Economic Forum, 2022).

Studies show that 75% of Gen Z shoppers favor sustainable options over well-known brands, indicating a significant shift in buying priorities (World Economic Forum, 2022). Their interest in sustainability has also impacted older generations, as spending on eco-friendly products by Generation X, individuals born approximately between 1965 and 1980, has risen by 24% since 2019 (World Economic Forum, 2022). Consequently, Gen Z has been labelled "the most disruptive generation in history" because they promote sustainable consumerism and shape corporate sustainability strategies (World Economic Forum, 2022).

To align with their sustainability values, Gen Z has increasingly adopted eco-friendly shopping habits such as thrifting vintage clothing, renting apparel, and embracing slow fashion, which rejects the fast fashion industry's culture of overconsumption (Kim & Choi, 2021). The rise of second-hand shopping on online platforms such as Depop, Marktplaats,

and Vinted has made it easier for Generation Z consumers to buy and sell pre-owned clothing, reducing waste and promoting circular fashion (Sandlin, 2020).

Additionally, their sustainable purchasing behavior is influenced by their willingness to hold brands accountable for their actions. They often call out unsustainable practices on social media and reward companies that demonstrate genuine environmental responsibility (World Economic Forum, 2022). Nevertheless, some barriers still exist despite their commitment. Studies show that cost remains a significant factor, with 16% of consumers citing price as a reason for not fully adopting sustainable shopping practices. Additionally, 15% state they need more information before changing their purchasing habits, indicating that greater transparency and education are needed to support sustainable consumer behavior (World Economic Forum, 2022).

2.1.2 The Environmental Impact of Fast Fashion

Due to high consumer demand, the fast fashion industry is one of the most important contributors to global carbon emissions. It is responsible for 10% of global greenhouse gas emissions, exceeding the combined emissions of the aviation and shipping industries (Bick et al., 2018). The persistent demand for new products drives rapid and unsustainable clothing production, leading to overconsumption and severe environmental degradation.

The fast fashion manufacturing process is highly energy- and water-intensive, significantly contributing to climate change. The textile industry alone is responsible for 20% of global wastewater production and consumes around 93 billion cubic meters of water annually, enough to meet the needs of five million people (Fletcher, 2014; Ellen MacArthur Foundation, 2017). Cotton farming and textile dyeing are particularly harmful practices within the textile industry, as they involve excessive water use and the release of toxic chemicals that contaminate freshwater ecosystems (Chapagain & Hoekstra, 2007).

A case study on jeans, a staple fast fashion item, revealed that the carbon footprint of fast fashion consumption is 2.50 kg CO2 per single wear of jeans, which is 11 times higher than that of traditional fashion consumption. Furthermore, the production of jeans and cross-border transportation account for 91% of fast fashion's carbon footprint, with developed countries having a 53% higher per capita footprint than developing countries (Li et al., 2024).

Another primary environmental concern is textile waste. Each year, the fashion industry generates 92 million tons of textile waste, with a significant portion ending up in landfills or being destroyed. Additionally, synthetic fabrics, which account for approximately 60% of all clothing produced, shed around half a million tons of microplastics into the environment annually, polluting land and water sources (Ellen MacArthur Foundation, 2017).

A shift toward eco-friendly materials is essential to reduce these environmental impacts. Various certifications, indicating compliance with specific environmental, ethical, and social responsibility standards, make it easier to recognize sustainable fabrics. Third-party certifications such as the Global Organic Textile Standard (GOTS), OEKO-TEX, and Fair Trade help consumers identify sustainable clothing and encourage responsible consumption.

2.1.3 Ethical Concerns of Fast Fashion

The most significant ethical issue facing the fast fashion industry is the exploitation of garment workers. Many of these workers, particularly in developing countries, are subjected to unsafe working conditions, low wages, and sometimes child labor (Rossi, 2020). It was worldwide news when the Rana Plaza building in Bangladesh collapsed in 2013, 1,300 people lost their lives, highlighting that the fast fashion industry was prioritizing cheap labor over the safety and well-being of its employees (Khan, 2014). Additionally, the lack of transparency in supply chains worsens these ethical concerns, as consumers often cannot trace the origin of their clothing or verify the conditions under which it was produced (Locke, 2013).

To address these ethical issues, several certifications and standards have been established to promote fair wages, safe working conditions, and sustainability in the fashion industry. Ethical certifications such as Fair Trade, SA8000, and ILO Conventions ensure that companies adhere to international standards. Fair Trade certification mandates companies to provide fair compensation, prohibit child and forced labor, and implement sustainable production practices. Independent organizations monitor these standards to ensure that brands comply with ethical sourcing and labor rights (Fair Trade International, 2021). Furthermore, SA8000, developed by Social Accountability International, establishes guidelines based on human rights norms, including the requirement for safe workplaces, prohibition of discrimination, protection of workers' rights to unionize, and a maximum of 48 working hours per week. Additionally, wages must be sufficient to meet basic living needs, thereby helping to prevent workers from falling into exploitative conditions (SAI, 2022).

Despite the presence of certifications aimed at promoting a more ethical fast fashion industry, weak oversight in global supply chains continues to enable unethical practices. This gap undermines the effectiveness of such certifications, allowing harmful behaviors to persist. Some brands engage in "certification washing," where they obtain ethical labels but continue to exploit workers through subcontractors. This undermines the effectiveness of certifications and leads to unethical behavior (Kozlowski et al., 2013). To ensure genuine ethical production, stronger enforcement mechanisms are necessary. This includes independent third-party audits and increased transparency in supply chains to hold brands accountable for their practices and prevent the continuation of exploitation.

2.1.3 The Attitude-Behavior Gap

The attitude-behavior gap refers to the situation in which individuals express positive attitudes towards sustainability but fail to consistently translate these attitudes into sustainable behaviors (Borges-Tiago et al., 2024). The gap highlights the inconsistency between people's beliefs, values, attitudes, and actions. Despite growing awareness of environmental issues and the increased commitment to sustainable practices, many consumers continue to show behaviors inconsistent with their environmental attitudes. This divergence is influenced by various psychological, social, economic, and contextual factors that affect decision-making and behavior.

In their study, Borges-Tiago et al. (2024) propose a dual-level analysis to explore this gap in the context of sustainability. They identify individual-level factors (such as attitudes, motivations, and values) and external factors (like societal influences, economic constraints, and contextual conditions) as key drivers of sustainable behavior. For instance, even if individuals hold positive attitudes toward sustainability, factors like affordability, convenience, and limited access to sustainable options often prevent them from making eco-friendly choices. These practical barriers can outweigh even the best intentions when it comes to everyday purchasing decisions. This model suggests that businesses, policymakers, and educators must understand these drivers and design strategies that bridge the gap by making sustainable behaviors easier, rewarding, and socially accepted.

Borges-Tiago et al. (2024) note that addressing the psychological and contextual barriers to sustainable behavior makes it possible to develop more effective interventions and policies that encourage fundamental changes in consumer habits. These interventions should focus on raising awareness and addressing the structural and contextual obstacles that prevent individuals from acting on their environmental values. Understanding the attitude–behavior gap is important when advancing sustainable consumer behavior and achieving broader environmental and social goals.

2.1.4 Drivers of overconsumption of Generation Z

Understanding the key drivers of overconsumption among Generation Z is crucial for addressing their sustainable purchasing behavior. These factors significantly shape their buying habits and contribute to the gap between their attitudes and actual behavior. By targeting these exact drivers, businesses and policymakers can make sustainable options more affordable, convenient, and appealing, encouraging Gen Z to make more sustainable fashion choices (Tanner & Wölfing Kast, 2003; Vermeir & Verbeke, 2006).

Overconsumption of fashion, particularly among Generation Z, has become a significant trend in recent years, primarily driven by aggressive marketing strategies. The fast fashion industry uses targeted digital marketing to remind consumers of new products, limited-time offers, and trendy styles. These marketing tactics, which include flash sales and discounts, encourage impulse buying by creating a sense of urgency (Tran et al., 2022).

Generation Z, being highly active on social media platforms such as Instagram, TikTok, and Snapchat, is particularly influenced by marketing strategies that feature influencers and celebrities showcasing the latest fashion trends. This creates a fear of missing out (FOMO) among young consumers, motivating them to buy items they perceive as trending to maintain social relevance. The constant exposure to marketing makes it even harder for Gen Z to stick to their original values, as the pressure to conform to trends often conflicts with their desire to make sustainable choices, further contributing to the attitude-behavior gap (Joy et al., 2012).

In addition to aggressive marketing, the fast fashion industry's quick response to emerging trends exacerbates overconsumption among Generation Z. Brands like Zara, H&M, and SHEIN produce new collections rapidly, releasing fresh styles every week. This creates a cycle where young consumers feel pressured to buy new clothing items frequently in order to stay up-to-date with the latest fashion trends. Fast fashion's affordable pricing makes it

even more attractive, and the availability of inexpensive and disposable clothing encourages frequent purchases, contributing to the culture of overconsumption. As a result, consumers frequently buy clothing they do not need, wear it only a few times, and discard it, adding to the growing issue of textile waste and environmental degradation (Atik et al., 2022).

To address this attitude-behavior gap, the fashion industry must shift its marketing strategies to prioritize sustainability and ethical consumption, offering more accessible and affordable alternatives to fast fashion that is harmful. By increasing transparency and promoting conscious consumerism, the industry can help Generation Z make purchasing decisions that align with their environmental values and reduce the negative impacts of fashion overconsumption (Weber & Weber, 2022).

