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**Sustainability in Fashion: Analysing Consumer Preferences for  
Sustainable Attributes in Clothing**

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## Executive Summary

This research provides a detailed analysis of how the incorporation of organic materials, reduction of carbon footprint and waste reduction can influence consumer willingness to pay specifically in the context of fashion. The study aims to quantify the consumer preferences for various sustainability attributes that companies can adopt (usage of organic materials, carbon footprint reduction, and waste reduction), alongside price and style, using conjoint analysis. By evaluating these factors, a measure of willingness to pay (WTP) is achieved to help determine how sustainable characteristics influence consumer behaviour. To measure this, survey data was collected from 307 respondents who were presented with different product profiles varying in price, sustainability characteristics, and style. Each respondent's WTP for each attribute was calculated using part-worth utilities derived from the conjoint analysis. The results reveal a strong consumer preference for the adoption of sustainability attributes rather than none, with waste reduction being the most valued. Furthermore, price presents itself as a critical control factor as consumers showed significant sensitivity, responding positively to lower prices. Style on the other hand (formal vs. casual) did not significantly impact WTP when sustainability attributes were held constant. These findings suggest that consumers are willing to pay a premium for more sustainably produced clothes, but the style of the product is not influential. This research provides insights for fashion brands, into which practices are most valued by consumers and should therefore be prioritised. The study also emphasizes the importance of integrating sustainable practices to meet current consumer preferences and consequently enhance their financial performance. The study concludes by discussing the implications of these findings for fashion brands, acknowledging the limitations of the study, and proposing areas for future research. These insights can help fashion companies better align their strategies with consumer values, ultimately promoting sustainable development in the industry.

**Keywords:** *Willingness to Pay, Sustainability Attributes, Conjoint Analysis, Consumer Preferences, Fashion Industry*

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## Chapter 1. Introduction

The incorporation of sustainability is a development which many companies are practicing or aiming towards (Laszlo & Cescou, 2008). With pollution becoming an ever more critical issue, and the fashion industry being named the second most polluting industry by The United Nations, it is time that the fashion industry evaluates its impact on the environment and takes action to mitigate pollution (*UN Launches Drive to Highlight Environmental Cost of Staying Fashionable*, 2021). The fashion industry is one of the largest sectors in our global economy, estimated to be worth \$1.7 trillion (*What Is Fast Fashion?*, 2023) and has become increasingly watched because of the many changes it has gone through in recent decades. This evolved from the initial shift towards fast fashion in the 1960s where the emphasis became profit irrespective of the consequences, to the more recent trends of thrifting and environmentally conscious products that prioritise the lifecycle of an item and its environmental impact (Crofton & Dopico, 2007).

Fast fashion is a business model that has been adopted by many brands, primarily characterised by the rapid production of high volumes of clothes, often sacrificing quality, and sold at extremely low prices (Bartl & Ipsmiller, 2023). Unlike designer-led fashion seasons, fast fashion brands constantly adapt to current trends with frequent line releases (Crofton & Dopico, 2007). This focus on trends has led fast fashion to aim for short turnaround times between designing pieces to their release, requiring constant new collection releases to provide consumers with pieces that have become trendy in real-time (Kapoor, 2023). The fast fashion model combines cost-efficient methods and prices while relying on high sales volumes to generate profit.

More recently, there has been a shift towards sustainability in the industry. This has been driven by the increasing awareness of the environmental impacts of production and consumption from the fashion industry. Growing issues like water pollution, landfill waste and global warming have prompted consumers to reconsider their choices and businesses to adapt their approaches (Fang, 2023).

This shift has pushed both companies and consumers towards adopting more environmentally responsible practices throughout the production and consumption process (Yang, Song, & Tong, 2017). Companies have implemented measures such as using organic materials, reducing waste and carbon emissions, and creating longer-lasting more versatile items (Provin et al., 2021). In addition to established companies adapting their practices to better meet consumer preferences, there has also been an emergence of new companies with specific, sustainability-oriented agendas and products.

In consumer behaviour, this new focus on sustainability has led to the growth of second-hand shopping, especially after the Covid-19 pandemic (Lestari & Asmarani, 2021). Second-hand shopping is done mostly through thrifting where consumers ‘hunt’ for used, often luxury branded clothes, at second-hand stores or online through the rise of apps like “Vinted”. Here users can both sell and buy their used, unwanted items for a reduced price, based on the condition of the item (Lestari & Asmarani,

2021). This attention to the lifecycle of clothing starkly contrasts the inevitable results of fast fashion, where clothing is expected to last just a few wears.

## **1.1 Research Problem and Motivation**

In the paper by Viet et al. (2023), it is highlighted that consumers' concern for sustainability makes them susceptible to sustainability information disclosures by firms. This suggests that targeted communication with certain consumers is a possible strategy for clothing companies to adopt when making changes. There seems to be a general willingness to pay a premium for more sustainably produced clothes (Khan et al., 2022). Studies conducted thus far (Bastounis et al., 2021; Herrmann et al., 2022) show evidence of an increasing willingness to pay for sustainably produced products, due to the heightened awareness of the environmental situation. The potential risks for our planet have therefore prompted a deeper dive into their causes, resulting in the identification of companies, and specific industries as the main culprits. The fashion industry is known to be a contributor (*UN Launches Drive to Highlight Environmental Cost of Staying Fashionable*, 2021). Therefore, research has already identified several ways the damage caused by the industry can be reduced, through approaches like fabric waste reduction (Naveed et al., 2017).

Moreover, there have been suggestions that consumers may be more willing to pay for products that they perceive will be used for more important occasions (Behera et al., 2022). However, this has yet to be related to the nature of a specific product. A major literature gap exists regarding how the style of a clothing item, particularly its casual or formal nature, can impact consumers' willingness to pay when sustainability is involved. Additionally, there is a lack of research on which potential sustainability attributes that companies could adopt, are deemed most important for consumers in the context of clothing items.

The growing concern for the environment and willingness to pay a premium present a promising opportunity for companies, suggesting a potentially increasing market demand for sustainable fashion products. This drives motivation for this research, as it could provide valuable findings on how to more accurately meet consumer demands while efficiently taking advantage of their growing willingness to pay. A more solidified insight into the trends in consumer choices for these sustainable attributes can result in more effective campaigns and initiatives aimed at promoting a sustainable product, resulting in a greater impact on the firm's financial position too.

## **1.2 Research Objectives**

This paper analyses the relationship between the provision of a more sustainable common product by fashion firms, a shirt, and how these adaptations impact consumers' purchasing decisions. The new perspective offered by this paper is the study of how different types of sustainability

characteristics and the style of a shirt influence consumers' purchasing decisions differently. Consequently, this research aims to address the gap by focusing on three key objectives:

1. Identify which sustainability attributes are the most important to consumers when making purchasing decisions for clothing items.
2. Examine how the style of a clothing item, particularly its casual or formal nature, impacts consumer willingness to pay for sustainability attributes.
3. Provide actionable insights for fashion brands to optimise their understanding of consumer preferences and therefore their product offerings.

This paper highlights differences between the willingness to pay for eco-friendly products and non-eco-friendly products, illustrating how consumer preferences for sustainability can significantly influence a company's performance and profitability of a specific product line. This paper aims to provide insights into contemporary attitudes towards this topic, with a specific focus on shirts, a common item sold by clothing companies. The key objectives are explored using the following research question:

*“How do sustainable characteristics, price and style influence consumers' purchasing decisions for sustainable clothing?”*

From the evaluations of this study, clothing companies will be able to take their results into account when making decisions on implementing more sustainable practices. The resulting analysis offers a more detailed insight into current consumer preferences regarding sustainability, enabling brands to tailor their offerings to better meet market demands and enhance their brand loyalty.

This research is structured in the following sections: an introduction to the shifts of focus in the fashion industry, underlining the research question, followed by an exploration of the topic in the literature review and a depiction of the relationships within the conceptual framework. The research methods and data collection process are discussed in the methodological justification, followed by the analysis and results section where the findings are interpreted. Finally, the conclusion and future research recommendations are discussed in the final chapter.

## Chapter 2. Literature Review

This framework provides a thorough understanding of customers' willingness to pay for sustainably produced clothing and the explanation of three different potential sustainability attributes. Outlined in this theoretical framework, is what characterises sustainable practices, and how these practices along with price and style may affect customers' purchasing decisions.

### 2.1 Price as a Determinant of Consumer Purchasing Behaviour

This paper's research focuses on the attributes of price, sustainability characteristics and style, and how each one of these affects purchasing decisions by consumers. To explore this topic, the relevant sub-question was developed: "*What is the relative importance of the product attributes price, sustainability characteristic and style?*". This section focuses on price and its effect while sustainability characteristics and style will be further discussed in the following sections of this literature review.

The existing literature by Gall-Ely (2009) defines consumer willingness to pay as: "*the maximum price a buyer accepts to pay for a given number of goods or services*". It can also be referred to as the reservation price representing the threshold price which a buyer is willing to pay (Teptsova et al., 2018). This theory slightly differs from that of Gall-Ely as it conveys more of a limit idea, suggesting if the price were to go above this threshold the buyer would not purchase the item. This is a more rigorous line providing just the two options of a consumer certainly or certainly not buying a product.

In behavioural economics, as stated by the Harvard Business School, (*Willingness to Pay: What It Is & How to Calculate*, 2020), willingness to pay is defined as the maximum price at or below which a consumer will definitely buy one unit of a product. The theory by Harvard Business School provides more of a guideline of the price at which a consumer will buy at least one unit of the product, leaving room for them to buy more. In contrast to the threshold theory, it does not absolve the idea that consumers may be swayed to still purchase an item despite it surpassing the threshold provided, as a result of other circumstances or features of the product.

The definition by Harvard Business School is the definition adopted in this paper as it best fits the scope of this research without undermining the irregularities in human behaviour at times. It will allow for the comparison of maximum prices amongst individuals for the same unit of clothing, with and without various sustainability characteristics.

In the study by Miller et al. (2011) four approaches to measure willingness to pay are discussed. The first is the open-ended question format (OE) where respondents are simply asked to state their maximum willingness to pay for a good without further constrictions. This is a straightforward method to carry out but is likely prone to biases by the respondent, especially if no circumstances are explained and no range is given, which could result in responses that do not truly reflect the purchasing behaviour of respondents.



