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Sustainable Apparel Products – Key Attributes Influencing Consumer Purchasing Decisions

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Abstract (English)

With the climate change as one of humanity's greatest challenges, the need for a shift towards more sustainability has become inevitable. The aim of this master's thesis is to contribute to filling the research gap on sustainability in the apparel industry, which was identified during the literature review process. In order to examine which product attributes motivate consumers to buy sustainable products and to pay a higher price for these compared to regular products, a choice-based conjoint analysis has been conducted. The findings indicate that attributes such as price, sustainability certification, origin and material all have a significant influence on consumers' purchasing decisions when it comes to sustainable products. Consumers are generally willing to pay a higher price for sustainability certified products made from sustainable materials and produced locally compared to non-sustainable products.

Keywords: Sustainable apparel, Sustainable consumption, Conjoint analysis

Abstract (German)

Mit dem Klimawandel als eine der größten Herausforderungen der Menschheit ist die Notwendigkeit eines Umschwungs hin zu mehr Nachhaltigkeit unausweichlich geworden. Das Ziel dieser Masterarbeit ist es, einen Beitrag zur Schließung der Forschungslücke zur Nachhaltigkeit in der Bekleidungsindustrie, welche im Zuge der durchgeführten Literaturrecherche identifiziert wurde, zu leisten. Um zu untersuchen, welche Produktattribute die Verbraucher:innen motivieren, nachhaltige Produkte zu kaufen und dafür einen höheren Preis zu zahlen als für herkömmliche Produkte, wurde eine Choice-Based Conjoint-Analyse durchgeführt. Die Ergebnisse zeigen, dass Attribute wie Preis, Nachhaltigkeitszertifizierung, Herkunft und Material einen signifikanten Einfluss auf die Kaufentscheidungen der Konsument:innen bei nachhaltigen Produkten haben. Die Verbraucher:innen sind im Allgemeinen bereit, für zertifizierte Produkte aus nachhaltigen Materialien und aus lokaler Produktion einen höheren Preis zu zahlen als für nicht nachhaltige Produkte.

Schlagwörter: Nachhaltige Mode, Nachhaltiger Konsum, Conjoint-Analyse

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1. Introduction

In recent decades, topics concerning the environment and sustainability have become an integral part of public debates. Regularly published reports and studies attempt to quantify the consequences human economic activity has had for the ecosystems of our planet. One of the most serious issues when it comes to humans' impact on the planet is anthropogenic climate change, i.e. climate change caused by humans since the beginning of the industrialization, which has drastic consequences for the planet's ecosystems and leads to extreme weather events such as floodings and droughts. In view of the potential consequences, combating climate change can be considered humanity's greatest challenge of the 21st century (cf. Mutschler, 2012). In order to overcome this challenge, the need for a change towards a more sustainable industrial production, consumption and general lifestyle has become inevitable. Especially since the beginning of the 21st century, research on sustainable consumption has gained considerable attention (cf. Bangsa & Schlegelmilch, 2020). The aspects required to achieve sustainable consumption include a reduction in consumption as well as changes in consumption patterns, i.e. purchasing more sustainable products (Fuchs & Boll, 2018). Concerning the latter, a special interest has been laid on research regarding sustainable product characteristics (Bangsa & Schlegelmilch, 2020). Said topic will be the focus of this master's thesis.

While there has been a lot of research on the omnipresent topic of sustainability in general as well as sustainability in different industries such as food (Hassoun et al., 2022), transportation (Shah et al., 2021) and construction (Moshood et al., 2024), the research conducted in the context of the textile and apparel industry has been rather limited so far, as stated by various researchers (Bangsa & Schlegelmilch, 2020; Gonçalves & Silva, 2021). Especially the demand side of the market, i.e. the consumer side, has traditionally received little attention when it comes to sustainable innovation. This is despite the fact that sustainable development requires change not only in production but also in consumption patterns (cf. Niinimäki & Hassi, 2011). This master's thesis intends to contribute to research in the missing field of sustainability in the fashion industry by addressing the aspect of sustainable consumption, which is the concept of reducing individuals', corporations' and nations' resource footprints for the purpose of environmental protection and ecological integrity (Anantharaman, 2018). The

goal is to enhance sustainable consumption in order to find a way to make the industry more sustainable. Specifically, this thesis aims to do so by empirically testing which factors, i.e. product attributes, motivate Austrian consumers to buy sustainable apparel despite the often higher price that is charged for these products (L. Wang et al., 2022). The attributes tested for this purpose are 'sustainability certification', 'origin' and 'material'. The results are intended to give marketing managers an insight into which aspects of sustainable apparel products must be addressed in order to motivate more consumers to buy these products and thereby contribute to more sustainability in the apparel industry. The conducted literature review leads to the following research questions:

I. *Which product attributes motivate consumers to buy sustainable apparel?*

II. *Which product attributes motivate consumers to pay a higher price for sustainable apparel?*

This master's thesis includes a theoretical as well as an empirical part. The theoretical part contains a brief introduction to the topic, previous literature and research in the field of sustainability in general, the environmental impact of the textile sector as well as sustainability approaches in the apparel industry. The subsequent chapters elaborate on other aspects which are relevant for the research conducted and for the formulation of the hypotheses. These include motives for sustainable consumption, demographic factors influencing sustainable consumption as well as the key product attributes relevant for the research conducted, i.e. price, sustainability certification, origin and material. Following the theoretical insights, the methodology chapter discusses the research concept, which is based on a choice-based conjoint analysis conducted using an online questionnaire. I will then present the results of the empirical analysis and link them to the hypotheses to answer the research questions. Finally, after summarizing the thesis' main findings, I will provide some concluding thoughts and discuss limitations of the present research and possible implementation of the findings.

2. Literature Review and Hypotheses

The following chapter provides an overview of the existing literature and research on the topic of sustainability and sustainable products. After the introduction of a number of relevant definitions for the purpose of this thesis, the environmental impact as well as sustainability in the apparel industry will be described. Later, the main motivations of sustainable consumption, the influence of demographic factors as well as the key product attributes used for the conducted study will be explained.