2.2 Eco-labels

Eco-labels have become essential in guiding consumers toward making environmentally and socially responsible purchasing decisions. As consumer awareness of sustainability issues increases, eco-labels identify products that meet specific environmental and ethical standards. However, eco-labels do not come without the necessary challenges. Variations in the types of eco-labels, differences in certification standards, and growing concerns over misuse and greenwashing complicate their effectiveness. (Gorton et al., 2023). Eco-labels are categorized into three primary types: third-party certifications, self-declared labels, and government-regulated labels. These categories differ in terms of credibility, verification processes, and standards, which in turn influence the effectiveness of eco-labels in promoting sustainable consumption.

2.2.1 Variations of Eco-Labels

Third-party certifications

Third-party certifications are considered to be the most accurate and reliable form of eco-labelling. These labels are issued by independent organizations that assess and verify a company's sustainability claims based on clearly defined standards. Third-party certifications are valued for their objectivity and transparency; they ensure that claims are independently verified (Testa et al., 2013). The standards for third-party certifications are often comprehensive, addressing environmental, social, and ethical criteria.

For example, the Global Organic Textile Standard (GOTS) certifies textiles made from organic fibers, ensuring that products are produced using environmentally friendly processes and adhering to ethical labor practices. Another well-known third-party certification is Fair Trade, which ensures that products meet stringent social standards, including fair wages, safe working conditions, and environmental sustainability, for producers in developing countries (Atkinson & Rosenthal, 2014). The credibility of these certifications is reinforced by periodic audits and inspections, which verify that companies continue to meet the required standards. This thorough process fosters consumer trust in the eco-label and its claims, thereby contributing to increased consumer confidence in purchasing items that carry such a label (Testa et al., 2013).

Self-declared labels

On the other hand, self-declared labels are created by companies themselves to indicate their commitment to sustainability. However, these labels are not subject to independent verification. This lack of external validation makes self-declared labels less credible and more susceptible to misrepresentation (Lyon & Montgomery, 2015). Self-declared labels frequently include terms such as "eco-friendly," "green," or "natural," which often lack clear and standardized definitions, making it difficult for consumers to evaluate the claims. As Atkinson and Rosenthal (2014) observe, the absence of third-party verification opens the door for brands to greenwash their products. This lack of accountability undermines the potential for self-declared labels to promote sustainable consumption genuinely and even contributes to consumer confusion.

For example, Zara's Join Life label indicates that the products bearing it are more sustainable. However, it often uses vague terms like "eco-friendly" without clear definitions, third-party verification, or transparent evidence of actual sustainable practices, making it difficult for consumers to assess the actual environmental impact and increasing the risk of greenwashing.

Government-regulated labels

Government-regulated labels issued by governmental or international bodies represent a middle ground between third-party certifications and self-declared labels. These labels are typically subject to strict regulatory frameworks that ensure companies adhere to established sustainability standards.

One example is the EU Eco-label, which certifies products based on stringent environmental criteria across their lifecycle, from production to disposal. Another example is Energy Star, a government-backed label that identifies energy-efficient appliances, helping consumers choose products with lower energy consumption and thereby reducing their carbon footprint (Lyon & Montgomery, 2015). These government-regulated labels are widely trusted because recognized authorities issue them and because there are clear rules to follow. However, despite their high level of credibility, government-regulated labels may present challenges for companies, especially small enterprises, which may struggle with the costs and complexity of compliance with government rules (Testa et al., 2013). Nevertheless, government-regulated labels contribute to consumer confidence by assuring that a reliable regulatory body has evaluated and certified the products.

As can be seen, trust is key to making sustainable consumption labels work in the fast fashion industry. Third-party certifications, such as GOTS and Fair Trade, offer the most credibility due to their independent verification, which builds consumer trust (Testa et al., 2013). Self-declared labels that lack external validation can lead to greenwashing and reduce consumers' trust in eco-labels (Lyon & Montgomery, 2015). Government-regulated labels, such as the EU Eco-label, provide a balanced approach, offering trusted assurances backed by authorities. Ultimately, consumer confidence in these labels is crucial for promoting sustainable purchasing decisions and mitigating the impact of misleading claims and greenwashing.

2.2.2 Limited consumer knowledge of eco-labels

As Lyon and Montgomery (2015) emphasize, many consumers lack the required knowledge to differentiate between credible certifications and misleading environmental claims. This leads to overlooking eco-labels or misinterpreting their significance. This knowledge gap is a key barrier to genuine sustainable consumption, as awareness alone does not ensure informed decision-making.

Therefore, consumer education should focus on equipping individuals with the skills to critically evaluate eco-labels and certifications. This includes understanding the distinction between reliable third-party environmental certifications and self-declared claims that are susceptible to greenwashing. Moreover, consumers should be encouraged to investigate the types of certifications a brand has obtained, whether environmental, ethical, or social responsibility certifications, to gain a fuller picture of the brand's sustainability commitments. Teaching consumers to research product origins, production processes, and certification credentials empowers them to make informed choices that align with their sustainability goals.

Investing in clearer standards, greater transparency, and comprehensive public education can strengthen trust in eco-labels. When consumers can discern credible labels and critically assess brand certifications, eco-labels can more effectively guide sustainable purchasing behaviors and contribute to meaningful environmental and ethical progress.

2.3 The Relationship Between Eco-Labels and Sustainable Buying Behavior of Generation Z in Fast Fashion

The connection between eco-labels and Generation Z's sustainable purchasing habits in fast fashion is an emerging topic of research interest. Generation Z is a technologically handy and socially conscious demographic that increasingly prioritizes environmental and ethical concerns (Lopez et al., 2024). Given the fast fashion industry's considerable environmental and social impact, examining how eco-labels influence the buying decisions of Gen Z can provide valuable insights into promoting sustainability within the fashion sector. This section will examine Gen Z's awareness and perception of eco-labels, the impact these labels have on their sustainable purchasing behavior, and the challenges that may limit the effectiveness of eco-labels in promoting sustainable consumption.

2.3.1 Positive Relationship of Eco-Labels for Generation Z in Fast Fashion

Despite the challenges eco-labels face, they can significantly encourage sustainable purchasing decisions when they are well-recognized, trusted, and clearly communicated to consumers. Research indicates that when Generation Z consumers are familiar with an eco-label and trust its credibility, they are more likely to prioritize sustainable fast fashion options (Sandlin, 2020). This suggests that increasing awareness and knowledge about eco-labels could enhance their impact on purchasing behavior, thereby helping to narrow the existing gap between attitudes and behavior.

Eco-labels also serve as a shortcut for ethical decision-making, simplifying the purchasing process for consumers who wish to make more sustainable choices (Annunziata et al., 2023). When labels provide clear, verifiable information about a product's environmental

benefits, consumers are more likely to use them as the deciding factor when shopping for fast fashion (Gorton et al., 2023). This is only effective when eco-labels are highly visible, easy to understand, and associated with brands promoting sustainability (Khare & Pandey, 2022).

Additionally, eco-labels can reinforce positive perceptions of a brand's commitment to sustainability, increasing consumer loyalty among Generation Z (Annunziata et al., 2023). As eco-conscious shopping becomes more mainstream, eco-labels can be a competitive advantage for brands that successfully integrate them into their marketing and product offerings (Sandlin, 2020).

2.4 Hypothesis 1

H1: There is a positive relationship between eco-labels and the sustainable buying behavior of Generation Z of fast fashion.

Hypothesis 1 suggests that while eco-labels may face challenges in influencing Generation Z's sustainable purchasing behavior, they still hold potential to promote sustainable consumption. This potential can be realized if eco-labels are well-recognized, trusted, and effectively communicated to the consumer. Additionally, they must be transparent and align with the values and expectations of this demographic.

2.5 The moderating effect of greenwashing on the relationship between eco-labels and sustainable purchasing behavior of Generation Z in fast fashion.

Greenwashing refers to deceptive marketing practices in which companies exaggerate or misrepresent their environmental responsibility. It plays a significant role in moderating the relationship between eco-labels and the sustainable purchasing behavior of Generation Z in the fast fashion industry. Delmas and Burbano (2011) define greenwashing as an attempt by companies to create a misleading image of their environmental responsibility without making any substantial changes to their practices. This misrepresentation erodes consumer trust in eco-labels. Although eco-labels are intended to signify genuine sustainability, they are often misused to mask a brand’s broader environmental and social impact (Lyon & Montgomery, 2015).

Greenwashing erodes the credibility of eco-labels. Hwang and Lyu (2020) argue that when brands engage in greenwashing, they diminish trust in these labels, reducing their effectiveness as tools for guiding sustainable purchasing behavior. As a moderating variable, greenwashing creates confusion by exaggerating environmental claims and promoting selective transparency, making it difficult for consumers to distinguish between truly sustainable brands and those that merely adopt green marketing tactics (Parguel, Benoît-Moreau, & Larceneux, 2011). This undermines the power of eco-labels, which are designed to provide clear indicators of environmental responsibility.

Generation Z's engagement with digital platforms further amplifies this moderating effect. Ebbes (2019) notes that this generation actively interacts with reviews, influencers, and social media discussions to learn about brands' sustainability practices. This heightened digital engagement makes them more aware of greenwashing and increases their skepticism

toward eco-labels. While this awareness helps Generation Z avoid brands that they know are involved in greenwashing, it also leads to a broader disillusionment with the eco-label system. As they encounter misleading sustainability claims, even from brands with legitimate certifications, Generation Z questions the overall credibility of all eco-labels, diminishing their effectiveness in encouraging sustainable purchasing (Hwang & Lyu, 2020).