The second approach discussed is a choice-based conjoint analysis (CBC) where respondents are asked to make decisions between several product options that differ on their levels of several attributes including price. Both willingness to pay and preferences for different product attributes can be inferred from their choices. This may still however not completely reflect real-life purchase decisions as the options provided are likely hypothetical and not equal to those available in real life.

The third mechanism analysed is the Becker-DeGroot-Marschak Mechanism (BDM). In this method, participants are asked to think carefully about how much they value a product and are simply asked to state the highest price they are willing to pay for it, similar to the open-ended question format. However, after this step, a random price is drawn from a predetermined set of possible prices that assumes the role of the selling price. If the participant's stated willingness to pay price is greater than or equal to the selling price drawn, the respondent is obligated to purchase the product at the selling price. This provides an economic incentive which may reduce some bias, yet the difficulty to perfectly recreate a real-life situation still stands, leaving room for some bias against real purchasing behaviour.

The last approach suggested is the incentive-aligned choice-based conjoint analysis which essentially combines CBC with an incentive similar to BDM. Respondents are asked to make decisions with the knowledge that they may have to purchase the item based on their revealed preferences. This likely provides more accurate statements of willingness to pay prices reducing hypothetical biases and reflecting real-life decisions more closely. This is however also very challenging to carry out compared to the standard CBC method.

The method selected to measure willingness to pay in this paper is choice-based conjoint (CBC) analysis. The reasons for selecting the choice-based conjoint method are the time and resource constraints. The data collection process is a lot more time efficient, allowing participants to complete the survey quickly and cost-efficiently as it does not require administering real-life products or transactions. The CBC method is also what most closely achieves the scope of this research which is to identify the difference in consumer willingness to pay for the different levels of sustainability attributes. This method not only helps to identify preferences between attributes but also quantifies how much value consumers place on each one. These insights can then be translated into willingness to pay enabling businesses to make more informed decisions on their pricing.

Clothing companies have experienced drastic changes to their pricing habits, specifically in the last five years, during and after the Covid-19 pandemic. As mentioned previously, the shift towards the continuous provision of new lines released at low prices to stay on top of trends, has led to the surge of fast fashion. Fast fashion has been adopted by an increasing number of companies, led by Amancio Ortega Gaona and his companies Zara and Inditex (Crofton & Dopico, 2007). Nowadays, Shein has taken on the role as the most well-known fast fashion company, valued at \$100 billion, having been the most downloaded shopping app in 2022 (Williams, 2022).

Fast fashion can be characterised by its short turnaround times of only a few weeks, from designing the pieces to their release. Fast fashion requires constant new collection releases, often several

times a month compared to the traditional four seasons per year (Jin et al., 2011). In addition to its constant evolution, fast fashion combines cost-efficient methods involving less expensive material and cheaper labour, often outsourced from other countries. This allows them to offer trendy clothing at very low prices. Consequently, products often become disposable with items often getting discarded after on average only seven wears (*What Is Fast Fashion?*, 2023). Fast fashion companies contribute significantly to negative externalities, imposing costs on third parties, through their production process. The costs fall particularly on the environment through increased CO<sub>2</sub> emissions, water pollution and contributing to landfills.

In the up-to-date study conducted by Maedia and Muhiban (2023) in West Java, a sample population was taken to focus on Shopee a big e-commerce marketplace for a variety of products including clothing. When looking at which factors would most affect purchasing decisions, they found that price influenced 75.61% of purchasing decisions. This highlighted the significant role prices and promotions play. Another study by Bahri (2023) confirmed that price was the main motivator for online clothing purchases, overshadowing other factors like brand image. Husic and Gregurec (2015) further highlighted the influence economic constraints can have, often resulting in the price of a good being the sole reason for purchasing a product rather than other attributes like its style or sustainability level. Particularly during economic crises or among lower-income households, price often becomes a top priority due to the economic constraints they may bear (Ghosh & Motta, 2014). Perceived value also plays a role in how important the price of a product is, because often consumers equate lower prices with better deals and therefore higher values (Sitta & Perdana, 2021). This perception can outweigh the importance of other attributes like sustainability and make it hard for consumers to change their minds after they have seen the lowest price for a deal.

Due to the combination of price sensitivity, perceived value and economic constraints, there is evidence to believe that price would play the biggest role in consumer purchasing decisions. Therefore, the following hypothesis arises:

***Hypothesis 1:*** Out of the attributes “Price”, “Sustainability Characteristic” and “Style”, consumers consider “Price” to be the most important factor when purchasing a white shirt.

## **2.2 Sustainable Characteristics and Consumer Purchasing Behaviour**

Sustainability in fashion is the integration of sustainable practices into business models, focusing on reducing negative environmental impacts (Thorisdottir & Johannsdottir, 2019). Thorisdottir and Johannsdottir (2019) underline how innovative practices and business models can support sustainability through slow fashion, zero-waste design, and ethical sourcing of materials. To focus the research on sustainable attributes, the following sub-question was developed: *“How does the incorporation of sustainable characteristics in clothing companies impact consumer willingness to pay?”*

Slow fashion advocates for purchasing fewer higher quality items that are durable to reduce the frequency of buying new clothing and reduce waste. The idea of slow fashion encompasses many different attributes such as the use of organic materials, ethical labour practices, small-scale production, and mindful consumption on the consumer's end including repairs and upcycling (Hapsari & Belgiawan, 2023). Henninger et al. (2016) provided a detailed definition of sustainable fashion that combines the environmental, social and economic aspects. The goals include reducing the environmental impact, promoting social equity and achieving economic stability. The paper emphasized prioritising environmental responsibility over social and economic responsibility. The discussed attributes that characterise sustainable fashion from the environmental perspective, and therefore the possible methods to achieve this are the use of organic materials, energy-efficient production processes, management of chemicals and waste, reduction of waste, and carbon footprint reduction.

In this paper, a sustainable characteristic is defined as the introduction of a product that explores a sustainable goal in its production. This research will focus on three of the previously mentioned sustainability characteristics: the use of organic materials, reduction of waste, and reduction of carbon footprint. These characteristics represent changes in the company's production approach and will be explained in the following section.

Firstly, organic materials are those produced following United States Department of Agriculture (USDA) organic regulations which prohibit synthetic chemical use, GMOs, and require sustainable farming practices to maintain soil health and biodiversity (*USDA Organic*, n.d.). They are considered sustainable for their contribution to environmental benefits. Organic farming prohibits the use of synthetic pesticides and fertilisers, which reduces soil and water contamination. This reduction in chemical use compared to non-organic farming benefits ecosystems due to its nature and is in turn a better option for human health. Furthermore, organic farming can enhance soil fertility, and promote biodiversity in the soil, which is crucial to create a more balanced ecosystem. Organic cotton for example is grown without synthetic chemicals and genetically modified organisms (GMOs) (*OTA* |, n.d.) which reduces its environmental impact, and benefits the health of farmers and their soil simultaneously. A study conducted by the OTA found that organic cotton uses 91% less water and 62% less energy than conventional cotton farming, which translates to the more environmentally friendly option. Hence organic materials being chosen as one of the attributes to analyse in this paper.

The reduction of waste is another key for achieving sustainability. This practice focuses on minimising the amount of waste generated by human activities (Sparnicht, 2023) and can be achieved through several approaches.

The first is source reduction, which prevents waste generation at its origin by designing products that use fewer resources from the start and consequentially produce less waste. After this, the technique of recycling and reusing can be applied. Recycling is the process of converting waste materials into new products, while reusing products extends their lifecycle and delays the need for new materials (Ross & Evans, 2003). Reducing waste can also be achieved through more efficient use of resources which

simply entails optimising the use of all resources and materials to ensure resources are utilised to their full extent, resulting in minimal waste (Wilts et al., 2016). The reduction of waste is considered to contribute to sustainability because of its resource-preservation nature. By reducing waste, the demand for raw materials decreases which leads to less extractions necessary, and less depletion of natural resources. Reducing waste also contributes to the environmental protection by reducing the volume sent to landfills, a growing problem in today's world (*European Environment Agency's Home Page*, n.d.).

Another strategy that has been explored to enhance sustainability is the reduction of a company's carbon footprint. It refers to efforts aimed at minimising the amount of greenhouse gasses emitted into the atmosphere, primarily focused on carbon dioxide (CO<sub>2</sub>). Humans play a significant role in the level of CO<sub>2</sub> released. According to the European Environment Agency, just textile products consumed in the EU generated 121 million tonnes of greenhouse gas emissions (*European Environment Agency's Home Page*, n.d.). Consequently, reducing carbon footprint is an integral part of achieving sustainability for fashion companies because it addresses one of the biggest contributors to climate change and promotes the preservation of finite resources like fossil fuels. The reduction of carbon footprint entails shifting towards more renewable energy sources than the burning of fossil fuels, such as solar, wind, hydroelectric and geothermal power which can generate electricity without producing greenhouse gas emissions. This in turn would contribute to the promotion of sustainability, hence why it has been considered in this paper as a sustainability attribute for companies to adopt.

In Yilmaz's (2021) paper, the idea of adopting similar sustainable practices in the fashion industry such as using eco-friendly materials is explored. The findings highlight how consumer demand for sustainable fashion is on the rise, indicating potential earnings for companies that adopt more sustainable approaches. This highlights the importance of integrating sustainable practices for the long-term profitability of a firm, which in the end is necessary for the survival of any company.

Several studies were analysed before concluding that consumers' willingness to pay is affected by the sustainability level of a product. In the paper by Tully and Winer (2014), they particularly explore consumers' willingness to pay a premium for products with social or environmental benefits. Their findings indicate that 60% of consumers were willing to pay an average premium of 17.3% for more sustainably produced products, suggesting a positive relationship between consumer willingness to pay and their perception of a product's sustainability. A choice experiment conducted with Dutch consumers examined the willingness to pay for various food products with five socially responsible attributes: no child labour, a liveable wage and a safe working environment, education of workers, equal wages, and freedom to join a trade union (Arnoldussen et al., 2022). The results highlight the monetary value consumers place on ethical production practices, again highlighting the price premiums consumers are prepared to pay. These findings suggest the potential to create a more sustainable economic system by reducing the demand for less-sustainable products.

Chatterjee et al. (2021) discussed how consumers' attitudes are changing towards ethical certification. The results indicate that consumers are prepared to pay a significant positive premium for

products certified as sustainable vs those that are not, reflecting consumers' increasing prioritisation of sustainability in their decision-making process. Therefore, the following hypothesis arises:

***Hypothesis 2:*** The incorporation of sustainable characteristics by clothing companies positively impacts consumer willingness to pay.