2.1 Defining Sustainability

In existing literature, there is a number of different explanations and definitions of sustainability and sustainable products. The United Nations (1987) generally define sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." More specifically, according to the United States Environmental Protection Agency (2015), sustainable manufacturing is defined as "the creation of manufactured products through economically-sound processes that minimize negative environmental impacts while conserving energy and natural resources, which also enhances employee, community and product safety." The CSC-model, CSC standing for consumers' consciousness for sustainable consumption, defines the consciousness for sustainable consumption as "an intention to consume in a way that enhances the environmental, social and economic aspects of quality of life" (Balderjahn et al., 2013, p. 182). The dimensions of environmental, social and economic relate to the planet, the people and profits, respectively (Balderjahn et al., 2013; Bangsa & Schlegelmilch, 2020).

Environmental Sustainability: The aspect of environmental sustainability refers to the protection of the sources of raw materials necessary to meet human needs and to the prevention of harm to humans through excessive amounts of human waste (Goodland, 1995).

Social Sustainability: Out of the three dimensions, social sustainability is the least clearly defined. However, adequate health and safety practices, transparency and enlightened human resource policies as

well as commitment to philanthropy can be described as companies' social sustainability initiatives (cf. Foot & Ross, 2004).

Economic Sustainability: The concept of economic sustainability refers to the stability of economic capital and is often described as a matter of intergenerational equity, which means maintaining capital for future generations (Anand & Sen, 2000; Goodland, 1995).

Sustainability can also be looked at on the level of organizations. While global sustainability includes future generations and the environment, organizational sustainability usually only involves primary and secondary stakeholders (Garvare & Johansson, 2010). According to Freeman's (2010) stakeholder theory, organizations should not only fulfil the needs of their stakeholders, i.e. those who have an interest in the organization, but also avoid to diminish future generations' ability to meet their needs. Organizational sustainability can be achieved by endlessly satisfying the needs of an organization's stakeholders (Garvare & Johansson, 2010).

2.2 The Environmental Impact of the Textile Sector

The textile or apparel industry is concerned with the production of fibers, yarns, fabrics and clothing as well as textile goods intended for home and decoration (Bullón Pérez et al., 2017). While the textile sector is one of the largest industries worldwide in terms of production amount, employment and contribution to gross domestic product, it is also one of the least sustainable industries as it is responsible for significant environmental and social impacts (Heidenstrøm, 2024; Siliņa et al., 2024). The environmental impacts include the pollution of water, air and soil, the use of hazardous chemicals, the heavy consumption of resources like energy, water, land and raw materials as well as significant amounts of waste. Social impacts are human and labor rights violations like safety problems, child labor and inequality. Especially the phenomenon of fast fashion causes social and environmental challenges of enormous proportions impeding the achievement of global sustainability goals (cf. Siliņa et al., 2024).

Fast fashion is a business model relying on "inexpensive clothing produced rapidly by mass-market retailers in response to the latest trends" (Oxford University Press, n.d.). Consumers are frequently offered new, low-priced items following the latest trends which leads to impulse buying and a

sense of urgency when purchasing (Niinimäki et al., 2020). It has become an exponentially growing segment of the clothing industry since the end of the 20th century outperforming more traditional fashion retail and causing apparel brands to produce nearly twice the amount they did before the year 2000 (Niinimäki et al., 2020; Siliņa et al., 2024). The trend of using clothes for very short periods of time before discarding them contributes to patterns of overproduction and overconsumption and an inefficient use of non-renewable resources, like fibers from fossil-fuels (European Commission, 2022). As illustrated in Figure 1, the global textile market size is expected to more than double between 2023 and 2033, from a value of $1,840.12 billion to $3,767.92 billion (Precedence Research, n.d.). With its extremely fast cycles and consumers' unsustainable desires, the fashion industry represents the phenomenon of planned obsolescence, i.e. "the strategy of shortening a product's lifespan" (Rivera & Lallmahomed, 2016, p. 119), which can be observed in many different industries (Niinimäki & Hassi, 2011).

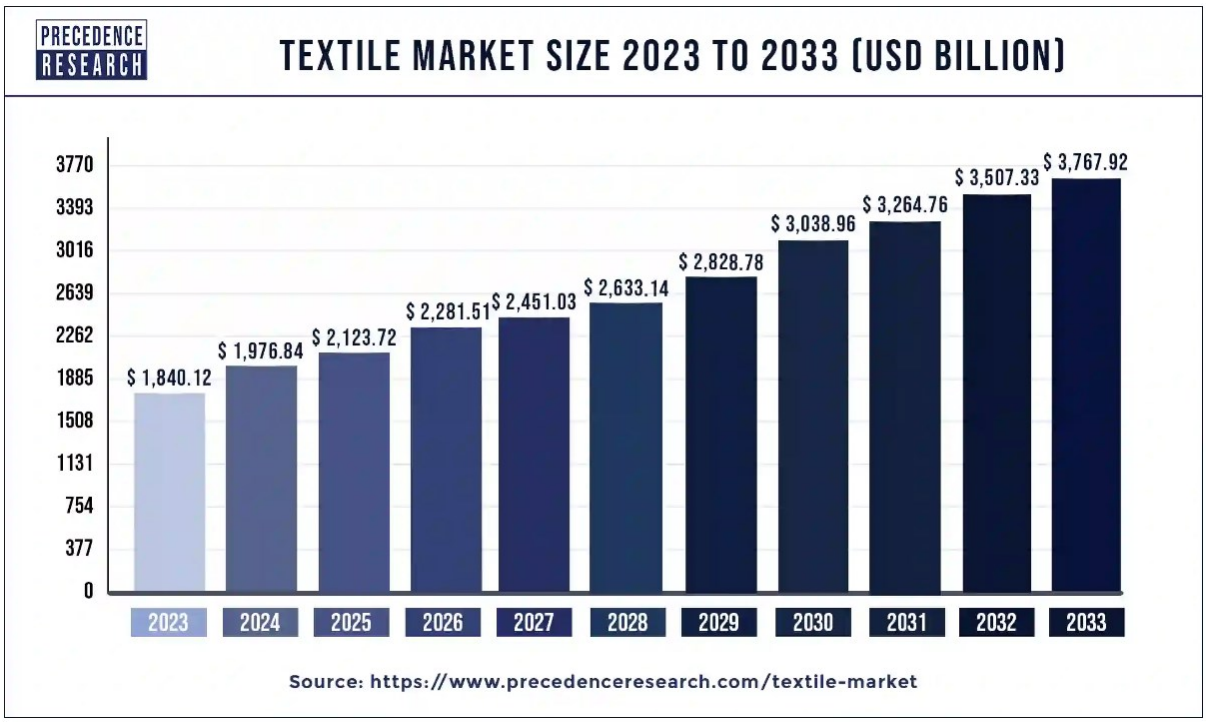

Figure 1: Textile Market Size (Precedence Research, n.d.)