Thus, greenwashing is a key moderating variable that influences the relationship between eco-labels and the sustainable purchasing behavior of Generation Z in the fast fashion industry. Greenwashing erodes trust in eco-labels. As a result, their ability to influence purchasing decisions is significantly reduced. Over time, they lose their status as reliable guides for sustainable consumption. To restore the effectiveness of eco-labels, fast fashion brands should adopt and implement permanent, verifiable sustainability practices and refrain from using deceptive marketing tactics.

2.5.1 Greenwashing Tactics in Fast Fashion

Greenwashing has become an increasingly common tactic in the fast fashion industry, where companies exaggerate or misrepresent their sustainability efforts. They often use vague claims and minimal sustainable initiatives to create the illusion of being eco-friendly, while continuing to employ unsustainable production practices (Delmas & Burbano, 2011). These deceptive tactics make it challenging for consumers to distinguish between genuinely sustainable brands and those merely engaging in greenwashing.

Vague or Misleading Claims

Many fast fashion brands use ambiguous language to give the illusion of sustainability. SHEIN, for example, has promoted certain products made from "responsible" or "eco-friendly" materials. However, the company's ultra-fast fashion model, which produces thousands of new styles daily, contradicts the core sustainability principles (Li & Liu, 2022). While SHEIN has introduced initiatives such as a resale platform and limited use of recycled fabrics, these efforts do little to offset the massive environmental impact of its production, distribution, and waste generation. This misleading approach allows companies to maintain an eco-friendly image without significantly altering their business model.

Minimal Sustainable Efforts

Some brands introduce small-scale, sustainable collections to appear eco-conscious while continuing to produce on a mass scale. For example, Boohoo launched a 20-piece "sustainable" collection in 2021, yet the company still produced over 100 new styles daily (Jacometti, 2019). This contradiction highlights how brands claim to be sustainable while continuing to engage in unsustainable practices, failing to reduce waste or mitigate environmental harm.

Carbon Offsetting Without Real Change

Some fast fashion companies claim carbon neutrality through offset programs, which do not directly address the environmental damage caused by their operations. Carbon offset

programs enable companies to compensate for their emissions by investing in projects that reduce or sequester carbon elsewhere. For example, PrettyLittleThing promotes its carbon offsetting efforts while relying heavily on synthetic fabrics, such as polyester, which require substantial fossil fuel inputs for production (Claudio, 2007). This form of offsetting does not address the fundamental environmental harm of fast fashion, making such claims misleading (Wiedmann & Lenzen, 2018).

These tactics suggest that greenwashing undermines the credibility of eco-labels, making it more difficult for consumers to trust and rely on them when making sustainable purchasing decisions.

2.5.2 The Misuse of Eco-Labels

While eco-labels have the potential to encourage sustainable consumption, their effectiveness is often undermined by misuse and greenwashing, which erode consumer trust. Lyon and Montgomery (2015) emphasize that greenwashing not only deceives consumers but also diminishes the overall credibility of eco-labels, increasing skepticism toward sustainability claims. A clear example of misuse is Boohoo's "Ready for the Future" collection, which claimed to offer more sustainable products made from recycled materials, such as polyester. However, research showed that some items in the collection contained acrylic material that significantly damaged the environment (CMA, 2023).

Boohoo's eco-labelling falls under self-declared environmental claims, lacking third-party certification. This absence of independent verification and transparency undermines its sustainability claims, making them difficult to trust. Phrases such as "more sustainable" are vague and unsubstantiated, misleading consumers into believing they are making eco-conscious purchases when, in fact, the products only have minimal sustainability benefits (Remake, 2021). Moreover, the low prices of items in the "Ready for the Future" collection, sometimes as low as £10, raise concerns about the wages and working conditions of garment workers within Boohoo's supply chain. Boohoo fails to provide evidence that its use of recycled materials significantly reduces environmental harm, reinforcing accusations of greenwashing (CMA, 2022).

Greenwashing continues to impact the trust consumers place in eco-labels. As Lyon and Montgomery (2015) argue, the increasing prevalence of false environmental claims reduces the transparency and credibility of eco-labels, leading consumers to be wary of all sustainability certifications. Furthermore, the growing number of eco-labels causes considerable confusion among consumers, making it challenging to identify which labels are significant. This confusion arises from the varying standards and criteria across different eco-labels, which differ depending on the issuing body or region (Atkinson & Rosenthal, 2014).

In conclusion, greenwashing is critical in moderating the relationship between eco-labels and Generation Z's sustainable purchasing behavior in the fast fashion industry. Greenwashing creates confusion and skepticism, leading to a decline in the influence of eco-labels on purchasing decisions. Despite heightened digital awareness, which helps Generation Z avoid brands involved in greenwashing, this phenomenon contributes to a broader disillusionment with the eco-label system. To restore the effectiveness of eco-

labels, fast fashion brands must prioritize transparency and verifiable sustainability practices, avoiding deceptive marketing strategies.

2.6 Hypothesis 2

H2: The relationship between eco-labels and the sustainable buying behavior of fast fashion by Generation Z is negatively influenced by greenwashing.

Hypothesis 3 suggests that greenwashing weakens the influence of eco-labels on Generation Z's purchasing decisions. As greenwashing misleads consumers, it erodes trust in eco-labels and undermines their effectiveness in guiding sustainable consumer behavior. This occurs because greenwashing affects consumers' ability to distinguish between genuine and deceptive sustainability claims, thereby reducing the effectiveness of eco-labels in influencing Gen Z's sustainable purchasing behavior of fast fashion.

Chapter 3

3.1 Participants of the study

This study focuses on Generation Z consumers (born 1997–2012) in the fast fashion sector, as identified by the Pew Research Center (2019), to examine how eco-labels influence their sustainable purchasing behavior and whether greenwashing affects this relationship. Gen Z was chosen for this research because of their rising purchasing power, environmental awareness, and interest in sustainable fast fashion.

At least 50 Gen Z participants will be surveyed to ensure a diverse range of perspectives while maintaining a manageable dataset. This sample size strikes a balance between the need for meaningful insights and the need for realism, thereby reducing the impact of outliers and individual biases (Cohen, 1992). By focusing exclusively on individuals aged 13 to 27, the research aims to capture the internal diversity of Gen Z, including differences in age and shopping frequency. A sample of 50 allows for variation across these subgroups without compromising the depth of analysis. While the study does not aim to generalize its findings to all global Gen Z populations, this approach provides a sufficient scope to identify patterns, attitudes, and emerging themes within the group. The sample size thus supports a focused exploration of Gen Z experiences, perceptions, and values relevant to the research objectives.

3.2 Procedure

The data for this study will be collected through an online questionnaire created in Qualtrics. Participants will receive a link, which can be accessed on their preferred device. This survey will be distributed through various social media platforms, including Instagram, Snapchat, TikTok, and WhatsApp, to ensure a broad and diverse sample of Generation Z fast fashion consumers. These platforms are specifically chosen to target Gen Z individuals, who are highly active on social media platforms(Kullolli & Trebicka, 2023).

Generation Z is easily accessible through social media, making it an effective platform for participant recruitment. This approach allows the researcher to extend participation beyond their immediate network, helping to ensure a more diverse and representative sample. To further broaden reach, the study will employ snowball sampling, where initial participants are encouraged to share the survey with anyone who meets the eligible age criteria of Generation Z. At the end of the survey, participants will see a message thanking them for taking time and kindly inviting them to forward the survey link to friends, classmates, or acquaintances who fall within the Gen Z age range (13–27). This message will emphasize the value of capturing a wide range of voices within Gen Z. Snowball sampling facilitates an organic expansion of the sample, enhancing the study's ability to capture varied perspectives within the target population group (Goodman, 1961).

3.3 Measurements

This paragraph details the structure and design of the questionnaire used in this research. The survey begins with an introduction and demographic questions, followed by several sections that address key aspects of the research objectives. These sections aim to examine consumer awareness, attitudes, and behaviors, as well as the impact of greenwashing on sustainable purchasing decisions in the fashion industry. A particular focus is placed on the role of eco-labels in shaping the perceptions and intentions of Generation Z consumers toward sustainable fashion choices.

The survey will use a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) to measure attitudes, perceptions, and behaviors related to eco-labels, sustainable purchasing, and greenwashing. This scale effectively captures a range of opinions while efficiently measuring constructs like trust and perceptions without overwhelming respondents (Likert, 1932). Additionally, one frequency-based multiple-choice question will assess behavior frequency, offering predefined options such as "Rarely," "Occasionally," or "Weekly" (Dillman et al., 2014). This method provides insights into the buying behavioral patterns of the participants.

3.3.1 Introduction of the questionnaire

The questionnaire will begin with an introduction and opening statement that explains the purpose of the study, assures participants of anonymity and voluntary participation, states the approximate time required to complete the survey (5-7 minutes), and clarifies that we are only seeking individuals who fall within the Gen Z category for this study.

3.3.2 Demographics

A small section of the questionnaire will focus on collecting demographic information to confirm that respondents belong to Generation Z and to gain insights into their shopping frequency, which may influence the survey results. Participants will be asked to provide their age, as only individuals between 13 and 27 can continue with the survey, and their gender. Additionally, they will be asked to complete a frequency-based multiple-choice question: "How often do you shop for fashion items?" with response options: Rarely, Occasionally, Monthly, or Weekly.

This question is included to understand participants' shopping habits, as the frequency of fast fashion purchases may impact their exposure to eco-labels and sustainable fashion. Additionally, it helps assess whether their shopping behavior influences their perceptions of eco-labels and greenwashing. By gathering this information, the study can more effectively analyze the data and ensure that the findings are relevant to the target group (Dillman et al., 2014).