### **2.3 Effect of Shirt Style on Consumer Purchasing Behaviour**

Consumer preferences for sustainable products vary depending on the type of clothing and individual taste. However, there has been evidence that suggests sustainable fabrics are more eagerly sought after in formal clothing items compared to casual ones (Soyer & Dittrich, 2021). This preference can be attributed to the association of sustainable practices with greater transparency about the quality of materials used. Additionally, formal clothing needs to be more durable and timeless compared to casual pieces. Therefore, the following targeted sub-question was developed: "*How does the style of a clothing item affect consumer choices?*". The combination of greater transparency in sustainable practices and the need for durability in formal shirts suggests that consumers may be more willing to pay a premium for a sustainably produced shirt if it is formal rather than casual.

In the study by Slepian et al. (2015) formal clothing is defined as more modest to portray professionalism, therefore in this paper a formal shirt will be defined as a white long-sleeve button up. Casual clothing on the other hand, is characterised as informal and more practical for everyday use (Cooper, 1985). In this study, a casual shirt will be characterised as a plain white t-shirt, and a visual representation of the two styles will be presented in the survey.

Evidence was also found to suggest that consumers expected higher quality when purchasing formal vs casual (Oh, 2010). Consumers were found to place greater importance on product quality for formal clothing compared to casual clothing. This suggests consumers are willing to invest more in formal clothes, with the anticipation of better quality materials and higher durability. Casual clothes, in contrast, are generally used for less important occasions and can therefore explain the result of the quality being a less important factor compared to formal clothes (Jefferson, 2015). In a study by Ha-Brookshire and Norum (2011) on cotton apparel, it was found that consumers were more willing to pay a premium for products perceived to be of higher quality. This suggests the idea that individuals are likely willing to pay more to receive a better product in return.

In the paper by Shafie et al. (2021), a link is suggested between the use of sustainable methods in clothing production and consumers' perception of enhanced quality. This finding is further supported by Paul (2021) who studied the effect of similar sustainable manufacturing practices on consumer purchase behaviours. The study found that consumers perceive these sustainable characteristics as improving the quality of fashion apparel, positively influencing their decisions to purchase.

If consumers prioritise higher quality in formal clothing over casual clothing and associate sustainably produced items with better quality, this could translate into a stronger motivation to purchase sustainably produced formal clothing over casual options. Therefore, the following hypothesis arises:

**Hypothesis 3:** A formal-styled, sustainably produced shirt will positively impact consumer willingness to pay more than a casually styled, sustainably produced shirt

### 2.4 Conceptual Model

The three hypotheses mentioned above lead to this research’s conceptual model, seen in Figure 1, and serve as a tool to assess the research objectives. Representing the various hypotheses are the independent variables of Price, Sustainability Characteristics and Style. The signs on the arrows represent the direction of the expected relationship between the independent variables and the dependent variable, Purchasing Decisions by Consumers, which will be measured by willingness to pay. Each arrow is labelled to indicate its corresponding hypothesis: H1 for Price, H2 for Sustainability Characteristics, and H3 for Style (Formal). Figure 1 also visualises two control variables, whose purpose will be later justified in the methodology.

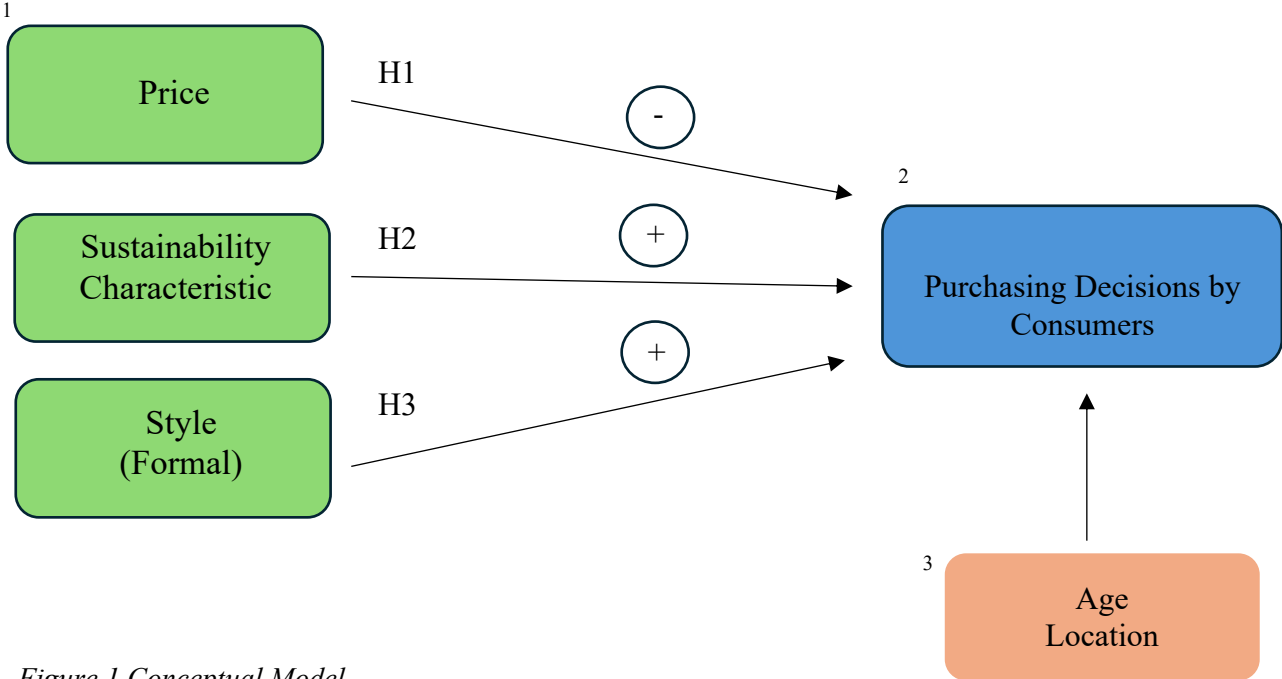


Figure 1 Conceptual Model

<sup>1</sup> Independent Variables  
<sup>2</sup> Dependent Variable  
<sup>3</sup> Control Variables

## **Chapter 3. Methodology**

The chosen methodology for this research paper is quantitative methods by means of a survey to test for the previously mentioned hypotheses. Quantitative research can be characterised as a numerical interpretation and analysis of data usually gathered through surveys or experiments (Kolmogorov, 1965). Therefore, quantitative methods were selected due to their ability to collect and analyse numerical data, which is essential for measuring and comparing consumers' willingness to pay for different sustainability attributes. Quantitative methods, such as surveys, enable a structured way to gather data from a large number of respondents, resulting in statistically relevant results that can be generalised to a broader population (Arghode, 2012). Hence, making this method the most suitable for this research question.

Empirical research has been conducted by obtaining primary data through an online survey that was constructed with the aim of performing "Choice-Based Conjoint Analysis". This research focuses on the impacts on purchasing decisions by consumers after firms have adopted one of the attributes discussed. This approach allows for the analysis of relationships between variables such as price, sustainability characteristics, style and their impact on purchasing decisions through statistical tools. This research aims to provide actionable insights into consumers' perceptions of sustainable clothing, enabling clothing companies to focus their efforts and tailor their strategies to maximise consumer appeal. Understanding these perceptions is essential for exploring the outcomes of investing in sustainability, a practice that is becoming increasingly prevalent (Hutchinson et al., 2022).

### **3.1 Data Collection: Survey**

To explore the impact of a company's decision to adopt one of the three attributes, the use of primary data collection through a survey was essential. A survey was optimal due to its efficient collection of data from a large number of respondents, ensuring a representative sample, and was particularly useful for understanding consumer preferences as it gathered information directly from the consumers. The survey asked participants to choose between two options of white shirts from an orthogonal subset of product profiles (Appendix A) that differ in one or more attributes. (Nunan et al., 2020). This method allowed for the identification of the premium consumers are willing to pay, based on the importance they place on each attribute. It provided quantifiable data to analyse the impact of each attribute level. Two white shirts that differ only in style and no other characteristics were selected to isolate the impact of style on purchasing decisions, ensuring that factors such as colour or pattern do not influence the results.

The online distributed survey (Appendix B) was created using the survey software Qualtrics XM, specifically tailored to be able to perform Choice-Based Conjoint Analysis. This was specifically chosen to make the survey easily completed by all respondents. The first part of the survey includes two

demographic questions about the respondents' characteristics (i.e. Age, Location), two questions on environmental consciousness measured on a Likert scale, and a question on their opinion of acceptable pricing for a shirt. The environmental consciousness questions were measured on a five-point Likert scale ranging from 'very unlikely' to 'very likely,' while the opinion on acceptable pricing was a choice question where respondents had to choose between €20, €30, or €40 an acceptable price for a white shirt.

The second part of the survey includes six questions comparing two white shirts with varying levels of price, sustainability characteristics and style. Price was measured using three levels: €20, €30, and €40 to represent a reasonable range of prices consumers might encounter in today's market. The variables Age and Location were used as control variables in an attempt to isolate the effects of the independent variables, and therefore enhance this research's internal validity. Meanwhile, Q3 through to Q5 on environmental consciousness, attempt to gain a better understanding of each respondent's pre-existing purchasing behaviour and outlook before completing the survey.

To obtain valuable insights and a representative sample of the respondents' real-life purchasing habits as closely as possible, the "snowball sampling" method was used by sharing the survey on social media groups. Snowball sampling is a non-probability sampling technique where existing study subjects recruit future subjects from among their acquaintances, creating a chain referral process (Biernacki & Waldorf, 1981). This method was used due to time and resource constraints as it allows for quick data collection while still getting access to the population that is required. This was done to ensure a large enough sample size to achieve statistically significant results and enhance the external validity of this research. The survey was first shared on June 4<sup>th</sup> 2024 and collected a total of 307 responses (See Appendix E for Raw Data).

### **3.2 Survey Respondents Data**

The survey was initially sent out to respondents within reach, and accessible through online platforms. Then participants were asked to distribute the survey through their networks further, creating a chain reaction allowing the sample size to grow organically through referrals. The sample of 307 respondents was relatively balanced out in their preferences for sustainability, suggesting the results accurately represent how the public would react to such options.

An overview of the descriptive statistics for variables location and age, including count, percentage, mean and standard deviation, is presented in the table below to offer insights into the distribution of these key variables.