A report published by the European Parliament in 2020 shows the substantial environmental impact caused by the global textile and clothing industry with its production and disposal practices. Specifically, 79 billion cubic meters of water were used globally for the production of textiles and the growth of fibers in 2015. For instance, for the production of a single cotton t-shirt, which is the subject of the research of this thesis, 2,700 liters of water are required. In 2020, the sector constituted the third largest cause of water degradation and land use. Additionally, it leads to 20 percent of clean water pollution as well as 10 percent of carbon emissions worldwide (cf. European Parliament, 2020).

As described by Karthik and Gopalakrishnan (2014), the environmental impact of clothing is present in all phases of the products' life cycle. First, the choice of raw materials significantly influences the level of environmental impact of a piece of clothing, since different fibers require different amounts of water, pesticides and dye. During the production, the process of dyeing and textile mills cause water pollution and CO_2 emissions. When it comes to transportation, the different steps in a production process are often located on opposite sides of the globe, which leads to long transportation routes affecting different populations and ecosystems. Lastly, consumer care including washing habits have a significant impact on water and energy use (cf. Karthik & Gopalakrishnan, 2014).

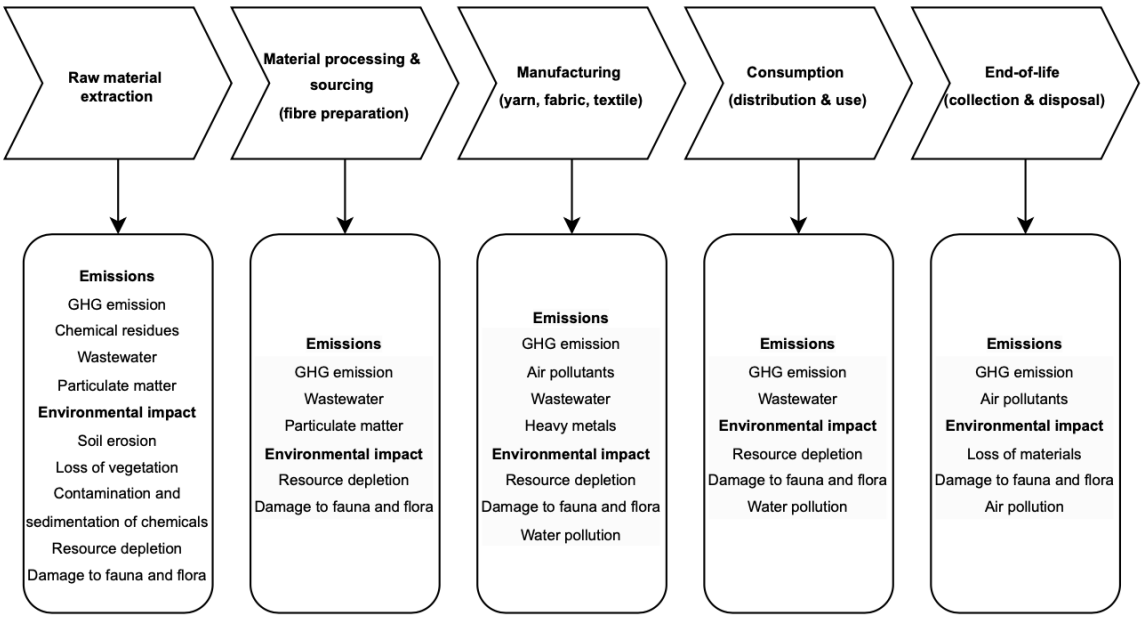

Figure 2: Emissions and environmental impact based on Edirisinghe et al. (2024)

Figure 2 summarizes the emissions and environmental impact caused in different stages of the textile life cycle (Edirisinghe et al., 2024). The emissions present in most of the stages are greenhouse gas emissions and wastewater. Concerning environmental impact, all stages of the product life cycle lead to damage to fauna and flora and most of them include resource depletion, some of them in combination with water and air pollution, among others. For raw material extraction, the emissions and environmental impact are the most diverse, reaching from particulate matter and chemical residues to soil erosion and loss of vegetation (cf. Edirisinghe et al., 2024).

2.3 Sustainability in the Apparel Industry

This chapter discusses sustainability approaches in the apparel industry from various perspectives, i.e. institutional and governmental measures as well as consumer trends. So far, there has been less research on sustainability in the fashion industry compared to other sectors, like the food sector (Bangsa & Schlegelmilch, 2020; Gonçalves & Silva, 2021). However, there is an increasing pressure on companies in the industry to add environmental and social responsibility to their corporate strategies. Sustainability guidelines for companies do exist, but certification schemes are often specific to certain countries or brands, which makes comparisons difficult and less meaningful. Also, their use is usually voluntary (cf. Gonçalves & Silva, 2021). The issue of certification schemes for sustainable apparel will be addressed later on in this thesis.

The United Nations (2015) have defined 17 sustainable development goals for 2030, out of which the following are specifically important for the apparel industry: Clean Water and Sanitation, Decent Work and Economic Growth, Climate Action as well as Responsible Consumption and Production. These goals relate to a reduction in the use of chemicals for production, better working conditions, especially in developing countries, a reduction in CO_2 emissions, more eco-friendly production and less waste (Gonçalves & Silva, 2021).

Figure 3: 17 Sustainable Development Goals (United Nations, 2015)

Transforming the textile industry into a more sustainable model requires significant changes at the level of governance, industry and consumption (Siliņa et al., 2024), especially since the global consumption of apparel is expected to increase by 63% by 2030 (European Commission, 2022). The so-called European Green Deal aims "to make growth sustainable, climate-neutral, energy- and resource-efficient and respectful of nature, and built around a clear and circular economy" (European Commission, 2022, p. 2). The textile industry is identified as a sector with a strong and urgent need as well as potential for a transition towards sustainable production, consumption and business models. EU authorities, companies and consumers are already focusing on this transition, however, it takes time and the climate footprint of the industry remains high (cf. European Commission, 2022). Besides apparel manufacturers and retailers, consumers also play an important role in making the textile industry more sustainable, as they possess the power to accept or reject an item depending on its sustainability property (Ghosh & Mohan, 2021).