3.3.3 Questionnaire

Awareness and knowledge of eco-labels

This section of the questionnaire captures participants' awareness and knowledge of eco-labels, which are frequently used in the fast fashion industry. The goal is to assess their familiarity with the third-party certifications of Fair Trade, GOTS, and OEKO-TEX. It also measures their understanding of the meaning and perceived benefits associated with certified eco-labels on clothing items. This information is crucial for explaining how eco-labels influence participants' sustainable purchasing intentions and will serve as the baseline for the research.

The section consists of eight statements rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). While answering these statements, participants are shown visual representations of the certified eco-labels, Fair Trade, GOTS, and OEKO-TEX, to support logo recognition and improve their responses, as shown in Images 1, 2, and 3.

The statements in this section are adapted from two sources: Gam et al. (2014) and Jung and Jin (2016). Their work examined consumer perceptions of sustainable clothing and the role of eco-labels in shaping their purchasing decisions. The statements in this section have been adapted from the following sources to align with the research objectives, explicitly focusing on fast fashion clothing and three certified eco-labels.

An example of an adapted item is the statement about familiarity with a specific eco-label (e.g., "I am familiar with the Fair Trade eco-label"), which is based on Jung and Jin (2016). While their study assessed general recognition of eco-labels, it was not explicitly focused on the fast fashion industry, so adaptation was necessary to fit this context. Similarly, statements related to understanding the meanings and benefits of eco-labels are inspired by Gam et al. (2014); however, because their original items were not tailored to clothing, they were modified to align with the focus of this study on sustainable fashion.

This approach enables a deeper understanding of how various label characteristics are interpreted by Gen Z consumers, thereby providing more comprehensive findings.

Image 1, Fair Trade

Image 2, GOTS

Image 3, OEKO-TEX

Attitudes Towards Join Life Eco-Label

This questionnaire section explores participants' attitudes toward the Join Life eco-label, a brand-owned sustainability initiative developed by Zara and other Inditex companies to signal environmentally and socially responsible products. The goal is to assess how the Join Life label influences perceived brand appeal, price sensitivity, and purchase intentions.

Participants respond to three statements using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). To support their evaluation, Image 4, featuring a garment with the Join Life label, is shown alongside the statements. The items are adapted from Rolling and Sadachar (2017) and Jung and Jin (2016), as selected for their relevance to consumer attitudes toward eco-labels in the fashion industry.

Rolling and Sadachar (2017) examined the impact of eco-labels on consumer perceptions of brand image, trust, and value. One item was adapted from their work: "When I see clothing with this eco-label, I view the brand as more appealing." The original statement referred to

eco-labelled fashion more generally; it was revised to reference the Join Life label, aligning with the study's brand-focused objective.

Jung and Jin (2016) investigated the impact of sustainability labels on purchase decisions, particularly among young consumers. Two of their statements were adapted to fit the fast fashion context and directly reference the Join Life label. For example: "I am more likely to buy clothing with this eco-label, even if it costs more than non-eco-labelled clothing," and "I would prefer to buy clothing with this eco-label over similar clothing from brands that do not have eco-labels, even if the non-eco-labelled clothing is cheaper." These statements originally referred to generic products and were modified to focus on clothing and brand-led eco-labelling.

The adaptations ensure that the statements accurately reflect the nature of a brand-owned eco-label, such as Join Life, rather than third-party certifications. This approach enables the study to examine how Gen Z consumers assess the trustworthiness and influence of sustainability initiatives overseen directly by a fast-fashion brand, such as Zara.

Image 4, Join Life label.

Sustainable Purchasing Intentions

This part of the questionnaire focuses on participants' sustainable purchasing decisions, particularly how environmental motivations, brand reputation, and visible sustainability efforts influence Gen Z consumers. The aim is to understand the extent to which personal values and brand-level factors, such as eco-labels and environmental credibility, shape environmentally conscious fashion consumption.

Participants respond to eight statements using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The items are adapted from Borusiak et al. (2020), Albloushy and Hiller Connell (2019), and Jung and Jin (2016). These sources were selected to emphasize sustainability communication, environmental motivation, and purchasing intentions among young consumers. All adaptations were made to reflect the fast fashion context better and align with the study's objectives.

Borusiak et al. (2020) examined the role of sustainability messaging in building consumer trust. Two of their items were adapted. For example, "The environmental reputation of a brand positively influences my decision to buy its clothing" was slightly modified to refer

specifically to clothing. Another item was adjusted from a general statement about environmental awareness in fashion to focus on fast fashion: "I am aware of the environmental impact of the fast fashion industry."

Albloushy and Hiller Connell (2019) explored how environmental motivations predict sustainable fashion behavior. Two statements from this source were used, one of which required adaptation. In that case, the reference to the general fashion industry was replaced with a more specific focus on fast fashion, as it better fits the context of this study.

Jung and Jin (2016) studied how young consumers evaluate sustainable products. Three statements were drawn from their work and adapted to align with fast fashion rather than general consumer products. For instance, the original item "I am likely to purchase products from companies that demonstrate sustainability through eco-labels" was revised to: "I am likely to purchase clothing from brands that demonstrate environmental sustainability through eco-labels," making both the product type and the context more relevant to the fashion industry.

These targeted adaptations ensure the statements remain faithful to the original constructs while aligning them more closely with the topic of fast fashion and the study's focus on Gen Z consumers. By clarifying these changes, the section strengthens the questionnaire's validity and relevance.

Before Exposure to the Greenwashing

Before introducing the concept of greenwashing, this section assesses participants' trust in Zara's Join Life eco-label and its environmental claims. The goal is to explore how Gen Z consumers initially perceive the label's credibility and effectiveness, based on the framework developed by Zimand-Sheiner and Lissits (2023), who evaluated attitudes toward SHEIN before and after exposing participants to concerns about greenwashing.

Participants are shown Image 5 to support this evaluation. It displays a Zara shirt with the Join Life label, a brand-owned eco-label signalling the use of sustainable materials and improved production practices. The image helps participants recall their existing perceptions of Zara's sustainability efforts.

This section establishes a baseline understanding of participants' attitudes before presenting critical information on greenwashing. Since third-party certifications like GOTS or OEKO-TEX do not verify Join Life, this baseline helps measure the extent to which consumers trust brand-generated claims. Later comparisons will reveal whether trust shifts after participants are exposed to information about potential greenwashing.

Participants respond to six statements using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). These items are adapted from Kolović et al. (2023), Jung and Jin (2016), and Lee et al. (2015), and modified to refer specifically to Zara's Join Life label, following the adaptation approach used by Zimand-Sheiner and Lissits (2023).

Kolović et al. (2023**)** investigated how consumers perceive green advertising and eco-labels, and how these perceptions influence their purchasing intentions. Their original items were adapted by replacing general eco-label references with Zara's Join Life label. Jung and Jin (2016) investigated the impact of eco-labels on sustainable purchasing. For example, their

item "I believe eco-labels can help me make more sustainable purchasing decisions" was adapted to refer directly to Join Life. Lee et al. (2015) focused on authenticity in environmental marketing. Their statements were reworded to evaluate how truthful and credible consumers find Join Life, as opposed to general claims.

This section combines these sources to capture the sustainability efforts. The adapted items enable a focused evaluation of how Gen Z perceives a brand-owned eco-label before being exposed to concerns about greenwashing.

Image 5, Zara shirt with Join-Life label

Greenwashing Exposure

In this section, participants are introduced to the concept of greenwashing. The aim is to explore how exposure to this information affects consumer trust in eco-labels, with a focus on Zara's Join Life label. This part of the questionnaire is guided by the framework proposed by Zimand-Sheiner and Lissits (2023), which examines how concerns about the truthfulness of those claims can influence trust in brand sustainability messages.

To provide context, participants are shown Image 5, which displays a Zara shirt featuring the Join Life label. This image is accompanied by the following message: *"We would like to inform you that recent reports have raised concerns about the environmental claims made by some brands, including Zara's Join Life label. While Zara markets the Join Life collection as eco-friendly, investigations suggest that the brand's claims may not always be fully substantiated or could be exaggerated. Critics argue that independent third parties do not verify some of the environmental benefits promoted by Join Life, and some practices may not be as sustainable as claimed."* This message encourages participants to assess Zara's sustainability claims critically and reflect on whether the Join Life label represents genuine environmental effort or primarily serves as a marketing strategy.

Participants responded to six statements on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). These items were adapted from Zimand-Sheiner and Lissits (2023), whose work provides valuable insight into how consumer trust is affected by perceived exaggeration or lack of evidence in sustainability claims. In their study, the authors examined how consumers cognitively evaluate brand messages, particularly when they suspect greenwashing.

To align with the current study's context, their original items, initially referring to a general brand, were modified to mention Zara's Join Life label specifically. For example, the adapted item "I feel betrayed by Zara for promoting its Join Life collection as environmentally friendly without providing sufficient proof of its sustainability" reflects the same underlying concept of perceived brand betrayal but grounds it in the brand scenario presented to participants.

By incorporating both emotional and cognitive evaluations of greenwashing, these adapted items help capture a more nuanced understanding of how Gen Z consumers respond to eco-labels and assess brand credibility and purchasing intentions.

Image 5, Zara shirt with the Join-Life label

Final Thoughts

This final section of the questionnaire asks participants to reflect on their attitudes toward eco-labelled clothing after reading information about the environmental impact of fast fashion and the risk of greenwashing. The aim is to explore whether this information affects their willingness to buy sustainable clothing, their trust in eco-labels, and their motivation to check the environmental claims made by fashion brands.