*Table 1 Descriptive Statistics of Location*

<b>Location</b>	<b>Percentage</b>
Europe	67.75%
Outside of Europe	32.25%

*Table 2 Descriptive Statistics of Age*

<b>Variable</b>	<b>Mean</b>	<b>St. dev</b>
Age	30.2	7.5

Out of the 307 respondents, more than half (67.75%) reported their location as Europe, while the remaining 32.25% were reportedly based outside of Europe. The distribution suggests the sample predominantly represents consumer preferences in Europe. The average age of respondents was 30 years old, with a standard deviation of 7 and a half years. This indicates that the sample mainly consisted of young adults, but the wide range of ages among respondents allows for valuable insights into age-related consumer preferences.

### **3.3 Data Analysis**

As previously mentioned, the survey has been designed in a way that allows for “Choice-Based Conjoint Analysis” to be conducted. Nunan et al. (2020) describe Conjoint Analysis as a statistical technique which allows for the decomposition of survey responses into preference values for each attribute (i.e. Price, Sustainability Characteristics, Style). The analysis will help to quantify how much value consumers place on each sustainability attribute and how these values translate into willingness to pay.

The Choice-Based Conjoint Analysis was conducted by asking participants to respond to questions based on hypothetical shopping scenarios. They were asked to make choices based on different variations of price, sustainability level, and style of a basic white shirt. The variables were operationalised as follows:

#### **Attributes and Attribute Levels**

- **Price:** (€20, €30, €40)
- **Sustainable Characteristic:** (Use of Organic Materials, Reduction of Waste, Reduction of Carbon Footprint, Not Sustainably Conscious)
- **Style:** (Formal, Casual)

Each attribute was measured at the attribute levels mentioned above to determine their impact on participants’ preferences. Price was measured at €20, €30 and €40 to evaluate how sensitive respondents’ choices were to changes in the price of the shirt. The Sustainability Characteristic was

measured across four levels: use of organic materials, reduction of waste, reduction of carbon footprint, and not sustainably conscious. This helped gauge participants' preferences for different sustainability characteristics as well as their overall preference for sustainability. Meanwhile, the Style was measured using the two options formal and casual. Respondents were presented with examples of a white formal shirt and a white casual shirt to consider in the survey, to assess their style preference for sustainable clothing. Participants were presented with various combinations of these levels in different hypothetical shopping scenarios and asked to choose their preferred option. This allowed for the decomposition of their choices into preference values for each attribute.

The purchasing decisions by consumers were measured using willingness to pay, by converting their preferences into part-worth utilities for each attribute level. The willingness to pay provides a quantifiable metric to accurately reflect consumer preferences and their perceived value of the product. This was necessary to be able to infer the relative importance of the product attributes.

Each level was paired following the orthogonal set with each other to be able to analyse each attribute level independently from the others. The data retrieved on the choices made by respondents was first exported to Microsoft Excel for cleaning, and then the data was analysed using a linear regression method in the "JMP" software.

The profiles presented in the survey were designed specifically to avoid overlapping and provide results with the effects of each attribute that could be independently assessed (Klink & Smith, 2001). Initially, a broad set of profiles was generated using the "DOE: Main Effects Screening Designs" tool in the JMP statistical software. From this, an orthogonal subset of 12 profiles was selected and narrowed down to 6 choice sets, each containing 2 profiles. This selection aimed to minimise the likelihood of incomplete responses from participants, allowing them to complete the full survey within five minutes. In order to prevent any order bias, the order of the profiles presented was randomised. The statistical analysis of the data included the likelihood ratio tests, effect marginals, and the utility profiler to gain a comprehensive understanding of the results.

Conjoint analysis was chosen as it allowed for the consideration of multiple attributes simultaneously and provided results that reveal varying levels of importance per attribute. This method is useful to identify the most important attributes determining consumer choices. The insights gained can guide brands in understanding which sustainable practices are most valued by customers, and would therefore be the best-received and most impactful for firms to adopt.

## Chapter 4. Results

This chapter presents the results of the 307 respondents obtained from the survey data analysis using JMP software. The analysis aims to address the primary research question: “How do sustainable characteristics, price and style influence consumers’ purchasing decisions for sustainable clothing?” and draw valuable conclusions from the results. Each hypothesis was tested using various statistical tests to ensure a full understanding of the results and conclusions.

### 4.1 Respondent’s Pre-Existing Behaviour

To gather a complete understanding of respondents' pre-existing mindset towards sustainability, and their typical shopping habits, two key Likert scale questions were incorporated into the survey measured on a five-point scale from very unlikely to very likely. The first question (Q3) aimed to assess consumers’ belief in the power of individual contributions towards sustainability, to gauge their perceived impact of sustainable shopping. The second question (Q4) aimed to evaluate consumers’ self-reported sustainable shopping behaviours to better understand the application of their beliefs in their real-life purchasing habits.

Table 3 Summary statistics on beliefs of individual actions and individuals’ shopping habits

Descriptives	Beliefs of Individual Actions	Sustainable Shopping Habits
Mean	3.51	3.63
Std Dev	1.18	0.99

Table 3 displays the summary statistics of questions 3 and 4, where respondents were questioned on their belief that individual actions can help address environmental problems and their contribution to sustainability through their shopping habits. Their responses were measured on a Likert scale where three represented “neutral”. Both questions have similar means at 3.51 (SD = 1.18) and 3.63 (SD = 0.99) respectively, suggesting a slight general tendency towards agreeing with the statements: “Individual actions can help address environmental problems” and “I try to contribute to sustainability through my shopping habits”.

First Cronbach’s Alpha was calculated to check for the internal reliability of the two survey questions. The Cronbach's Alpha value was approximately 0.80 (Appendix C), indicating an acceptable level of reliability. Respondents were then categorised into two segments "Low" and "High" based on their scores compared to the median, to account for outliers. The Low segment included participants with scores below the median while the High segment included participants with a score above the median. This segmentation differentiates those with lower and higher beliefs about the impact of individual actions on environmental issues. To understand the relationship between consumers’ belief

in individual actions and their sustainable shopping habits, separate regression analyses were performed for the Low and High segments.

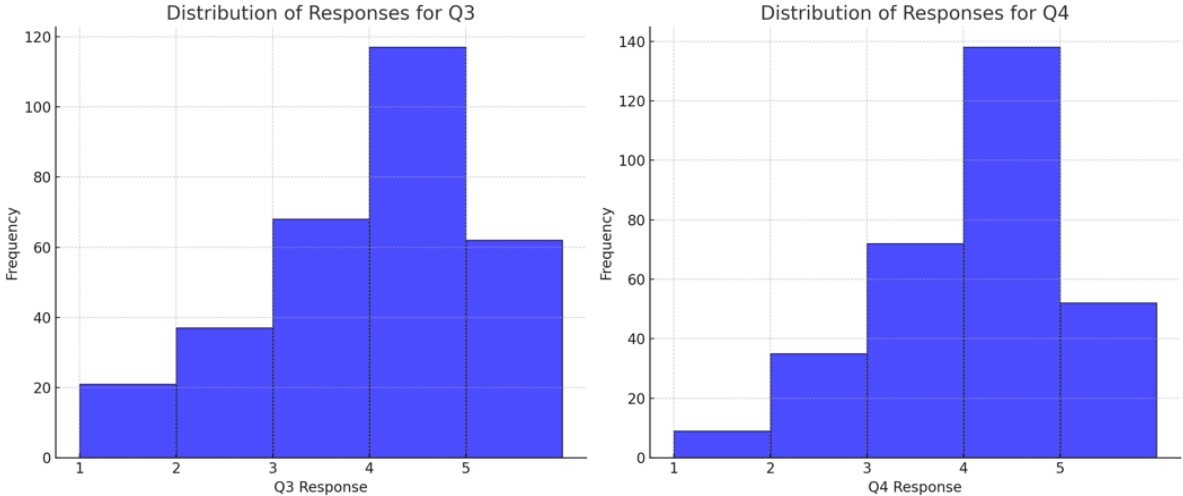


Figure 2 Histograms of survey respondents' belief in their individual impact through actions (Q3) and their self-reported contribution to sustainable shopping (Q4), measured on a Likert scale (1 = very unlikely, 5 = very likely)

Table 4 Regression analysis of sustainable shopping habits (Q4) on the impact of consumer beliefs (Q3)

Segment	R-squared	Adj. R-squared	F-statistic	P-value (F-statistic)	Coefficient for Q3	p-value for Q3
Low Segment	0.01	0.01	2.69	0.10	0.09	0.10
High Segment	0.15	0.13	10.25	0.00	-0.45	0.00**

N = 307. ; \*p<0,1; \*\*p<0.05; \*\*\*p<0.001. Values are rounded to 2 decimal places.

In the Low segment, the relationship between individuals' beliefs and actions was not statistically significant, with a p-value of 0.10. This suggests that there is no relation between respondents with more negative perceptions of the impact of their actions, and their sustainable shopping habits. On the other hand, in the High segment, there is a statistically significant negative relationship between beliefs and actions, with a p-value of 0.0020. Interestingly individuals who have a higher belief in the impact of their individual choices, tend to report less sustainable shopping habits, which could suggest these consumers believe their sustainable habits in other areas rather than shopping have more of an impact.

An overview of the descriptive statistics; the mean and standard deviation of the variable ‘willingness to pay’ is presented in the table below. The willingness to pay variable has a mean of 3.5 on a scale of additional euros (€) willing to pay, and a moderate standard deviation of 0.8 around this mean.

*Table 5 Descriptive Statistics of Willingness to Pay*

<b>Variable</b>	<b>Mean</b>	<b>St. dev</b>
Willingness to pay	3.5	0.8

To further understand respondent’s pre-existing attitudes towards the pricing of sustainable clothing, a question (Q5) was included in the survey. This question aimed to gauge what respondents would select as an acceptable price for a white shirt, before presenting them with the different profiles to choose from.

*Table 6 Descriptive Statistics of Acceptable Shirt Price*

<b>Level</b>	<b>Percentage</b>
€20	51.79%
€30	38.11%
€40	10.10%

Approximately half of respondents (51.79%) selected €20 as an acceptable price for a white shirt, meanwhile, the other half of respondents were split between the price levels €30 and €40. Specifically, 38.11% of respondents considered €30 an acceptable price level and the minority of respondents (10.10%) felt €40 was an acceptable price. This distribution of acceptability for lower priced shirts suggests price-sensitivity amongst the respondents, due to the significant portion of respondents selecting €20 price level. The lower acceptance of the price level €40 may also indicate an estimate for a threshold beyond which some consumers are not willing to purchase a shirt at this price level.