Among the measures suggested by the European Commission (2022) to make the textile sector more sustainable are an increase in product quality and durability in order to extend the life of products as well as bans on the destruction of unsold and returned items, and measures to tackle microplastic pollution from clothing. Other initiatives are the labeling of truly sustainable products through green claims, which will be addressed later on in this thesis, and the promotion of reuse and recycling of clothes and textile waste (cf. European Commission, 2022). Besides the environmental sustainability of apparel, the aim is to also achieve social sustainability, including aspects like fair working conditions and remuneration as well as transparency, and economic sustainability, which means the promotion of green products through tax policies and investments (Siliņa et al., 2024).

Another recent sustainability measure affecting the apparel industry is the EU Directive on corporate sustainability due diligence, which aims to increase sustainable and responsible corporate behavior and addresses companies' value chains inside and outside Europe (European Commission, n.d.-a). In order for large companies to be allowed to operate in the European Union, they will have to meet high ethical, environmental and labor standards, which is supposed to promote human rights and sustainable business practices throughout global value chains. The directive particularly focuses on sectors possessing a high risk of negatively impacting the environment, such as wholesale trade of textiles, clothing and footwear (cf. Felbermayr et al., 2024).

The theory of reasoned action proposed by Ajzen (1991) describes the relation between individuals' intentions and their behavior. According to the theory, the stronger the underlying intention, the more likely the respective performance (Ajzen, 1991). Many researchers have used the theory of reasoned action to predict behavior in the context of sustainability (Liu et al., 2017). Based on the theory, accountability concepts can motivate corporate managers to perform environmentally friendly practices. These measures can be effective even without strong legal sustainability regulations, as they make corporate managers think of potential consequences of environmentally degrading behavior (cf. Jeremiah & Etim, 2019). At the same time, the theory of reasoned action can be used to predict consumer behavior. Individuals' beliefs about the consequences of buying certain products, such as sustainable apparel, affect their purchasing intentions (cf. Liu et al., 2017).

Opposed to the throwaway trend of fast fashion discussed in the previous chapter stands the concept of second-hand buying, which relates to the acquisition of products that have been owned by another person prior to the consumer. These products are often sold in specific retail formats or places of exchange (cf. Borusiak et al., 2020). In Western countries, especially in the United States, the second-hand apparel market has grown significantly during the last decade, which has contributed to the sustainability of the fashion industry. While initially, second-hand shopping was rather associated with low-income consumers, it is now popular also among other consumers groups for sustainability or hedonic reasons, especially among the younger generation (cf. Kim & Woo, 2022). Studies suggest that the main reasons for people to avoid second-hand clothes are unorganized or dirty stores and products that are in poor condition or not much cheaper than new clothes. There is a need to educate people on the environmental benefits of second-hand clothing in order to motivate them to buy these products despite the perceived inconvenience (cf. Connell, 2009).

2.4 Motives for Sustainable Consumption

This chapter introduces the idea of motivation, and links it to sustainable consumption, which is the focal topic of this master's thesis. As stated earlier, sustainable consumption is a crucial issue when it comes to combating climate change (Fuchs & Boll, 2018). Consumer behavior relating to sustainable products is dealt with in socially responsible consumer behavior literature. Socially responsible consumer behavior means basing consumer decisions on the desire to minimize or eliminate any harmful effects on society and at the same time maximizing beneficial impacts of consumption (cf. Norum & Ha-Brookshire, 2011). In order to be able to change consumption patterns towards more sustainable decisions, it is necessary to understand which motivating factors affect consumer purchasing decisions. I will elaborate on these factors in the following.

Motivation is a "psychological construct that drives individuals to engage in certain behaviors or activities" (Bandhu et al., 2024, p. 2). It can be extrinsic or instrumental, i.e. driven by incentives or sanctions, and intrinsic or personal, i.e. driven by personal commitment (Davis et al., 2018). A study by Abdulrazak and Quoquab (2018) found extrinsic motivation to have more influence on sustainable

consumption than intrinsic motivation. According to prior literature, some of the most relevant factors motivating sustainable consumption are altruistic motives (Siliņa et al., 2024), norms (Davis et al., 2018) and motives relating to the aspect of product quality (Sternad & Mödritscher, 2018).

Altruistic motives: Altruism is an individual's behavior benefitting others which comes at a cost for the individual (Kerr et al., 2004). In the context of sustainable consumption, altruistic actions aim at the protection of the welfare of all people and nature (Balderjahn & Hüttel, 2019). Previous research has shown that when individual identity goals, i.e. internal representations of how individuals want to see themselves, match altruistic motivation, sustainable behavior can be increased. This, in turn, implies that identity goals are important moderators of sustainable consumption (cf. Costa Pinto et al., 2019). In a study among European consumers, the majority expressed their wish to actively contribute to the transition process towards a more environmentally sustainable future (Siliņa et al., 2024).

Norms: A common definition of social norms is Bierstedt's (1974, p. 248) "a rule or a standard that governs our conduct in the social situations in which we participate". When it comes to sustainable consumption, norms possess the capacity to produce intrinsic motivation, i.e. motivation 'to do the right thing' and follow norms because it is right, as opposed to extrinsic motivation, like avoiding punishment or gaining social rewards (Davis et al., 2018). For individuals, social norms lead to a feeling of responsibility. Perceived responsibility for environmental quality has been found to increase sustainable behavior (cf. E. S. Wang & Lin, 2017).

Quality aspect: Traditionally, product quality was defined as "fitness for use" (Juran, 1974, p. 21), which means satisfying customer needs, without respect to the product's side-effects that might be harmful to the environment. As nowadays and for the future, the environment has become the most important concern for humankind, many researchers have argued in favor of including sustainability in the definition of quality (Kianpour et al., 2014; Martin et al., 2020). The social and ecological sustainability have also become a quality feature for customers (Sternad & Mödritscher, 2018).