Participants respond to five statements using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). These items were taken from Borusiak et al. (2020), Zimand-Sheiner and Lissits (2023), and Kolović et al.(2023). The statements were adapted where needed to fit the context of this study. These sources were chosen because they focus on consumer skepticism, trust in brands, and the intention to act in response to sustainability messages.

One item was adapted from Borusiak et al. (2020), who studied how misleading environmental marketing can create skepticism. Their original item was general, so it was changed to focus on a specific case: "I am less likely to purchase clothing from Zara after learning about the potential greenwashing related to their Join Life label." This change makes the question more relevant to the context of this research.

Zimand-Sheiner and Lissits (2023) examined how people judge brand-led sustainability efforts. One item was used without change: "The information about greenwashing has made me more cautious about trusting eco-labels on any fashion brand, even those that claim to be sustainable." This item fit the study's goals well, so no adaptation was needed.

Kolović et al. (2023) investigated how consumers perceive green advertising and eco-labels, specifically regarding their purchasing intentions. Their study highlighted that trust in eco-labels can be fragile, particularly when consumers are exposed to concerns about greenwashing. This study used one of their original items, "After learning about greenwashing concerns, I feel that eco-labels may not always reflect a brand's true commitment to sustainability," without changes. This item was retained in its original form because it directly reflects the skepticism and emotional response that consumers experience when questioning the authenticity of environmental claims.

Using items from these three sources allows for a well-rounded view of consumers' thoughts and feelings after learning about greenwashing. Combining cognitive and emotional aspects, the questionnaire helps measure participants' thoughts about sustainability claims and how this might influence their buying decisions.

Closure

To conclude the questionnaire, we will thank the participants with a note and provide contact information in case they want to reach out or have any questions about the questionnaire.

The questionnaire has been designed to evaluate the influence of eco-labels, consumer knowledge, attitudes toward sustainability, and the impact of greenwashing on purchasing behavior. The survey examines how consumer awareness and understanding of eco-labels influence purchasing decisions, as well as how exposure to greenwashing affects these perceptions.

Using a 5-point Likert scale, the survey provides a detailed assessment of participants' agreement with various statements, offering valuable insights into consumer behavior within the context of sustainable fashion. The references cited throughout the survey are grounded in relevant theoretical frameworks, which help inform our understanding of how sustainability concerns and greenwashing influence consumer behavior.

Chapter 4

This chapter presents the statistical analysis and findings related to the two hypotheses posed in this study. A hierarchical multiple regression analysis was conducted to examine the influence of eco-labels and perceptions of greenwashing on sustainable purchasing behavior among Generation Z fast fashion consumers.

Ninety-nine survey responses were collected for this study. However, after screening for completeness and eligibility, 30 responses were excluded. These exclusions were due to incomplete responses or respondents not meeting the inclusion criteria, such as not belonging to the Gen Z age category. As a result, the final dataset consisted of 69 valid responses.

4.1 Demographics

This study focused on members of Generation Z, defined as individuals aged between 13 and 27 years. The 69 eligible responses fell within this age category, confirming the appropriateness of the sample for generational analysis. The mean age of participants was 18.70 years (SD = 3.82).

Regarding gender distribution, the sample was skewed towards females, with 82.6% (*n* = 57) identifying as such. Male respondents accounted for 15.9% (*n* = 11), and one participant (1.4%) selected "Prefer not to say."

Table 1: Participants' demographics and shopping frequency

Variable	**Mean**	**Standard Deviation**	
Age	18.70	3.82	
	Category/Statistic	**Frequency (N)**	**Percent (%)**
Gender	Female	57	82.6%
	Male	11	15.9%
	Prefer not to say	1	1.4%
Fast Fashion Shopping Frequency	Monthly	37	53.6%
	Weekly	14	20.3%
	Occasionally	14	20.3%
	Rarely	4	5.8%
	Total	**69**	**100%**

As shown in Table 1, the frequency of fast fashion shopping varied among participants. The majority of participants (53.6%, n = 37) reported shopping for fast fashion on a monthly basis, followed by those who did so weekly (20.3%, n = 14) and those who did so occasionally (20.3%, *n* = 14). Only a small group (5.8%, *n* = 4) indicated they rarely purchase fast fashion. These figures suggest that the sample largely consists of regular fast fashion consumers.

Shopping frequency was a crucial variable in this study, as it could influence respondents' attitudes toward eco-labels and impact their sustainable shopping behavior. Individuals who frequently engage with fast fashion may develop distinct perceptions of environmental claims. Their shopping habits could be a critical factor in understanding how they interpret and respond to eco-labels.

4.2 Descriptive statistics

To examine the influence of eco-labels and greenwashing on sustainable fashion behavior, several key variables were computed:

Sustainable buying behavior: This variable was calculated based on responses to eight Likert-scale items from the questionnaire, which was designed to assess participants' sustainable shopping behavior. The items focused on considering environmental and social issues in purchasing decisions. These eight items, together, demonstrated strong internal consistency with a high Cronbach's alpha of 0.86, indicating that they reliably measure the same underlying construct. As a result, the responses were combined into a single composite score for analysis. The mean score for sustainable buying behavior was 3.47, with a standard deviation of 0.79.

Eco-labels: This variable was computed based on responses to eleven Likert-scale items from the questionnaire. It was designed to assess participants' attitudes toward and perceptions of eco-labels and their effectiveness. The items demonstrated acceptable internal consistency, with a Cronbach's alpha of 0.78, indicating they reliably measure the same underlying construct. These responses were combined into a single composite score for further analysis. The mean score for eco-labels was 2.84, with a standard deviation of 0.63.

Table 2: Descriptive statistics

Variable	**Mean**	**Standard Deviation**
Sustainable Buying Behavior	3.47	0.79
Eco-labels	2.84	0.63
Attitude Before Greenwashing	3.13	0.89
Attitude After Greenwashing	3.58	0.68
Change in Greenwashing	0.44	1.02
Interaction Term	1.32	3.07

Greenwashing variables: First, two variables were computed: one representing attitudes before exposure to greenwashing practices, and another representing attitudes after exposure to these practices. The pre-exposure variable was based on responses to six Likert-scale items from the questionnaire, with a Cronbach's alpha of 0.88, indicating excellent internal consistency, a mean of 3.13, and a standard deviation of 0.89. The post-exposure variable was based on eleven Likert-scale items, with a Cronbach's alpha of 0.88, also demonstrating strong internal consistency with a mean of 3.58 and a standard deviation of 0.68.

To compute the change in attitudes resulting from greenwashing, the post-exposure score was subtracted from the pre-exposure score (post-greenwashing score – pre-greenwashing score). Given the high internal consistency of both variables, the Cronbach's alpha for the change variable is 0.88, indicating strong reliability in measuring the shift in attitudes resulting from exposure to greenwashing. The mean score before greenwashing was 3.13 (SD = 0.89); after greenwashing, it was 3.58 (SD = 0.68). The mean change in attitudes towards eco-labels due to greenwashing was 0.44 (SD = 1.02), indicating that, on average, greenwashing led Gen Z to view sustainable buying behavior more positively. However, the relatively high standard deviation suggests that the impact varied widely among individuals, with some becoming significantly more favorable. In contrast, others showed little to no change or even reacted negatively.

Interaction term: This variable was created to test for potential moderation effects by multiplying the X-variable and the Moderator: Eco-labels and Greenwashing. This interaction term enables the examination of whether the perceived change in attitudes toward eco-labels, resulting from greenwashing, moderates the relationship between perceptions of eco-labels and sustainable behavior within the context of greenwashing. The mean score for the interaction term was 1.32, with a standard deviation of 3.0.

4.3 Correlations

A correlation matrix was computed to assess the strength and significance of the relationships between various variables. Table 3 presents the correlation coefficients and their associated p-values, highlighting both significant and non-significant correlations.

A significant positive correlation was found between shopping frequency and perceptions of eco-labels. As shown in Table 3, the correlation coefficient between shopping frequency and eco-labels is 0.272 ($p = 0.029$), indicating that individuals who shop more frequently tend to have more positive attitudes toward eco-labels. This relationship suggests that frequent shoppers may be more aware of and exposed to eco-labels, thereby enhancing their recognition and trust in these certifications. The p-value of 0.029 reinforces the significance of this finding, indicating that it is unlikely to be due to random chance.

Conversely, a significant negative correlation was observed between shopping frequency and the change in attitudes toward greenwashing, with a correlation coefficient of -0.305 and a p-value of 0.024 (Table 3). Frequent fast fashion shoppers may become desensitized to greenwashing tactics and may show less concern for sustainable consumption due to their habitual purchasing behaviors. Their repeated exposure to marketing strategies in the fashion industry could result in more resistant or less reactive attitudes toward

greenwashing than infrequent shoppers. The statistically significant p-value of 0.024 supports this interpretation, suggesting that frequent exposure to such tactics is associated with reduced sensitivity to greenwashing.

A strong positive correlation was found between eco-label perceptions and sustainable buying behavior ($r = 0.488$, $p < 0.001$), as shown in Table 3. This statistically significant result indicates a meaningful relationship: as perceptions of eco-labels increase by one unit, sustainable buying behavior tends to increase by approximately 0.488 units. In other words, individuals who view eco-labels more positively are significantly more likely to engage in sustainable purchasing practices. The strength of this association, along with the very low p-value, confirms that the relationship is both reliable and unlikely to be due to chance.