**4.2 Choice-Based Conjoint Analysis Results**

The choice-based conjoint analysis was conducted using the statistical software JMP. The analysis used the profiles presented in the survey to calculate part-worth utilities. These are derived from the estimated utility function, and therefore represent the utility associated with each specific attribute level, based on the respondent’s answers. The resulting estimates presented are each compared to a reference category and will be used to calculate the willingness to pay mentioned in the conceptual framework. In the table below, the part-worth utilities derived from the conjoint analysis are shown with each respective significance values.

Table 7 Part-worth Utilities and Significance of Each Attribute

Attribute	Level	Estimate	Std Error	t-value	p-value
Price	€20	0.55	0.17	3.20	0.00**
Price	€30	0.01	0.26	0.05	0.96
Sustainability Characteristic	Carbon Footprint	0.16	0.25	0.63	0.53
Sustainability Characteristic	Materials	0.23	0.24	0.95	0.34
Sustainability Characteristic	Waste	0.61	0.17	3.59	0.00**
Style	Casual	0.12	0.17	0.70	0.49

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.001$ . Values are rounded to 2 decimal places

The part-worth utility for the price level of €20 is the highest at 0.55, which represents a strong preference for this lower price level among consumers. The price level €20 has a statistically significant estimate with a p-value  $< 0.05$ , while the price level €30 does not. This suggests that depending on its level, price as an attribute can significantly influence consumer preferences for a white shirt, with a significant preference for the lower price level of €20.

Among the sustainability attribute levels, the reduction of waste has the highest part-worth utility estimate at 0.61 and is the only level found to have a statistically significant impact on consumer preferences with a p-value  $< 0.05$ . In contrast, the other sustainability attribute levels: reduction of carbon footprint and use of organic materials, do not show a statistically significant influence on consumer preferences and hence cannot be interpreted to be correlated with a consumer's purchasing decision. This suggests that while sustainability is important, not all sustainability attributes are equally valued by consumers, with waste reduction being the most influential factor.

The insignificant p-value of the style attribute also indicates that it is not possible to interpret the effect of style on consumer choice based on this data. This implies that there is no evidence from this analysis to suggest that style has a significant impact on purchasing decisions. In summary, Table 7 highlights that consumers prefer lower-priced shirts at the price level of €20 and the reduction of waste sustainability characteristic, while other sustainability characteristics and style did not have a significant impact on their purchasing decisions.

The interaction effects of the control variables Age and Location with the three attributes Price, Sustainability Characteristic and Style were observed separately (Appendix D). Both age and location

were found to have statistically insignificant effects following the  $p < 0.05$  rule. Therefore, neither the age of the respondent, nor their location (whether within or outside Europe) were found to be correlated with the consumers' preference for the price, sustainability characteristic or style of the shirt they selected. The insignificance of both control variables does however suggest that the findings found to be significant can be generalised across different ages and locations within this sample, without needing to interpret the effects in specific age and location subgroups.

From the outcomes of the part-worth utilities in Table 7, the utility values of the sustainability attributes are compared to the price attributes in order to calculate the willingness to pay for each attribute, using the formula below (Estimating Willingness to Pay Given Competition in Conjoint Analysis (2021), n.d.):

$$WTP = \frac{\text{Part-Worth Utility of Attribute Level}}{|\Delta \text{ Price Utility}|}$$

*Table 8 Willingness to pay (WTP) Values*

<b>Attribute</b>	<b>Level</b>	<b>Willingness to Pay (WTP)</b>
Sustainability Characteristic	Carbon Footprint	0.30
Sustainability Characteristic	Materials	0.43
Sustainability Characteristic	Waste	1.13
Style	Casual	0.22

*Values are rounded to 2 decimal places.*

These results suggest respondents were willing to pay €0.30 more for a shirt produced adopting the reduction of carbon footprint as a sustainability attribute. Respondents seemed to be willing to pay €0.43 more for a shirt produced using organic materials, and €1.13 more for a shirt produced with the goal of reducing waste compared to one without a sustainability characteristic. This supports a general preference amongst consumers for a shirt produced with one of the three sustainability characteristics discussed, compared to one without any, and suggests a specific preference for the reduction of waste sustainability attribute. These findings support the hypothesis that sustainable characteristics positively impact consumer willingness to pay, with waste reduction being perceived as the most impactful.

### **4.3 Relation to Hypotheses**

This section will provide a more in-depth discussion of the results, relating to how they support or refute the hypotheses previously discussed. In the first hypothesis, the importance of the three attributes is questioned, suggesting price as the most impactful factor when purchasing a white shirt. To

determine which attribute was indeed the most important, the part-worth utilities were analysed. The relative importance of each attribute can be calculated by considering the range of the part-worth utilities of each attribute to the total range of all the attributes. This is the formula applied to the price attribute:

$$\text{Relative Importance for Price} = \frac{\text{Range for Price}}{\text{Total Range}}$$

Rounded to three decimal places, the range of Price is 0.538, the range of Sustainability Characteristic is 1.219 and the range of Style is 0.120. This makes the total range is 0.538 + 1.219 + 0.120 = 1.876, resulting in the following relative importances:

*Table 9 Relative Importance of Attributes*

<b>Attribute</b>	<b>Relative Importance (%)</b>
Price	28.64
Sustainability Characteristic	64.97
Style	6.39

These results suggest that although price is a factor that may impact consumers’ purchasing decisions, its effect is not as critical as the sustainability characteristic attribute, which held a relative importance of 64.97% in the decision-making process of consumers. The sustainability characteristic attribute accounts for more than half of the decision-making importance, and therefore seems to have carried more weight for consumers than the impact of price and style combined. These results therefore do not support hypothesis 1, that out of price, sustainability characteristics and style, price is the most important factor when purchasing a white shirt.

In the second hypothesis, it was proposed that the potential incorporation of one of the three sustainability attributes would have a positive relationship with consumer willingness to pay for a white shirt. From the conjoint analysis, evidence was gathered to suggest consumers were willing to pay €0.30 more for a shirt with reduced carbon footprint, €0.43 more for a shirt made using organic materials and €1.13 more for a shirt produced with waste reduction measures. The consistency of all three positive values for each level of the attribute clearly points towards the theory that consumers place a higher value on products when one of these attributes is incorporated. However, it is important to note that these amounts represent relatively low premiums, suggesting consumers are not willing significantly more for these sustainable characteristics. Despite this, the positive impact on their purchasing decisions by the premiums reflects their increased willingness to pay, supporting hypothesis 2. The statistical significance of the effect of the most preferred sustainability attribute; reduction of waste, further supports this hypothesis as it reinforces the evidence that at least the reduction of waste positively impacts consumer’s decisions to purchase white shirts. The results of the conjoint analysis show how consumers value sustainability characteristics and the way in which they influence their purchasing



decisions. The results align with the previously discussed literature on the growing consumer awareness and demand for environmentally friendly products.

The third hypothesis suggested that a formal-styled, sustainably produced shirt would positively impact consumers’ willingness to pay more than a similar casual style, sustainably produced shirt. This would require consumers to place a higher value on formal styles over casual styles, when considering a sustainable shirt to buy. The reported willingness to pay for a casual styled shirt was a premium of €0.22 compared to its reference category, a formal styled shirt. This would point towards a preference for casual styled shirts by consumers, rather than expected preference for formal style. A regression was run, to test the effect of formal vs casual shirts, while holding sustainability constant, to isolate the effect of style:

$$WTP \text{ (i.e., Utility derived from purchase)} = \beta_0 + \beta_1 * (\text{Style}) + \beta_2 * (\text{Age}) + \beta_3 * (\text{Location}) + \epsilon$$

Table 10 Parameter Estimates Table

Term	Estimate	Std Error	p-value
Intercept	0.01	0.08	0.99
Style [Casual]	0.03	0.03	0.41
Age	0.79	0.00	0.99
Location [1]	0.00	0.04	0.98

\*p<0,1; \*\*p<0.05; \*\*\*p<001. Values are rounded to 2 decimal places

The estimate of style term compares the effect of a casual style to the reference category formal style. Considering the p-value of this estimate and its insignificance, along with the insignificant part-worth utility of style, there is no evidence to report a strong relation between the effect of formal style of a shirt and the purchasing decision of respondents. Although style resulted in a positive premium in the willingness to pay analysis, its insignificant estimate in the regression indicates this premium may not represent a meaningful difference in the decision on which shirt to buy by consumers when sustainability is held constant. Thus, providing no evidence to suggest that a formal or casually styled shirt significantly affect consumers’ purchasing decisions. The insignificant effect could stem from a sampling error, but still does not provide evidence to support hypothesis 3.

## Chapter 5. Conclusion and Recommendations

This chapter will discuss the main findings from the literature review and from the research conducted, concluding whether the findings of this study are in line with the theory. Furthermore, limitations to this research will also be explained and to which extent it affects the data collected. In the last section recommendations will be made to further explore this topic and the implications that can be taken away from this study will be stated.

The central research question to this study was “*How do sustainable characteristics, price and style influence consumers’ purchasing decisions for sustainable clothing?*”. The aim of this study was to explore the relationship between the provision of a more sustainable product by fashion firms, and consumers’ purchasing decisions. This relationship was studied to help fashion companies address the on-going increasing consumer demand for sustainable clothes, which has significant implications for the fashion industry’s reputation and performance overall. Through the analysis of the potential sustainability attributes; use of organic materials, carbon footprint reduction, and waste reduction, in combination with preferences for price and style, this research provides actionable insights for fashion brands looking to enter the sustainability market to better align their offerings with contemporary consumer values. This scope of research is essential for fashion companies to understand which sustainability practices are most valued by consumers, and therefore which can be used to inform strategic decisions that enhance brand loyalty and market competitiveness. This aligns with the key objective of providing actionable insights for fashion brands to optimise their understanding of consumer preferences.

### 5.1 Literature Key Findings

The literature review findings aimed to contribute to answering the central research question. First, price was selected as a critical factor of consumer’s purchasing decisions as in the study by Maedia and Muhiban (2023), they identified price sensitivity and economic constraints as primary factors influencing purchasing decisions. Additionally, using the four approaches discussed by Miller et al. (2011), choice-based conjoint analysis was selected as the most appropriate for this research because of its ability to analyse different product attributes and its time efficiency.