In the course of the research conducted for the purpose of this master's thesis, all of these motives will be included. The focus will be on extrinsic factors influencing purchasing decisions as well as demographic factors, rather than intrinsic motivation.

2.5 Demographic Factors influencing Sustainable Consumption

There is a number of demographic variables that, according to prior research, have an influence on sustainable purchasing behavior. These include a person's age, education and income, among others (Ashofteh & Dehghanan, 2017). The variables included in the research of this thesis will be discussed in the following.

Age: There have been contradictory findings on the relation between age and sustainable purchasing behavior (Diamantopoulos et al., 2003). While some studies have found age to be positively related to green buying, which means a more sustainable purchasing behavior among young people (Dudhale et al., 2019; Niinimäki & Hassi, 2011), others have found a negative relation between age and sustainable consumption, i.e. older people more often engaging in green purchasing behavior. This might be due to the lack of resources among younger people which prevents them from buying sustainable products at a premium price (cf. Diamantopoulos et al., 2003).

Gender: Several studies have found evidence that there are significant differences in environmental behavior between men and women (Chekima et al., 2016). The suggestion supported by most authors is that women have a stronger intention to buy sustainable products compared to men (Bloodhart & Swim, 2020; Chekima et al., 2016; Diamantopoulos et al., 2003; Niinimäki & Hassi, 2011). Gender differences in green purchasing are reinforced by traditional gender roles manifested in society (Bloodhart & Swim, 2020). For instance, the role of women in sustainable consumption is specifically important in the textile industry, as women are often the ones responsible for purchasing clothing for their family members and for doing laundry for the whole household (Vinz, 2009). Since wealthier people consume more than low-income people and men earn higher incomes on average, gender differences in sustainable consumption can also be related to income inequality between men and women (Bloodhart & Swim, 2020). However, some studies showed contradictory results, such as a stronger environmental behavior among men or no significant gender difference (Chekima et al., 2016).

Education: Prior research has shown that consumers with higher education levels, such as university and college degrees, are more likely to engage in sustainable consumption than individuals with lower education levels, like high school or lower degrees (Chekima et al., 2016). Supposedly, this is due to

the fact that higher-educated people have a better understanding of issues related to sustainability and environmental responsibility (Diamantopoulos et al., 2003). University students, for instance, acquire more knowledge on environmental issues during their studies and therefore have a better understanding of the need to change consumption patterns in order to tackle environmental problems than high-school students. Research has shown that university students are more independently motivated to acquire knowledge on sustainability, which means that their information-seeking behavior is shaped by internal rather than external factors compared to younger students (cf. Zsóka et al., 2013).

Occupation: So far, little research has been conducted on the relation between consumers' occupation and their purchasing behavior in terms of sustainability. A study on millennials' green buying intentions showed that for full-time employed individuals, attitude towards sustainable consumption is positively influenced by internal values like self-fulfillment while not yet full-time employed millennials are also influenced by external values, such as a sense of belonging and of being well-respected (Falke et al., 2022).

Income: In prior research, the findings on income influencing sustainable purchasing behavior are not conclusive. There are studies suggesting that high-income households tend to pursue a less sustainable lifestyle, since consumption is often associated with quality of life or status, which leads to more consumption when purchasing power is high (Gatersleben, 2001). At the same time, sustainable buying can also be related to status, which would imply that high-income groups show a more sustainable purchasing behavior. However, some studies did not find income to have a significant influence on green purchasing at all (cf. Chekima et al., 2016).

The study conducted for the present thesis shall provide an insight into the relation between the participants' demographic characteristics and their general attitude towards green products as well as their willingness to pay for sustainable products, which will be defined later on in this thesis.

2.6 Key Product Attributes of Sustainable Apparel

While demographic factors and motives, as discussed earlier, have an impact on consumer buying decisions (Ashofteh & Dehghanan, 2017), so do the features of a product. This chapter discusses the

product attributes of sustainable apparel chosen for the empirical part of this thesis. According to consumer demand theory and the characteristics model of demand derived from it, consumers assess the utility of a product from its attributes rather than the product itself (Lancaster, 1966). This leads to the assumption that when making purchasing decisions, consumers consider multiple attributes of a product simultaneously. Since consumers usually have a limited budget at their disposal, it is advisable to include the attribute 'price' in research. Even if they desire certain product attributes, consumers are not necessarily willing to pay the price charged for them (cf. Norum & Ha-Brookshire, 2011).

According to the literature review conducted, attributes used in previous studies on product characteristics influencing purchasing decisions for sustainable apparel are the product's durability or lifespan (Kianpour et al., 2012), origin (Hustvedt & Bernard, 2008; Norum & Ha-Brookshire, 2011), brand (Grewal et al., 1998; Malik et al., 2013), fiber production method (Hustvedt & Bernard, 2008; Norum & Ha-Brookshire, 2011), sustainability certification (Gonçalves & Silva, 2021; Kianpour et al., 2012), price (Kianpour et al., 2012; Tey et al., 2018) and material or fabric (Delate et al., 2021; Hustvedt & Bernard, 2008). As mentioned above, it is advisable to include the attribute 'price' in the research, together with a set of other attributes related to the aims of the study (Norum & Ha-Brookshire, 2011). For the purpose of this thesis, the selected attributes are 'price', 'sustainability certification', 'origin' and 'material', since they are among the most important attributes influencing purchasing decisions for sustainable apparel products, as stated in previous literature (European Commission, 2009; Norum & Ha-Brookshire, 2011). I will further elaborate on the relevance of these attributes in the following. The remaining factors mentioned above have been left out of the present study due to the scope of the thesis.

Price of Apparel Products

The price of a product is defined as "the amount of money for which something is sold" (Cambridge University Press, n.d.). In microeconomic theory, the concept of the marketing mix, which is usually referred to as the '4 Ps' of marketing, including product, price, promotion and place, was developed around the original element that was the price (Goi, 2009). The setting of a product's price is strongly associated with the concept of the consumer's willingness to pay, which is defined as the maximum price consumers are willing to spend for a product (Klingemann et al., 2022).