Table 3: Correlation Matrix

Variable	Age	Shopping Frequency	Ecolabels	Sustainable Buying	Interaction term	Greenwashing
Age	1.000					
Shopping Frequency	-0.054	1.000				
Ecolabels	-0.002	0.272*	1.000			
Sustainable Buying	0.136	-0.042	0.488**	1.000		
Interaction term	0.116	-0.259	0.185	0.460**	1.000	
Change Greenwashing	0.132	-0.305*	0.077	0.415**	0.978**	1.000

**. The correlation is significant at the 0.05 level (two-tailed). ** The correlation is significant at the 0.01 level. (two-tailed).*

Furthermore, a significant positive correlation was observed between sustainable buying behavior and the interaction term representing the combined effects of eco-label perceptions (X-variable) and greenwashing exposure (moderator), with $r = 0.460$ and $p < 0.001$, as shown in Table 3. This statistically significant correlation at the 0.01 level indicates that greenwashing exposure may moderate the relationship between eco-label perceptions and sustainable buying behavior. In other words, the influence of eco-label perceptions on sustainable buying behavior appears stronger among individuals with greater exposure to greenwashing. The very low p-value (< 0.001) confirms that this relationship is highly significant and unlikely to be due to random chance.

Additionally, a significant positive correlation was found between sustainable buying behavior and the change in greenwashing attitudes ($r = 0.415$, $p = 0.002$). Table 3 shows that this correlation is statistically significant, suggesting that individuals who engage in

sustainable buying behavior are more likely to exhibit significant shifts in their attitudes after exposure to greenwashing. The p-value of 0.002 indicates a tiny probability that this relationship occurred randomly, underscoring the robustness of this finding.

4.4 Testing hypothesis 1

H1: There is a positive relationship between eco-labels and the sustainable buying behavior of Generation Z of fast fashion.

A multiple linear regression analysis was conducted to test Hypothesis 1, examining the extent to which age, shopping frequency, and perceptions of eco-labels predict sustainable buying behavior. The results revealed significant and non-significant contributions from these predictors to the dependent variable.

The model summary revealed an R-squared value of 0.297, indicating that approximately 29.7% of the variance in sustainable buying behavior is explained by the three predictors: age, eco-label perceptions, and shopping frequency. This suggests that these variables collectively account for nearly 30% of the variability in participants' sustainable purchasing decisions, while the remaining 70.3% is attributable to factors not captured by the model.

The ANOVA table shows a statistically significant F-value of 7.451 ($p < 0.001$), which means that the model as a whole significantly predicts sustainable buying behavior. This confirms that the combination of age, eco-label perceptions, and shopping frequency provides valuable insight into participants' sustainable purchasing decisions. While the model explains a moderate portion of the variation in sustainable buying behavior, it leaves a considerable amount unexplained, suggesting that other factors could further improve the model's explanatory power.

Table 4: Model summary and ANOVA table, Model 1

Statistic	**Value**	
R-squared	0.297	
Standard Error of Estimate	0.68024	
Source	**F**	**Sig.**
Regression	7.451	< 0.001

The standardized beta for eco-label perceptions was 0.56, with a p-value less than 0.001, indicating a strong, positive, and statistically significant association with sustainable buying behavior. This suggests that more favorable perceptions of eco-labels are significantly related to an increased likelihood of engaging in sustainable purchasing.

In contrast, age had a standardized beta of 0.12 with a p-value of 0.300, which exceeds the conventional alpha level of 0.05, indicating that age is not a significant predictor of sustainable buying behavior in this model. Similarly, shopping frequency showed a negative

standardized beta of -0.21 with a p-value of 0.094, failing to reach statistical significance, which suggests that shopping frequency does not significantly predict sustainable purchasing behavior.

Overall, these results indicate that eco-label perceptions are a significant predictor of sustainable buying behavior. At the same time, age and shopping frequency do not significantly contribute to the model's explanatory power. This data supports hypothesis 1.

Table 5: Coefficients for Sustainable buying behavior, Model 1

Predictor	**Standardized Beta (β)**	**Sig. (p-value)**
Constant	-	0.017
Eco-labels	0.56	< 0.001
Age	0.12	0.300
Shopping Frequency	-0.21	0.094

4.5 Testing hypothesis 2

H2: The relationship between eco-labels and the sustainable buying behavior of fast fashion by Generation Z is negatively influenced by greenwashing.

A multiple linear regression analysis was conducted to examine the impact of multiple variables on sustainable buying behavior. The model included five predictors: age, shopping frequency, eco-label perceptions, attitude change toward eco-labels due to greenwashing, and the interaction term between eco-labels and greenwashing. The goal was to examine whether greenwashing moderates the relationship between eco-label perceptions and sustainable buying behavior.

The multiple linear regression model, which assessed the impact of age, shopping frequency, eco-label perceptions, change in attitudes due to greenwashing, and the interaction between eco-label perceptions and greenwashing on sustainable buying behavior, demonstrated a moderately strong overall relationship, as evidenced by an R-squared value of 0.383. This indicates that the predictors included in the model explain approximately 38.3% of the variance in sustainable buying behavior. In the context of social science research, this represents a reasonable level of explanatory power, supporting the relevance of the selected variables.

The ANOVA results confirmed the model's overall significance, with $F = 6.090$, $p < 0.001$. This statistically significant F-test indicates that the set of predictors collectively explains a significant portion of the variance in sustainable buying behavior. The model provides a significantly better fit to the data than a null model with no predictors.

Table 6: Model summary and ANOVA table, Model 2

Statistic	**Value**	
R-squared	0.383	
Standard Error of Estimate	0.63586	
Source	**F**	**Sig. (p-value)**
Regression	6.090	< 0.001

The multiple linear regression analysis revealed that only one variable among the five predictors in the model was a statistically significant predictor of sustainable buying behavior.

Specifically, eco-label perceptions demonstrated a standardized beta of 0.437 and a p-value of 0.003, indicating a strong and statistically significant positive relationship with sustainable buying behavior. This result suggests that individuals with more favourable perceptions of eco-labels are more likely to engage in sustainable consumption practices.

In contrast, the remaining variables did not significantly predict sustainable buying behavior; the p-value for age was 0.308, indicating that it is not a statistically significant predictor of sustainable buying behavior. Similarly, shopping frequency (p = 0.357), change in greenwashing attitudes (p = 0.932), and the interaction term between eco-labels and greenwashing (p = 0.655) also showed non-significant results. These findings suggest that none of these variables meaningfully contributes to explaining variations in sustainable purchasing behavior within this model.

The regression analysis supports the conclusion that eco-label perceptions are the most important and statistically significant predictor of sustainable buying behavior in this context. The model, which explained 38.3% of the variance in sustainable purchasing decisions ($R^2 = 0.383$), was statistically significant, as shown by the ANOVA results. However, age, shopping frequency, greenwashing attitude change, and the interaction term did not have a significant impact on sustainable buying behavior. This means that this data does not support Hypothesis 2.

Table 7: Coefficients for Sustainable buying behavior, Model 2

Predictor	**Standardized Beta (β)**	**p-value**
Eco-label Perceptions	0.44	0.003
Age	0.12	0.308
Shopping Frequency	-0.12	0.357
Change Greenwashing	0.05	0.932
Interaction (Eco-labels × Greenwashing)	0.28	0.655

Chapter 5

The primary aim of this study was to investigate the effectiveness of eco-labels in promoting sustainable purchasing behavior among Gen Z consumers in the fast fashion industry and to determine whether greenwashing affects the relationship between eco-labels and sustainable purchasing behavior among Gen Z consumers in the fast fashion industry.

Two key hypotheses were tested using a hierarchical multiple regression analysis. Eco-label perceptions showed a strong, statistically significant positive association with sustainable buying behavior. This supports Hypothesis 1, which proposes a positive relationship between eco-labels and the sustainable buying behavior of Generation Z in the context of fast fashion. The multiple regression model revealed that eco-label perceptions were the only significant predictor among the tested variables for sustainable purchasing behavior among fast fashion consumers of Generation Z. Meanwhile, age and shopping frequency were found to be insignificant. This reinforces previous findings (Testa et al., 2013) that eco-labels serve as credible signals to guide environmentally conscious purchasing decisions.

Hypothesis 2, which posits that the relationship between eco-labels and the sustainable buying behavior of Generation Z in fast fashion is negatively influenced by greenwashing, was not supported. The complete model included several variables: age, shopping frequency, eco-label perception, change in greenwashing attitude, and the interaction between eco-label perception and greenwashing. Together, these factors accounted for a reasonable percentage of the variance in sustainable buying behavior. However, the interaction term between eco-label perception and change in greenwashing attitude was not statistically significant. This suggests that greenwashing does not significantly influence how eco-label perceptions affect the sustainable purchasing decisions of Generation Z in the fast fashion industry.

Other predictors, age, shopping frequency, and greenwashing attitude change, were not statistically significant. This outcome suggests that while greenwashing may affect general attitudes, it does not directly or indirectly alter the influence of eco-labels on actual behavior within this sample. Despite the lack of significance for the interaction term, the overall model was statistically significant. This suggests that the included variables collectively contribute to understanding sustainable buying behavior. Among these, eco-label perceptions proved to be the most influential factor.

5.1 Demographics Overview

The final sample consisted of 69 valid respondents, aged 13 to 27, representing Generation Z. The majority of participants identified as female, while a smaller portion identified as male**.** Only one participant chose not to disclose their gender. This imbalance aligns with previous research on fashion sustainability, often showing higher levels of interest and engagement among women (Rutten, 2022). A likely reason for this is that women tend to be more interested in fashion-related topics than men, which may explain why more women chose to participate in this study. However, this imbalance made it difficult to perform meaningful comparisons between gender categories.