Furthermore, the literature by Thorisdottir and Johannsdottir (2019) revealed sustainability in fashion involves companies adopting any practice that reduces environmental impact, such as using organic materials, reducing waste and lowering carbon footprint. These practices were chosen as using as organic materials enhance soil fertility and promote biodiversity (*USDA Organic*, n.d.). Waste reduction reduces landfill volumes and preserves resources (Sparnicht, 2023), while reducing carbon footprint involves shifting to renewable energy sources (*European Environment Agency’s Home Page*,

n.d.). Several studies by Tully and Winer (2014), Arnoldussen et al. (2022), and Chatterjee et al. (2021) suggested consumers are willing to pay premiums for sustainable products.

Additionally, the study by Soyer and Dittrich (2021) suggests consumers have higher demand for formal clothing because of the perceived higher quality and durability of items, compared to casual clothing. Along with these findings, Ha-Brookshire and Norum (2011) suggested consumers associated sustainably produced shirts with higher quality products, influencing their willingness to pay more for formal, sustainably produced shirts. Based on these findings, the following hypotheses were formulated:

**Hypothesis 1:** Out of the attributes “Price,” “Sustainability Characteristic,” and “Style,” consumers consider “Price” to be the most important factor when purchasing a white shirt.

**Hypothesis 2:** The incorporation of sustainable characteristics by clothing companies positively impacts consumer willingness to pay.

**Hypothesis 3:** A formal-styled, sustainably produced shirt will positively impact consumer willingness to pay more than a casually styled, sustainably produced shirt.

## 5.2 Quantitative Research Key Findings

Firstly, looking into the analysis of the 307 survey respondents, the segmentation of respondents based on their beliefs about individual contributions had a significant relationship in the high segment, but not in the low. This suggests that those with higher belief in the impact of their actions, tend to report less sustainable shopping habits, suggesting they believe their belief in sustainable efforts are more impactful in other areas than shopping.

The choice-based conjoint analysis provided significant findings regarding the impact of €20 priced shirts, and the reduction of waste sustainability characteristics. The part-worth utility analysis presented the strong preference for a lower price of €20 vs €30. However, when comparing these findings to the relative importance of attributes, sustainability characteristics had a significantly higher importance of 64.97% compared to that of price of 28.64% and of style at just 6.39%. These findings contradict hypothesis 1 that price is the most important factor, suggesting that although price may play a large role in consumer purchasing decisions, when a sustainability aspect is introduced, consumers prioritise sustainability. This aligns with the literature found on increasing consumer awareness and demand for environmentally friendly products and the significant price sensitivity of consumers. The contradicting results could be due to the respondents not being obliged to follow through on their choices, resulting in them simply choosing the option with their preferred sustainability attribute. The results therefore reject hypothesis 1 and conclude that it is not possible to declare price as the most important factor when purchasing a white shirt, out of the attributes “Price”, “Sustainability Characteristic” and “Style”.

The results from the part-worth utility analysis provided relevant data to hypothesis 2, by confirming consumers are willing to pay premiums for sustainable products. The premiums compared

to a product that has no sustainable characteristics were, €1.13 more for the reduction of waste, €0.43 for the use of sustainable materials, and €0.30 for the reduction of carbon footprint. The positive premiums of all three attributes support hypothesis 2 that the incorporation of sustainable characteristics by clothing companies, positively impacts consumer willingness to pay. The sustainability characteristic with the highest premium was the reduction of waste, indicating for consumers it is the most valued sustainability attribute out of the three. It may represent consumers' perception of environmental waste as a more urgent issue than using non-sustainably sourced materials or carbon footprint. These findings also align with the literature suggesting consumers are willing to pay premiums for products that are environmentally conscious. The identification of waste reduction as the most important sustainability characteristic also aligns with the first key objective of this study. Although relatively low, hypothesis 2 is accepted as the positive premiums are evidence for the incorporation of sustainable characteristics by clothing companies positively impacting consumer willingness to pay.

The results on the style attribute contradict the theory that consumers prefer formal styled shirts, as the effect is not statistically significant. Hence the relationship observed was not strong enough to rule out the possibility these results happened by chance based on the sample used. Therefore, it is not possible to interpret this effect and apply its theory to other findings. Consequently these findings contradict hypothesis 3, determining it cannot be concluded that a formal-styled, sustainably produced shirt would positively impact consumer willingness to pay more than a casually styled, sustainably produced shirt. This could be explained by consumers valuing other factors more than the style of the shirt, or the preference for style being heavily influenced by other factors such as fashion trends or economic factors that are not included in this analysis. This was also suggested by the results of the pre-existing behaviour where respondents with low beliefs in individual actions did not correlate these beliefs with their shopping habits, and those with higher beliefs in individual actions reported low sustainable shopping habits.

### **5.3 Comparing Literature Findings to Research Findings**

The findings from literature available and the conducted empirical research in this study reveal both consistencies and discrepancies between the two. The combination therefore provides a better understanding of consumer purchasing decisions regarding sustainable clothing.

The importance of sustainability attributes is supported by both the literature and research findings. Literature available such as studies by Tully and Winer (2014), Arnoldussen et al. (2022), and Chatterjee et al. (2021) indicated consumers are increasingly willing to pay premiums for sustainable products. The studies highlighted how consumers value environmental consciousness and are prepared to pay more for products that incorporate sustainable characteristics. This is consistent with the research findings, which showed respondents were willing to pay premiums of €1.13 for waste reduction, €0.43 for sustainable materials, and €0.30 for carbon footprint reduction. These results support hypothesis 2

and align with the growing consumer demand for sustainability noted in the literature. The preference for the incorporation of sustainable characteristics compared to none is also consistent in both the literature and research findings. The empirical data confirmed this through the positive coefficients 0.16, 0.23, and 0.61 for the sustainability attributes reduction of carbon footprint, use of organic materials and reduction of waste respectively. The positive coefficients compared to the reference category of no sustainability attribute convey the preference for some type of sustainable characteristic compared to none. This was further supported by the significant role of sustainability attributes in respondents' purchasing decisions, as sustainability characteristics had the highest relative importance (64.97%). These findings align with the literature findings from Thorisdottir and Johannsdottir (2019) and the USDA Organic (n.d.), which emphasize the critical role of sustainable characteristics such as the use of organic materials and waste reduction in consumer decision-making.

A clear discrepancy between the literature discussed and the findings of this research was the role of price. While in literature, such as in the studies by Maedia and Muhiban (2023) and Miller et al. (2011), price is introduced as the main determinant of consumer purchasing behaviour due to economic constraints and price sensitivity, the research findings revealed a more complex relationship. Although a strong preference for lower-priced shirts (€20) was found, sustainability characteristics were found to be more influential overall. Thus contradicting hypothesis 1. This difference in findings could be due to the hypothetical nature of the survey distributed, as respondents were not required to make actual purchases, diminishing the real impact of price on their choices. Another clear difference between the literature available and the research conducted was the preference for style. Although literature available on this aspect was limited, the studies by Soyer and Dittrich (2021) and Ha-Brookshire and Norum (2011), suggested a higher demand for formal clothing may be expected due to its perceived higher quality and durability. This suggested consumers would prefer formal sustainably produced shirts over casual ones. However, the empirical research findings did not support hypothesis 3 due to the insignificant results obtained. This could be explained by the demographic of the sample surveyed or a general broader appeal of casual clothing due to its everyday wear. These findings differ from the focus on consumers on specific formal occasions in the literature previously explored.

Overall, the research findings reinforce the findings presented by literature on the expanding trend of preference for sustainability, but also suggest a more complex interaction of multiple factors influencing purchasing decisions. The difference in findings on the role of price underlines the need for real-life purchasing scenarios in future research to better gauge consumer behaviour. While the insignificant results for formal and casual styles highlight the need for further investigation into contextual and demographic factors that might influence style preferences. Overall, the findings of the research conducted emphasize the importance of integrating sustainability into brand strategies, as demand for sustainable products increases, while still considering other influential factors like price sensitivity and fashion trends, to enhance market competitiveness and consumer loyalty.

## 5.4 Research Limitations

This research faced several limitations that could affect the validity and representativeness of the results. The sample size and composition may not fully represent the general population; therefore, a larger and more diverse sample would guarantee more reliable results. The respondents were mainly higher education students, or adults with an average age of 30 years old. Due to resource constraints and the sampling strategy used, it resulted in having access only to a certain student population and others reachable by forwarding the survey further. This kind of demographic might have skewed the results, as older generations' purchasing attitudes and behaviours toward sustainable products likely differ. A sample with a wider range of age groups, and higher representation of each age group could improve the reliability and external validity of these findings.

The methodology of the questionnaire was also a limitation. As previously mentioned, respondents were not required to follow through with the choices made in their survey, despite it aiming to mimic real-life shopping decisions. This likely compromised the validity of responses as the respondents may have made different purchasing decisions if these had been in-store purchases. In real-world context factors such as budget constraints and urgency of need impact decisions. Therefore, the hypothetical nature of the choices may not accurately reflect actual purchasing behaviour which would lead to real financial consequences and immediate ownership of the product.

Within the survey, the absence of a "no-buy" option is an ulterior limitation. Without the ability to buy none, respondents were forced to choose from the available options, even if they would not have made that purchase in a real-world scenario. This could lead to the overestimation of willingness to pay and does not capture some who may have chosen not to purchase any shirt. Including such an option would have allowed for the measurement of a clear cutoff price, to indicate the amount consumers are willing to pay before opting out of buying a shirt.

The research and analysis done also did not take into account all the potential factors that influence consumers' purchasing decisions. Variables like personal style, income and brand loyalty likely all influence a consumers' purchasing decision and were not included in this analysis. This likely decreased the validity of these results as it excludes a lot of other factors influencing decisions making and makes these results very specific to the sample of respondents used.

Despite these limitations, the data was collected from a sample of 307 respondents, improving its reliability due to the adequate sample size. The insights collected into consumer preferences for sustainably produced clothing are therefore still trustworthy within the context of the sample and methodology used. However, due to its potential for improvement of external validity, caution should be taken when generalising these results to a broader population.

## 5.5 Recommendations and Future Research

A recommendation for the methodology of the survey would be to employ more incentive-aligned methods that require respondents to live with the consequences of their choices. For example, this could be done by offering respondents the opportunity to win the product they selected, in order to ensure respondents are more intentional with their choices and result in more realistic and reliable data. Another recommendation would be to include economic factors such as income, personal factors such as style and brand loyalty, and setting factors such as culture or country they are in. Including such relevant variable in analysing the decision-making process of a shirt would impact the results obtained and provide a more standardised result of the impact of each factor and a better comprehensive understanding of consumer behaviour. Future research addressing the limitations mentioned above could improve validity and add to the findings of these paper.