For companies, the price is one of the most important elements of the market as it influences profits as well as market shares (Išoraitė, 2016). Also from the consumer's perspective, price is the key product attribute influencing purchasing decisions for different products (Norum & Ha-Brookshire, 2011). It is considered the most important factor affecting customer satisfaction and loyalty, partly because it helps the consumer understand the value of products (Išoraitė, 2016). Generally, customers want to buy products at the lowest price possible (Gabler & Reynolds, 2013). They develop internal reference prices, i.e. expected prices for specific goods based on average market prices or a range of average prices (Grewal et al., 1998). In a purchasing situation, consumers compare their expectation of what they are willing to pay for a certain product to the actual price and react negatively to prices higher than expected and positively to lower prices (Gabler & Reynolds, 2013).

Consumers tend to perceive product prices to be high and unfair (Dekhili & Achabou, 2013). Price fairness refers to consumers' perception of whether prices charged by companies are reasonable and just (Bolton et al., 2003). The perception of price fairness is an important issue especially in the case of sustainable products, as fair prices can improve the efficiency of pricing strategies for these products (Dekhili & Achabou, 2013). At the same time, price unfairness can lead to negative consequences for sellers, such as negative word of mouth (Rothenberger, 2015). In order for consumers to be able to compare and judge prices, price transparency is fundamental (Dekhili & Achabou, 2013; Rothenberger, 2015). Price transparency is defined as the price information available to the consumer (Rothenberger, 2015).

Sustainable apparel is usually sold at a premium price compared to non-sustainable apparel due to inflated costs for the production of such products and for the purchase of sustainable materials (L. Wang et al., 2022). Even when environmental concerns are strong, consumers are still very price sensitive, also when it comes to buying ecofriendly products (Kianpour et al., 2012). However, along with increasing awareness of environmental issues such as climate change and diminishing natural resources among the population, more and more consumers are willing to pay a premium price for sustainable products, like sustainable apparel, compared to regular products (Kianpour et al., 2012; Tey et al., 2018). Previous research has found various factors influencing consumers' willingness to pay a premium for green products. These factors depend on the product category and include perceived personal

benefit as well as inherent benefit such as monetary savings, gender (Drozdenko et al., 2011) and age (Norum & Ha-Brookshire, 2011).

Sustainability Labels for Apparel Products

Chen (2010, p. 309) proposed the construct of green trust, which is defined as "a willingness to depend on a product, service, or brand based on the belief or expectation resulting from its credibility, benevolence, and ability about its environmental performance". Consumer trust is a key prerequisite for establishing a market for green products, especially when they are sold at a premium price (Nuttavuthisit & Thøgersen, 2017). People are willing to pay more for sustainable products when they are credibly assured that they are in fact sustainable. The majority of European consumers are willing to buy more sustainable products given that they are certified by an independent organization using well-defined and transparent criteria (cf. Gonçalves & Silva, 2021).

Consumers' mistrust in companies and their claims is often caused by corporate greenwashing, which refers to "companies unethically misleading consumers about their environmental practices or the environmental benefits of their products or services" (Ginder et al., 2021, p. 355). In Kelley's (1967) attribution theory, consistency refers to an individual's behavior across different occasions. Applied to corporate social responsibility, it means that a company's internal actions should be congruent with its external claims in order to achieve consumer trust (Ginder et al., 2021).

Labelling schemes are an effective tool to increase transparency and trust in sustainable products (Majer et al., 2022). According to a study published by the European Commission (2009), 58% of Austrian consumers see ecolabelling as an important factor for their purchasing decisions. Sustainability labels are also a means for brands to differentiate themselves from competitors. Consumers are willing to pay the premium price related to those labels according to their values (cf. Tey et al., 2018).

Besides the products themselves, existing certification schemes take into account the origin of raw materials as well as production processes (Gonçalves & Silva, 2021). In the following, the sustainability certification schemes used for the purpose of this thesis will be introduced in detail.

EU Ecolabel: The EU Ecolabel is one of the most well-known labels in many EU countries and is used for various kinds of sustainable products, e.g. clothing. It promotes products of environmental excellence which are evaluated using standardized processes based on scientific evidence (cf. European Commission. Directorate General for Environment., 2023). Apparel products holding the EU Ecolabel are more durable than average apparel products and their production process is more sustainable, less polluting and uses less hazardous substances. They are also required to contain sustainable fibers. For instance, cotton products have to contain a specific share of recycled or organic cotton (cf. European Commission, n.d.-b). The level of trust in the EU Ecolabel is high among European consumers, as about 75% of respondents in EU countries state that they trust that products holding the label in fact have a lower environmental impact than other products on the market. This number also applies to Austrian consumers, even though the label is not yet that well known in Austria, with only 27% of consumers stating that they are familiar with the label (cf. European Commission. Directorate General for Environment., 2023).

Figure 4: EU Ecolabel (EU Ecolabel, n.d.)

Fairtrade: Fairtrade is the sustainability label with the highest level of recognition and trust worldwide. The Fairtrade Standards are based on economic, environmental and social criteria. For instance, these include minimum prices, ecologically sound practices and non-discrimination, respectively (cf. Fairtrade International, n.d.). In the context of textiles and clothing, the Fairtrade standards aim to protect the health and safety of farmers and ban the use of hazardous pesticides and GMO seeds. Even though it is not required for the certification, many Fairtrade cotton farmers worldwide have decided to produce organic textiles, which is supported by the organization (cf. Fairtrade America, n.d.). In

2021/22, the global production of Fairtrade cotton reached 18,255 tons. About 65% thereof were also certified to be of organic origin (cf. Textile Exchange, 2023). Previous studies have found that consumers are willing to pay a premium for Fairtrade certified products, as the certification leads to a positive evaluation of the product (Ruggeri et al., 2021).

Figure 5: Fairtrade Label (Fairtrade Österreich, n.d.)

From the above statements concerning sustainability certifications for apparel products and their recognition among consumers, the following two hypotheses have been derived:

H1a: All other attributes equal, consumers choose apparel products certified with the Fairtrade label or the EU Ecolabel over non-certified apparel products.
H1b: All other attributes equal, consumers are willing to pay a higher price for apparel products certified with the Fairtrade label or the EU Ecolabel than for non-certified apparel products.