Regarding fast fashion consumption, over half of the participants reported shopping every month, while a smaller group indicated they shopped weekly. This highlights a frequent level of interaction with the fast fashion industry. Shopping frequency was positively correlated with eco-label perceptions and negatively correlated with changes in greenwashing attitudes, suggesting that frequent consumers may become more receptive to sustainability messages and are less susceptible to greenwashing strategies.

5.2 Interpretation of Results

The results convey a clear and important message for businesses, marketers, and sustainability advocates: Eco-labels can significantly influence the sustainable purchasing behavior of Generation Z when used effectively. The significant positive relationship indicates that when young consumers perceive eco-labels as credible and meaningful, these labels become more effective in guiding Generation Z toward making environmentally and ethically responsible fashion choices (Hwang & Lyu, 2020). This means that in real life, transparent and credible eco-labels serve as essential shortcuts for consumers who want to make more sustainable choices but lack the time or expertise to thoroughly investigate every product's sustainability claims.

The fact that age and shopping frequency did not significantly predict sustainable behavior suggests that eco-labels work across a wide range of young consumers, regardless of how often they shop or their exact age within Gen Z. This broad applicability makes eco-labels a powerful tool for promoting sustainable fast fashion on a large scale for this generation.

On the other hand, the study found that raising awareness of potential greenwashing practices among Generation Z does not significantly alter the influence of eco-label perceptions on sustainable purchasing decisions. After being exposed to an example of greenwashing practices, Generation Z's shifts in attitudes did not translate into stronger or weaker effects of eco-labels on their sustainable purchasing behavior. This reveals a key insight for consumers and brands: although many young people are aware of greenwashing, awareness alone is insufficient to override their reliance on eco-labels when making sustainable purchasing choices.

One reason could be that eco-labels serve as cognitive shortcuts, simplifying decision-making when purchasing fast fashion items. Even when consumers feel skeptical, they may still rely on eco-labels as convenient cues that lead them to make environmentally responsible purchases in their eyes. The mere presence of a label, especially one that appears official or familiar, can create a sense of trustworthiness, reassuring consumers and easing any doubts about their choices. However, this reliance often serves more to make consumers feel better about their purchases rather than ensure that products are genuinely sustainable. In many cases, consumers do not critically engage with or challenge greenwashing practices, not necessarily due to a lack of awareness, but because they are more focused on the idea of contributing to sustainability than on ensuring their actions genuinely reflect it. Although Generation Z exhibits signs of awareness, the threshold for actively challenging greenwashing remains high and is rarely crossed in practice. As a result, eco-labels often serve as superficial reassurance, valued more for symbolizing sustainability than for guaranteeing that products meet environmental standards.

Another factor could be the limited consumer knowledge of eco-labels, as discussed in Chapter 2. While awareness of greenwashing may trigger some skepticism toward certain eco-labels, it does not necessarily equip consumers with the concrete tools or skills to differentiate between credible certifications and misleading claims. As Lyon and Montgomery (2015) emphasize, many consumers struggle to critically evaluate eco-labels critically, often defaulting to trusting familiar labels or overlooking others entirely. It is essential to teach consumers to research the origin of a product, the production process, and certification credentials, as it empowers them to make informed choices that align with their sustainability goals. This knowledge gap represents a significant barrier to genuine sustainable consumption, as awareness alone does not translate into informed decision-making or behavioral change.

Many fast fashion brands rely on the recognition of self-declared eco-labels rather than the actual meaning or credibility of these labels. They understand that most consumers are unaware of what these labels truly represent and whether they meet any genuine environmental or ethical standards. This is not necessarily because consumers are misinformed, but because they often do not care to investigate beyond the surface, what matters most to them is the idea of sustainability, not its verification. As a result, eco-labels can be used as superficial tools to project an image of responsibility without meaningful action to support them.

To change this, it is essential to invest in clearer standards, greater transparency, and comprehensive consumer education. Additionally, the use of self-declared, non-verified eco-labels must be eliminated. Teaching consumers how to assess the legitimacy of environmental, ethical, and social certifications and encouraging them to investigate the origins and production practices of products can lead to more informed and authentic purchasing decisions. When consumers can critically evaluate brand claims and recognize credible certifications, eco-labels can serve their intended purpose and help close the attitude-behavior gap between sustainable intentions and actual behavior.

While awareness of greenwashing may influence consumer attitudes, it does not necessarily lead to changes in purchasing behavior, as demonstrated earlier by the attitude–behavior gap. Borges-Tiago et al. (2024) propose that to close this gap, marketing strategies should prioritize sustainability and ethical consumption by making fast fashion alternatives more accessible and affordable, while promoting conscious consumerism to reduce overconsumption.

To change this, it is essential to invest in more transparent, more rigorous, and consistent eco-labelling standards. Brands and certifying bodies must increase transparency by providing detailed information about product origins, production practices, and certification credentials. Additionally, the use of self-declared, non-verified eco-labels must be strictly regulated or eliminated to prevent consumer deception. Comprehensive consumer education is crucial, as it teaches individuals how to critically assess eco-labels, research product origins, production processes, and the legitimacy of certifications, enabling them to make informed and authentic purchasing decisions. Promoting credible third-party certification backed by independent verification will increase trust and accountability in the marketplace.

Moreover, the fashion industry must shift its marketing strategies to prioritize sustainability and ethical consumption by offering accessible and affordable alternatives to fast fashion. Promoting conscious consumerism is also key, encouraging behaviors that reduce overconsumption and aligning purchasing decisions with sustainability goals. These combined efforts aim to close the attitude-behavior gap by translating sustainable intentions into actual behavior through education, regulation, transparency, and marketing changes.

While awareness of greenwashing may influence consumer attitudes, it does not necessarily lead to changes in purchasing behavior, as demonstrated earlier by the attitude–behavior gap. Borges-Tiago et al. (2024) propose that closing this gap requires marketing strategies that prioritize sustainability and ethical consumption by making fast fashion alternatives more accessible and affordable, while promoting conscious consumerism to reduce overconsumption.

These findings suggest a two-pronged approach for promoting sustainable behavior in the fast fashion sector. First, strengthening and promoting credible eco-labels is critical. This requires investing in clearer, more transparent, rigorous, and consistent labelling standards, increasing transparency around product origins and production processes, and eliminating self-declared, non-verified eco-labels to prevent misleading consumers. Encouraging the adoption of independent third-party certifications will build consumer trust and accountability. Governments and independent organizations must lead in safeguarding the integrity of eco-labels and ensuring their widespread, credible use.

Second, comprehensive consumer education and strategic industry reforms must complement regulatory efforts to ensure adequate protection. Educating consumers to critically assess eco-labels, research product credentials, and make informed decisions empowers them to effectively navigate sustainability claims. Simultaneously, the fashion industry should shift its marketing strategies to prioritize sustainability and ethical consumption by offering accessible and affordable alternatives to fast fashion. Promoting conscious consumerism and raising awareness about overconsumption will help align purchasing behaviors with sustainability goals.

By combining credible labelling with informed consumer engagement, robust regulations, and responsible marketing, this dual approach can close the attitude-behavior gap and empower Generation Z to make purchasing decisions that genuinely support environmental sustainability.

5.3 Limitations and Future Recommendations

First, the relatively small sample size and pronounced gender imbalance limit the generalizability of the findings to the broader Generation Z population. Most participants identified as female, which means the results predominantly reflect female perspectives, restricting conclusions about male consumers or a more gender-balanced cohort. This imbalance arose partly because recruitment strategies reached more female respondents, and despite recognizing the value of a balanced sample, practical constraints made it challenging to achieve equal representation. Although the study did not initially hypothesize gender-based differences in eco-label perception or greenwashing responses, the uneven

distribution prevented meaningful gender comparisons. Future research should therefore prioritize recruiting a larger and more gender-balanced sample within Generation Z to explore potential gender differences and provide a more comprehensive understanding of sustainable consumer behavior.

Second, the study's focus on age and shopping frequency as the sole demographic variables limits its explanatory power regarding sustainable buying behavior, as important socio-economic factors such as income, education, and geographic location were excluded. This choice was influenced by the young age of many participants (especially those aged 13 to 17), who often lack stable income or completed education, which complicated data collection. However, for older participants, these variables could reveal meaningful insights into how education or income relates to eco-label understanding and purchasing habits. Thus, future studies should include a broader range of demographic factors to capture a more comprehensive picture of the influences on sustainable consumption, thereby enhancing the model's precision and generalizability.

Third, reliance on self-reported data through Likert scales introduces potential bias, especially social desirability bias, where participants may overstate sustainable behaviors to appear more eco-conscious. The study measured perceived understanding of eco-labels rather than actual knowledge, a limitation partly due to the need for accessible and age-appropriate measures for younger respondents. While self-reporting enabled the inclusion of younger participants, it limits the accuracy of conclusions regarding accurate understanding and behavior. Future research could incorporate more objective assessments, such as quizzes or recognition tasks, to more accurately gauge eco-label comprehension and sustainable actions, improving the validity of findings.

Finally, while this study used an experimental design measuring participants' attitudes toward eco-labels before and after greenwashing exposure within the same survey to capture changes effectively, the inclusion of a control group, where participants are not exposed to greenwashing, would allow for even stronger conclusions about the causal effects of greenwashing on consumer attitudes and behavior. The decision to combine both an experimental design and standard survey questions into a single questionnaire was made to streamline data collection and build on established research methods. The standard section included Likert-scale questions on various sustainability-related topics. At the same time, the experimental component was designed to measure participants' attitudes toward a product before and after being exposed to greenwashing practices. This integrated approach enabled a more efficient analysis of how deceptive sustainability claims can influence consumer perception. However, incorporating a control group in future studies is recommended to enhance internal validity and provide more precise comparisons between exposed and unexposed groups.