The practical implications of this research are important for fashion companies who aim to incorporate more sustainable characteristics into their products. The finding indicate sustainability characteristics, especially waste reduction, is highly valued by consumers, which presents an opportunity for companies to justify imposing higher price points for products with such characteristics. It also provides motivation for clothing companies to employ and prioritise sustainable practices in order to meet changing consumer values, meet consumer demand better, and enhance their overall brand reputation. Future research on the difference in preferences between generations would be interesting and is something that has not yet been explored within this specific scope. In addition, further research into how the style of a clothing item, and potentially into different clothing items such as pants, dresses or shoes should also be explored as it has the potentially to greatly enhance the understanding of consumers' purchasing decisions on sustainable clothing. As this is a growing market, it is important to perform new research and analysis on the changing preferences of consumers. Tailoring marketing strategies to emphasize the sustainability characteristics of a product, to customers can maximise sales and consumer satisfaction simultaneously. In conclusion, this research highlighted the growing importance of sustainability in consumers' priorities while making purchasing decisions, and provided evidence for the potential positive receipt of customers, if companies were to adopt these sustainability characteristics. By investing in adopting practices such as those discussed in this study, especially the reduction of waste, companies can target their strategies more efficiently by aligning with consumer values, and having confidence in their ultimate promotion of long-term profitability.

## References

- Arghode, V. (2012). Qualitative and quantitative research: Paradigmatic differences. *Global Education Journal*, 2012(4)
- Arnoldussen, F., Koetse, M. J., De Bruyn, S. M., & Kuik, O. (2022). What Are People Willing to Pay for Social Sustainability? A Choice Experiment among Dutch Consumers. *Sustainability*, 14(21), 14299. <https://doi.org/10.3390/su142114299>
- Bahri, K. N. (2023). The influence of Instagram, brand image, and price on online purchase decisions. *Asia Pacific Journal of Management and Education*, 6(1). <https://doi.org/10.32535/apjme.v6i1.1654>
- Bartl, A., & Ipsmiller, W. (2023). Fast fashion versus circular economy: an exciting match? *Detritus*, 24, 23–27. <https://doi.org/10.31025/2611-4135/2023.18309>
- Bastounis, A., Buckell, J., Hartmann-Boyce, J., Cook, B., King, S., Potter, C., Bianchi, F., Rayner, M., & Jebb, S. A. (2021). The Impact of Environmental Sustainability Labels on Willingness-to-Pay for Foods: A Systematic Review and Meta-Analysis of Discrete Choice Experiments. *Nutrients*, 13(8), 2677. <https://doi.org/10.3390/nu13082677>
- Behera, N. A., Das, N. A., & Premlatha, N. D. S. (2022). A STUDY ON CONSUMER APPAREL BUYING BEHAVIOUR. *EPRA International Journal of Multidisciplinary Research*, 188–192. <https://doi.org/10.36713/epra11554>
- Biernacki, P., & Waldorf, D. (1981). Snowball sampling: Problems and techniques of chain referral sampling. *Sociological Methods & Research*, 10(2), 141–163. <https://doi.org/10.1177/004912418101000205>
- Chatterjee, S., Sreen, N., Rana, J., Dhir, A., & Sadarangani, P. H. (2021). Impact of ethical certifications and product involvement on consumers decision to purchase ethical products at price premiums in an emerging market context. *International Review on Public and Nonprofit Marketing*, 19(4), 737–762. <https://doi.org/10.1007/s12208-021-00288-1>
- Cooper, A. C. (1985). Casual, but not that Casual: Some Fashions of the 1950s. *Dress./Dress*, 11(1), 47–56. <https://doi.org/10.1179/036121185803657536>
- Crofton, S., & Dopico, L. (2007). *Zara-Inditex and the growth of fast fashion*. <https://www.ebhsoc.org/journal/index.php/ebhs/article/view/181>
- European Environment Agency's home page. (n.d.). <https://www.eea.europa.eu/en>
- Estimating willingness to pay given competition in conjoint analysis (2021). (n.d.). <https://sawtoothsoftware.com/resources/technical-papers/estimating-willingness-to-pay-in-conjoint-analysis>
- Fang, B. (2023). Environmental and human impacts of fast fashion. *Communications in Humanities Research*, 15(1), 166–171. <https://doi.org/10.54254/2753-7064/15/20230660>



- Gall-Ely, M. L. (2009). Definition, Measurement and Determinants of the Consumer's Willingness to pay: a critical synthesis and avenues for further research. *Recherche Et Applications En Marketing*, 24(2), 91–112. <https://doi.org/10.1177/205157070902400205>
- Ghosh, A., & Motta, A. (2014). Budget constrained consumers and oligopoly pricing. *Social Science Research Network*. <https://doi.org/10.2139/ssrn.1923558>
- Ha-Brookshire, J. E., & Norum, P. S. (2011). Willingness to pay for socially responsible products: case of cotton apparel. *the Journal of Consumer Marketing/Journal of Consumer Marketing*, 28(5), 344–353. <https://doi.org/10.1108/07363761111149992>
- Hapsari, P. D. N., & Belgiawan, P. F. (2023). The impact of slow and circular fashion concept on consumers purchase intention. *International Journal of Current Science Research and Review*, 06(07). <https://doi.org/10.47191/ijcsrr/v6-i7-74>
- Henninger, C. E., Alevizou, P. J., & Oates, C. J. (2016). What is sustainable fashion? *Journal of Fashion Marketing and Management*, 20(4), 400–416. <https://doi.org/10.1108/jfmm-07-2015-0052>
- Herrmann, C., Rhein, S., & Sträter, K. F. (2022). Consumers' sustainability-related perception of and willingness-to-pay for food packaging alternatives. *Resources, Conservation and Recycling*, 181, 106219. <https://doi.org/10.1016/j.resconrec.2022.106219>
- Hutchinson, R., Maher, H., de Laubier, R., Charanya, T. (2022). *The Five Digital Building Blocks of a Corporate Sustainability Agenda*. Boston Consulting Group. <https://web-assets.bcg.com/be/28/2262959d4ff8ba21ade6f9f4a151/bcg-the-five-digital-building-blocks-of-a-corporate-sustainability-mar-2022.pdf>
- Hustic, I., & Gregurec, I. (2015). *The influence of price on customer's purchase decision*. Faculty of Organization and Informatics Varazdin.
- Jin, B., Chang, H. J., Matthews, D. R., & Gupta, M. (2011). Fast fashion business model. In *Advances in logistics, operations, and management science book series* (pp. 193–211). <https://doi.org/10.4018/978-1-60960-756-2.ch011>
- Jefferson, T. (2015). The dandification of everyday life. *History Workshop Journal*, 79(1), 292–301. <https://doi.org/10.1093/hwj/dbu042>
- Kapoor, D. (2023). Fashion Designing & Fashion Trends in Current Scenario. *International Journal for Research in Applied Science and Engineering Technology*, 11(1), 1491–1494. <https://doi.org/10.22214/ijraset.2023.48852>
- Khan, M. M., Fatima, F., Ranjha, M. T., & Akhtar, S. (2022). Willingness to pay for sustainable green clothing. *Indonesian Journal of Social and Environmental Issues*, 3(2), 167–178. <https://doi.org/10.47540/ijsei.v3i2.565>
- Klink, R. R., & Smith, D. C. (2001). Threats to the external validity of brand extension research. *Journal of marketing research*, 38(3), 326–335.

- Kolmogorov, A. N. (1965). Three approaches to the quantitative definition of information'. *Problems of information transmission*, 1(1), 1-7.
- Laszlo, C., & Cescau, P. J. (2008). Introduction to sustainable value. In *Routledge eBooks* (pp. 119–134). <https://doi.org/10.4324/9781351280082-13>
- Lestari, F. A., & Asmarani, R. (2021). Thrifting Culture during the Covid-19 Pandemic and Its Impact on the Environment. *E3S Web of Conferences*, 317, 01006. <https://doi.org/10.1051/e3sconf/202131701006>
- Maedia, N. G. O., & Muhiban, N. A. (2023). The influence of online prices and promotions on purchase decisions on the Shopee marketplace (Case study at PT. Gucci Ratu Textile, Cimahi City, West Java). *International Journal of Integrative Sciences*, 2(6), 887–910. <https://doi.org/10.55927/ijis.v2i6.4766>
- Miller, K. M., Hofstetter, R., Krohmer, H., & Zhang, Z. J. (2011). How Should Consumers' Willingness to Pay be Measured? An Empirical Comparison of State-of-the-Art Approaches. *Journal of Marketing Research*, 48(1), 172-184. <https://doi.org/10.1509/jmkr.48.1.172>
- Naveed, T., Hussain, A., & Zhong, Y. (2017). Reducing fabric wastage through image projected virtual marker (IPVM). *Textile Research Journal*, 88(14), 1571–1580. <https://doi.org/10.1177/0040517517703605>
- Nunan, D., Birks D., & Malhotra N. K., (2020). "Marketing Research: Applied Insight", 6th Edition ISBN13: 9781292308722 or Malhotra, Nunan & Birks (2017) "Marketing Research, An applied approach", 5th edition ISBN13: 9781292103129
- Oh, H. (2010). Examining the Relationship between Shopping Style and Consumption Value of Apparel Products. *Daehan Gajeong Hakoeji/Daehan Ga'jeong Haghoeji*, 48(1), 27–40. <https://doi.org/10.6115/khea.2010.48.1.027>
- Paul, A. (2021). Impact of Sustainable Manufacturing Practices on Consumers' Purchase Intention towards Fashion Apparel in India. *SciSpace - Paper*. [https://typeset.io/papers/impact-of-sustainable-manufacturing-practices-on-consumers-1cqtl47mmd?utm\\_source=chatgpt](https://typeset.io/papers/impact-of-sustainable-manufacturing-practices-on-consumers-1cqtl47mmd?utm_source=chatgpt)
- Provin, A. P., De Aguiar Dutra, A. R., Machado, M. M., & Cubas, A. L. V. (2021). New materials for clothing: Rethinking possibilities through a sustainability approach - A review. *Journal of Cleaner Production*, 282, 124444. <https://doi.org/10.1016/j.jclepro.2020.124444>
- Ross, S., & Evans, D. (2003). The environmental effect of reusing and recycling a plastic-based packaging system. *Journal of Cleaner Production*, 11(5), 561–571. [https://doi.org/10.1016/s0959-6526\(02\)00089-6](https://doi.org/10.1016/s0959-6526(02)00089-6)
- Shafie, S. B., Kamis, A., & Ramli, M. F. (2021). Sustainability of fashion apparel toward Environmental Well-Being and Sustainable Development. *Journal of Vocational Education Studies (JOVES)*, 4(1), 60. <https://doi.org/10.12928/joves.v4i1.3638>