Origin of Apparel Products

Previous research has shown that generally, consumers care about where products are made (Norum & Ha-Brookshire, 2011). Various studies suggest that consumers are willing to pay a premium for locally produced compared to imported cotton products (Hustvedt & Bernard, 2008; Norum & Ha-Brookshire, 2011).

Supply chains in the apparel industry are complex and often geographically dispersed covering different regions, which leads to a deficiency in transparency and traceability (Siliņa et al., 2024). As mentioned in the previous chapters on price and sustainability certification, transparency is an important

factor in creating consumer trust in products and companies (Dekhili & Achabou, 2013). The complexity and extension of textile supply chains, together with the pressure to save time and cost, makes implementing sustainability measures challenging (Shen et al., 2017).

Besides environmental responsibility, buying local products can be motivated by social responsibility (Norum & Ha-Brookshire, 2011). Numerous scandals about labor law violations and poor working conditions in textile factories in developing countries have been fuel for discussions about social sustainability in the industry. There have been attempts to overcome these issues by limiting the global value chain to only democratic countries which have well-developed public regulations. However, most companies are reluctant to follow this rule as they are unwilling to restrict their procurement opportunities (cf. Egels-Zandén, 2016). Since the majority of the low-wage and unskilled workforce in the textile sector comprises of women, improving the sustainability of global supply chains would also contribute to gender equality, which is an important aspect of social sustainability (European Commission, 2022). Another reason for consumers to buy local products is to save jobs in their region (Norum & Ha-Brookshire, 2011).

In the study conducted for this thesis, the countries of origin of apparel will be divided into the regions Austria, the European Union and developing countries. This distinction is made due to the decreasing proximity to the Austrian market as well as different environmental regulations in the three regions, which will be elaborated on in the following.

Made in Austria: Austria counts more than 220 textile companies employing around 10,000 people. Due to their good reputation worldwide, 80% of the products are exported. The main export market is Europe. The Austrian fashion industry mainly consists of micro companies serving different niches. Many domestic fashion labels highly value the responsibility for people and the environment, especially with respect to production. Therefore, they consider the use of organic cotton and sustainability certifications like Fairtrade. They also aim to provide transparent production chains as well as maximum social justice, environmental compatibility and quality (cf. Advantage Austria, n.d.). Companies in the Austrian textile, clothing, shoe and leather industry are supported by an association for the representation of interests, lobbying and information networks (Wirtschaftskammer Österreich, n.d.).

Made in the EU: According to a report published by EURATEX (2022), the European Apparel and Textile Confederation, the textile and clothing industry of the European Union counts 143,000 companies and employs 1.3 million people. Most of the companies are small and medium-sized enterprises (Siliņa et al., 2024). Among the European countries, the biggest textile producers are Italy, France, Germany, Spain and Portugal. Still, more than two thirds of textiles consumed in the European Union are imported, which creates a significant share of the environmental impact caused by EU consumption. Textile production, as any other sector, is regulated by the EU to protect consumer rights and the safety of products. However, there is still little regulation in terms of environmental sustainability (cf. Siliņa et al., 2024). As mentioned earlier in this thesis, the EU is working on the implementation of extensive sustainability goals to be effective in the textile and clothing industry in the course of the next years (European Commission, 2022). These goals shall be achieved by measures like the recently passed EU Directive on corporate sustainability due diligence (European Commission, n.d.-a).

Made in developing countries: Textile production was outsourced from Europe to developing countries due to lower production costs after the abolition of textile quotas at the beginning of the 21st century. Most of the imports now come from China, Bangladesh, Türkiye, Vietnam and India, among others. Unlike in the European Union, there is no global legislation concerning the sustainability of the textile sector as there is no legislative body at the global level or worldwide inter-governmental cooperation on the issue (cf. Siliņa et al., 2024). Due to the lack of global legislation, as mentioned above, working conditions in production in the textile sector in developing countries are poor compared to developed countries (Egels-Zandén, 2016). In addition, in developing countries sludge contaminated with chemicals used in the industry is usually disposed in unsecured landfills and can then leach out and harm the environment (Nimkar, 2018). However, developing countries are on the run to develop their sustainability strategies in order to maintain their export positions in the textile industry (Siliņa et al., 2024).

Relating to the origin of products and based on consumers' preference, the following hypotheses will be used for the purpose of this thesis:

H2a: All other attributes equal, consumers choose apparel products made in Austria or the EU over apparel products made in developing countries.
H2b: All other attributes equal, consumers are willing to pay a higher price for apparel products made in Austria or the EU than for apparel products made in developing countries.

Material of Apparel Products

The choice of raw materials, among other factors, determines the sustainability of a product at the stage of production (Karthik & Gopalakrishnan, 2014). Cotton used to be the most important fiber applied in the apparel industry, as it made up the largest share of the global apparel supply chain until the early 2000s (Karthik & Gopalakrishnan, 2014; Norum & Ha-Brookshire, 2011). While by now synthetic fibers have overtaken cotton and other natural fibers in terms of production volume, with 65% of global production in 2022, cotton remains to be an integral part of the global textile value chain with 25% of worldwide production in 2022 (Textile Exchange, 2023).

For the purpose of this thesis, materials will be classified according to the Environmental Benchmark for Fibres (Gonçalves & Silva, 2021). The framework classifies fibers in their environmental impact, considering the factors greenhouse gas emissions, human toxicity, eco-toxicity as well as energy, water and land use. Materials are grouped into classes A (highest sustainability score) to E (lowest sustainability score) as well as F for unclassified materials. Conventional materials like cotton and wool have been assigned to the lowest class E, while recycled cotton, recycled wool and other recycled fibers received the highest possible classification A.

The research conducted for this thesis includes conventional, organic and recycled cotton. Their shares in the global textile production and their distinct environmental properties are described in more detail below.