5.4 Conclusion

This study offers valuable insights into how eco-labels influence sustainable purchasing behavior among Generation Z consumers in the fast fashion industry. The findings demonstrate that positive perceptions of eco-labels significantly encourage young consumers to make more environmentally and ethically responsible fashion choices. When perceived as credible and meaningful, eco-labels act as trusted signals that simplify decision-

making for consumers who want to shop sustainably but may lack the time or expertise to investigate every product's sustainability claims (Hwang & Lyu, 2020).

Notably, the influence of eco-labels on sustainable behavior is consistent across different age groups and shopping frequencies within Generation Z, highlighting the broad applicability of eco-labels as a powerful tool for promoting sustainable fast fashion on a large scale. However, raising awareness of greenwashing practices, while leading to more critical attitudes, does not significantly change the effect that eco-label perceptions have on purchasing decisions. This reveals a crucial gap between awareness and action: although many young consumers recognize deceptive marketing tactics, they continue to rely on familiar eco-labels as cognitive shortcuts.

The presence of an official-looking label often reassures consumers and justifies their purchases, even when the actual sustainability credentials are unclear or superficial. One key reason for this reliance is limited consumer knowledge. Many consumers lack the tools and education necessary to critically evaluate which certifications are credible and what they represent. Without such knowledge, consumers default to trusting recognizable labels or overlook unfamiliar ones, which maintains the status quo rather than drives change. Therefore, empowering consumers with the skills to distinguish between third-party, government-regulated certifications and self-declared claims, and encouraging research into product origins and production practices, is essential to closing the attitude-behavior gap.

Furthermore, many fast fashion brands exploit the general lack of consumer scrutiny by relying on self-declared, non-verified eco-labels. These labels often serve more as superficial tools to project an image of sustainability rather than provide genuine environmental or ethical assurance. To address this, it is essential to invest in clearer, more transparent, rigorous, and consistent eco-labelling standards, increase transparency about product and certification credentials, and eliminate or strictly regulate self-declared, non-verified eco-labels. Promoting credible third-party certifications backed by independent verification will increase trust and accountability in the marketplace.

Alongside these regulatory measures, the fashion industry must shift marketing strategies to prioritize sustainability and ethical consumption by offering accessible and affordable alternatives to fast fashion. Promoting conscious consumerism that encourages reduced overconsumption is equally essential to aligning purchasing behaviors with genuine sustainability goals.

Taken together, these findings suggest a two-pronged approach to promoting sustainable behavior within the fast fashion sector. First, strengthening and promoting credible eco-labels through rigorous standards, transparency, and the elimination of misleading labels is critical. Governments, third-party certifiers, and industry stakeholders must collaborate to safeguard the integrity and widespread adoption of trustworthy eco-labelling systems. Second, comprehensive consumer education and strategic industry reforms must complement these regulatory efforts. Educating consumers to assess eco-labels critically and encouraging informed decision-making empowers Generation Z to navigate sustainability claims effectively. Concurrently, industry marketing should support this shift by making sustainable options more accessible and encouraging mindful consumption patterns.

To conclude, eco-labels hold significant promise in guiding sustainable consumer behavior, but their impact depends on the trust they inspire and the knowledge consumers bring to the table. As this study demonstrates, awareness alone is not enough. Only when supported by education, transparency, regulation, and responsible marketing can eco-labels fulfil their potential as practical tools in the fight for a more sustainable fashion industry.

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Appendix

Dear Participants,

This study is about sustainable behavior. We aim to understand how Generation Z (individuals between the ages of 12 and 28) make purchasing decisions when it comes to fast fashion. We're especially curious about whether eco-labels influence their choices, and if greenwashing changes how they feel about those labels.

Your responses will help us gain valuable insights into these important topics. Please note that your participation is entirely voluntary, and you may choose to withdraw from the survey at any time without any consequences.

All responses will be kept confidential, and your identity will not be linked to any of the data provided. The survey will take approximately 5-7 minutes to complete. By proceeding with this survey, you are giving your consent to participate in this study.

Thank you for participating in this survey!

Q1: What is your gender?

Q2: What is your age?

Q3: How often do you shop for fashion items?

Section 1: This section consists out of 8 statements, these statements relate to your awareness and knowledge about eco- labels. Please indicate your agreement to these statements on this 5 point scale from strongly disagree to agree strongly. All statements need to be answered in order to continue to the next question.

I am familiar with the concept of eco-labels on clothing.

I am familiar with the Fair Trade eco-label.

I am familiar with the OEKO-TEX eco-label.

I am familiar with the GOTS eco-label.

I understand the meaning of certified eco-labels on clothing.

I understand the benefits of certified eco-labels on clothing.

I believe that certified eco-labels on clothing indicate a brand’s commitment to sustainability.

I am willing to pay a higher price for clothing with certified eco-labels.

Section 2: This section consist out of 3 statements, these statements relate to your attitudes towards the Join Life eco-label. Please indicate your agreement to these statements on this 5 point scale from strongly disagree to strongly agree. All statements need to be answered in order to continue to the next question.

When I see clothing with this eco-label, I view the brand as more appealing.

I am more likely to buy clothing with this eco-label, even if it costs more than non-eco-labelled clothing.

I would prefer to buy clothing with this eco-label over similar clothing from brands that do not have eco-labels, even if the non-eco-labelled clothing is cheaper.

Section 3: This section consists out of 8 statements, these statements relate to your sustainable purchasing behavior. Please indicate your agreement to these statements on this 5 point scale from strongly disagree to strongly agree. All statements need to be answered in order to continue to the next question.

I am aware of the environmental impact of the fast fashion industry.

I believe that purchasing sustainable clothing helps reduce the negative environmental impacts of the fashion industry.

I consider it important to be mindful of the environmental and social issues caused by the fast fashion industry when making purchasing decisions.

I am likely to purchase clothing from brands that clearly demonstrate environmental sustainability through certified eco-labels.

The environmental reputation of a brand positively influences my decision to buy its clothing.

I am motivated to buy eco-friendly clothing because of its positive environmental impact.

I am more likely to purchase from a brand with a strong commitment to sustainability, even if it means paying a higher price.

If I discover that a brand has been misleading in its environmental claims, I am less likely to purchase from them in the future.

Section 4: This section consist out of 6 statements, these statements relate to your attitude towards Zara's Join Life Label. Please indicate your agreement to these statements on this 5 point scale from strongly disagree to strongly agree. All statements need to be answered in order to continue to the next question.

I trust Zara to promote their products as environmentally friendly if they have the Join Life eco-label.

I believe the Join Life eco-label provides accurate and trustworthy information about Zara’s sustainability efforts.

I believe that the Join Life eco-label on Zara products reflects the brand's commitment to sustainability.

I feel more confident in purchasing clothing from Zara when it carries the Join Life eco-label.

I believe eco-labels like Join Life can help me make more sustainable purchasing decisions.

I trust that products labeled with the Join Life label are genuinely better for the environment than non-labeled products.

Section 5: We would like to inform you that recent reports have raised concerns about the environmental claims made by some brands, including Zara's Join Life label. While Zara markets the

Join Life collection as eco-friendly, investigations suggest that the brand's claims may not always be fully substantiated or could be exaggerated. Critics argue that some of the environmental benefits promoted by Join Life are not verified by independent third parties, and some practices may not be as sustainable as claimed.

This section consists out of 6 statements, these statements relate to your attitude towards Zara's Join Life label after learning about their greenwashing practices. Please indicate your agreement to these statements on this 5 point scale from strongly disagree to strongly agree. All statements need to be answered in order to continue to the next question.

After learning about potential issues with the Join Life eco-label, I trust Zara's claims of environmental sustainability less than I did before.

I feel betrayed by Zara for promoting its Join Life collection as environmentally friendly without providing sufficient proof of its sustainability.

The information about greenwashing makes me less likely to purchase products from brands that use eco-labels like Join Life in the future.

I feel that Zara's Join Life label is not as trustworthy after learning about potential greenwashing concerns.

I am now more skeptical about the effectiveness of eco-labels in promoting sustainability, especially after the information about the Join Life label.

I believe that after learning about greenwashing, I will be more cautious in trusting any eco-label, regardless of the brand behind it.

Section 6: This section consist out of 5 statements, these statements relate to your attitude towards eco-labels after learning about potential greenwashing. Please indicate your agreement to these statements on this 5 point scale from strongly disagree to strongly agree. All statements need to be answered in order to continue to the next question.

I am less likely to purchase clothing from Zara after learning about the potential greenwashing related to their Join Life label.

The information about greenwashing has made me more cautious about trusting eco-labels on any fashion brand, even those that claim to be sustainable.

After learning about greenwashing concerns, I feel that eco-labels may not always reflect a brand's true commitment to sustainability.

The greenwashing concerns regarding Zara's Join Life collection have made me more skeptical about the effectiveness of sustainability claims made by fast fashion brands.

After being informed about greenwashing practices, I am now more likely to research and seek third-party certifications before purchasing eco-labeled clothing.

Thank you for your participation in this survey!

I greatly appreciate your time and effort in providing honest and thoughtful responses. If you have any further questions or would like more information about the study, please feel free to reach out

at l.aerdts@tilburguniversity.edu.

Your input is instrumental in advancing our research and promoting a deeper understanding of sustainable purchasing behavior and the challenges associated with greenwashing in the fashion industry.

- Lotte