- Sitta, Y., & Perdana, M. A. (2021). The influence of consumer perceptions about price, product quality and service quality towards purchasing decisions (at Janji Jiwa Bengkalis). *Inovbiz*, 1(1), 14. <https://doi.org/10.35314/inovbizmik.v1i1.1877>
- Slepian, M. L., Ferber, S. N., Gold, J. M., & Rutchick, A. M. (2015). The cognitive consequences of formal clothing. *Social Psychological & Personality Science*, 6(6), 661–668. <https://doi.org/10.1177/1948550615579462>
- Soyer, M., & Dittrich, K. (2021). Sustainable consumer behavior in purchasing, using and disposing of clothes. *Sustainability*, 13(15), 8333. <https://doi.org/10.3390/su13158333>
- Sparnicht, C. (2023, August 19). *Welcome - Zero Waste International Alliance*. Zero Waste International Alliance. <https://zwia.org/>
- Teptsova, T. S., Bezdenezhnyh, T. P., Fedyaeva, V. K., Musina, N. Z., Hachatryan, G. R., & Tarasov, V. V. (2018). Determination of a willingness-to-pay threshold and decision-making in financing the healthcare technologies. *Farmakoèkonomika*, 11(3), 13–22. <https://doi.org/10.17749/2070-4909.2018.11.3-013-022>
- Thorisdottir, T. S., & Johannsdottir, L. (2019). Sustainability within Fashion Business Models: A Systematic Literature Review. *Sustainability*, 11(8), 2233. <https://doi.org/10.3390/su11082233>
- Tully, S. M., & Winer, R. S. (2014). The role of the beneficiary in willingness to pay for socially responsible products: A Meta-analysis. *Journal of Retailing*, 90(2), 255–274. <https://doi.org/10.1016/j.jretai.2014.03.004>
- UN launches drive to highlight environmental cost of staying fashionable. (2021b, March 10). UN News. <https://news.un.org/en/story/2019/03/1035161>
- USDA organic. (n.d.). USDA. <https://www.usda.gov/topics/organic>
- Viet, N. Q., De Leeuw, S., & Van Herpen, E. (2023). The impact of social vs environmental sustainability information disclosure on consumer choice of deliverytime with varying sustainability concerns. *International Journal of Physical Distribution & Logistics Management*, 53(11), 26–52. <https://doi.org/10.1108/ijpdlm-09-2021-0392>
- What is fast fashion? (2023, December 7). McKinsey & Company. <https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-fast-fashion>
- Williams, L. (2022). Rise of Shein Tests an Industry's Go-Green Commitments. Bloomberg. Retrieved January 21, 2023 from Shein's \$100 Billion Valuation Is Fast Fashion's Big Moment – Bloomberg :<https://www.bloomberg.com/opinion/articles/2022-04-10/shein-s-100-billion-valuation-is-fast-fashion-s-big-moment>
- Willingness to pay: What it is & how to calculate. (2020, October 20). Business Insights Blog. <https://online.hbs.edu/blog/post/willingness-to-pay>
- Wilts, H., Von Gries, N., & Bahn-Walkowiak, B. (2016). From waste management to Resource Efficiency—The need for policy mixes. *Sustainability*, 8(7), 622. <https://doi.org/10.3390/su8070622>

- Yang, S., Song, Y., & Tong, S. (2017). Sustainable Retailing in the Fashion Industry: A Systematic Literature review. *Sustainability*, 9(7), 1266. <https://doi.org/10.3390/su9071266>
- Yilmaz, I. (2021). Sustainability and financial performance relationship: international evidence. *World Journal of Entrepreneurship, Management and Sustainable Development*, ahead-of-print(ahead-of-print). <https://doi.org/10.1108/wjemsd-10-2020-0133>

## Appendices

### Appendix A (Orthogonal Design Product Profiles)

Orthogonal Subset			
	Price	Sustainability Characteristic	Style
1	20	Materials	Formal
2	30	Waste	Casual
3	20	Waste	Formal
4	40	Carbon Footprint	Casual
5	30	Waste	Formal
6	40	Materials	Casual
7	20	None	Casual
8	30	Materials	Formal
9	30	None	Formal
10	40	Carbon Footprint	Casual
11	20	Carbon Footprint	Casual
12	30	None	Formal

Figure 3 Orthogonal Subset of Attribute Levels

Source: JMP Software, 3<sup>rd</sup> June 2024

### Appendix B (Survey Questions)

1. What is your age?
2. Where are you a resident?
  - Europe
  - Outside of Europe
3. To what extent do you agree with this statement?  
“Individual actions can. Help address environmental problems”
  - Very Unlikely
  - Unlikely
  - Neutral
  - Likely
  - Very Likely

4. To what extent do you agree with this statement?

“I try to contribute to sustainability through my shopping habits”

- Very Unlikely
- Unlikely
- Neutral
- Likely
- Very Likely

5. What is an acceptable price for a shirt for you?

- €20
- €30
- €40

#### Information

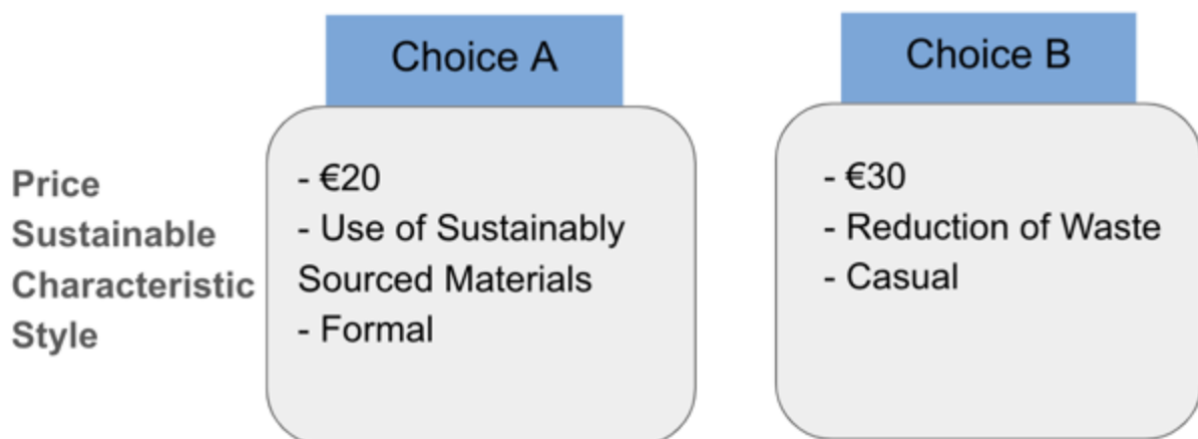
Imagine you decide to purchase a new white shirt that you plan to use often. This shirt has been produced prioritising a certain sustainability technique by the company. You will be asked to consider 2 different items that are very similar but differ in certain attribute levels: Price, Sustainable

Characteristic and Style

- Price: will range from €20 to €40
- Sustainable characteristic adopted: Materials, Waste, Carbon Footprint, None
- Style: Formal (white button up), Casual (white basic t-shirt)



6. Which shirt would you purchase?



7. Which shirt would you purchase?

	Choice A	Choice B
Price	- €20	- €40
Sustainable	- Reduction of Waste	- Reduction of Carbon Footprint
Characteristic	- Formal	- Casual
Style		

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8. Which shirt would you purchase?

	Choice A	Choice B
Price	- €30	- €40
Sustainable	- Reduction of Waste	- Use of Sustainably Sourced Materials
Characteristic	- Formal	- Casual
Style		

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9. Which shirt would you purchase?

	Choice A	Choice B
Price	- €20	- €30
Sustainable	- Not Sustainably Conscious	- Use of Sustainably Sourced Materials
Characteristic	- Casual	- Formal
Style		

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10. Which shirt would you purchase?

	<b>Choice A</b>	<b>Choice B</b>
<b>Price</b> <b>Sustainable</b> <b>Characteristic</b> <b>Style</b>	<ul style="list-style-type: none"> <li>- €30</li> <li>- Not Sustainably Conscious</li> <li>- Formal</li> </ul>	<ul style="list-style-type: none"> <li>- €40</li> <li>- Reduction of Carbon Footprint</li> <li>- Casual</li> </ul>

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11. Which Shirt would you purchase?

	<b>Choice A</b>	<b>Choice B</b>
<b>Price</b> <b>Sustainable</b> <b>Characteristic</b> <b>Style</b>	<ul style="list-style-type: none"> <li>- €20</li> <li>- Reduction of Carbon Footprint</li> <li>- Casual</li> </ul>	<ul style="list-style-type: none"> <li>- €30</li> <li>- Not Sustainably Conscious</li> <li>- Formal</li> </ul>

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### Appendix C (Reliability Test of Consumers' Pre-Existing Behaviour)

Table 11 Reliability Statistics of Q3 & Q4 of Survey

Reliability Statistics	
<b>Cronbach's Alpha</b>	0.8
<b>N of items</b>	2



## Appendix D (Table of Interaction Effects)

Table 12 Interaction Effects of Age and Location with Shirt Attributes

Control Variable	Interaction Term	Estimate	Std Error	p-value
Age	Age * Price [20]	-0.00	0.01	0.69
Age	Age * Price [30]	0.00	0.01	0.30
Age	Age * Carbon Footprint	0.00	0.01	0.48
Age	Age * Materials	0.01	0.01	0.30
Age	Age * Waste	-0.01	0.01	0.30
Age	Age * Casual	0.00	0.01	0.71
Location	Location[1] * Price [20]	0.00	0.08	0.94
Location	Location[1] * Price [30]	0.03	0.11	0.94
Location	Location[1] * Carbon Footprint	0.03	0.11	0.89
Location	Location[1] * Materials	0.06	0.10	0.22
Location	Location[1] * Waste	0.00	0.07	0.89
Location	Location[1] * Casual	-0.09	0.07	0.22

## Appendix E (Raw Data)

<https://drive.google.com/file/d/1WXRdUNUv2MGjvew3POgHdsxcrbck1mFy/view?usp=sharing>