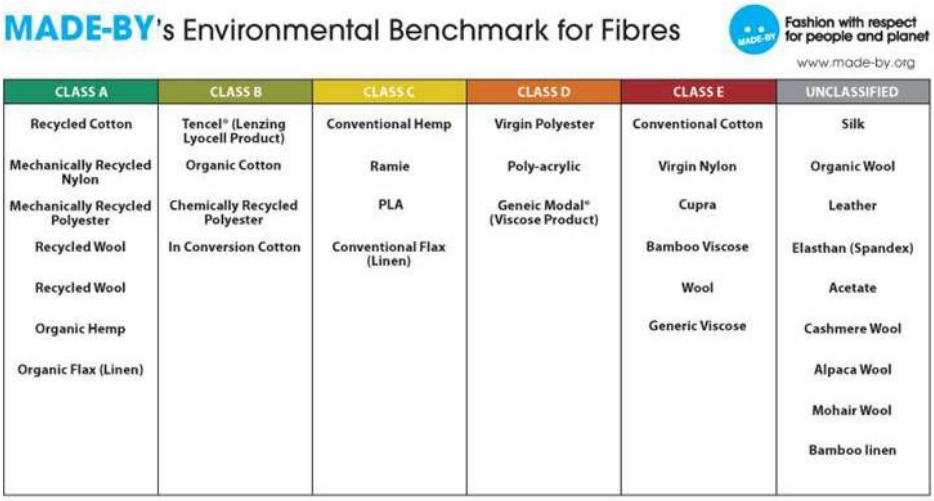

Figure 6: Environmental Benchmark for Fibres (Gonçalves & Silva, 2021)

Conventional cotton: Out of the global cotton production, 72% are classified as conventional or not registered to be organic or recycled (Textile Exchange, 2023). The cultivation of conventional cotton consumes large amounts of water, energy, pesticides and fertilizers as well as land, which has significant negative impacts on people and the environment (Cundubey & Azgin, 2024). For instance, compared to other commodity crops, cotton ranks among the greatest consumers of pesticides worldwide. The extensive use of pesticides and other agricultural chemicals leads to decreased effectiveness of these chemicals as well as higher production costs (cf. Delate et al., 2021). Due to the significant negative impact on the environment, conventional cotton received the lowest possible sustainability rating E in the Environmental Benchmark for Fibres (Gonçalves & Silva, 2021).

Organic cotton: Organic cotton is defined as "naturally cultivated cotton without the use of any synthetic agricultural chemicals such as fertilizers or pesticides or transgenic technology" (Yu, 2015, p. 52). Most of the environmental and health issues related to the pesticide-intensive production of conventional cotton can be avoided using organic cotton production methods (Delate et al., 2021). 27% of the world-wide cotton production is virgin cotton registered to be organic or covered by other programs recog-nized by the 2025 Sustainable Cotton Challenge, which also includes Fairtrade certified cotton (Textile Exchange, 2023). Even though the properties of organic cotton are not completely comparable to those of regular cotton, its use is growing rapidly due to its benefits to human health and the environment

(Yu, 2015). Consumers are increasingly willing to pay a higher price for organic compared to conventional cotton (Delate et al., 2021). Specifically, according to a study conducted by Ellis et al. (2012), consumers are willing to pay 25% more for an organic cotton t-shirt compared to a similar t-shirt made from conventional cotton. In the Environmental Benchmark for Fibres, organic cotton is assigned to class B, which has the second highest sustainability rating (Gonçalves & Silva, 2021).

Recycled cotton: Recycling is defined as "any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes" (European Union, 2008, p. 10). Recycled cotton fibers originate from recycled cotton textiles, as opposed to virgin cotton fibers which are extracted directly from cotton plants (Alcantara et al., 2024). Recycling techniques for cotton fibers can be divided into mechanical, chemical and biological recycling methods (Lu et al., 2023). The recycled fibers are obtained from different types of textile waste including pre-consumer waste, which comes from textile manufacturing, and post-consumer waste, which are textiles discarded by consumers (Alcantara et al., 2024). During production, fibers are often blended with others, which makes their recycling challenging due to a lack of technologies to separate fibers in textile waste (European Commission, 2022). According to the Environmental Benchmark for Fibres, recycled cotton is classified as class A, which is the class with the highest possible sustainability rating (Gonçalves & Silva, 2021). Despite its high rating in terms of sustainability, recycled cotton makes up only about 1% of global cotton production with an estimated volume of 300,000 tons in 2022. However, this share is expected to increase significantly in the course of the next years (cf. Textile Exchange, 2023). Research has shown that consumers expect recycled fibers to be included in their products in the near future (EURATEX, 2022).

Based on the above findings about the sustainability of materials and on the Environmental Benchmark for Fibres, the final two hypotheses have been derived:

H3a: All other attributes equal, consumers choose apparel products made from organic or recycled cotton over apparel products made from conventional cotton.
H3b: All other attributes equal, consumers are willing to pay a higher price for apparel products made from organic or recycled cotton than for apparel products made from conventional cotton.

These hypotheses, as well as the hypotheses formulated in the previous chapters concerning products' origin and sustainability certification, will be tested using the methodology described in the following chapter.

3. Methodology of Data Collection

This chapter introduces the quantitative method used for the purpose of this thesis, which is a choice-based conjoint analysis based on an online survey. Before coming to the method used in this thesis, I will discuss different research methods and argue why this specific one is the most appropriate in the given context.

When it comes to different research methods, qualitative and quantitative methods can be distinguished. While quantitative research works with predetermined variables, qualitative research goes beyond numbers and variables (Aspers & Corte, 2019). Quantitative approaches include standardized questionnaires (Weinreich, 1996) and are concerned with analyzing data from a mathematical perspective (Sukamolson, 2007). Qualitative methods aim to help the researcher understand the processes underlying certain behavior, and include observations, in-depth interviews and focus groups (Weinreich, 1996). In market research, quantitative methods are used to measure aspects like brand awareness, brand penetration and product preferences in order to represent what consumers do or think (Barnham, 2015). This is why a quantitative approach was chosen for this thesis. Qualitative market research, on the other hand, is used to gain a deeper understanding of consumers' attitudes, behavior and motivations (Barnham, 2015). The specific quantitative method used for the purpose of this thesis will be introduced in the following.

3.1 Choice-Based Conjoint Analysis

Introduced into marketing in the 1970s, conjoint analysis is now one of the most frequently used methods for measuring preferences of individuals or groups in different areas. It determines the utility individual product attributes add to the overall utility of the product by systematically varying the levels of attributes. The method provides scholars with a function showing the utilities of specific product attributes according to consumers' preferences. Thereby, actual purchasing decisions can be explained and choices can be predicted depending on changes to products' configurations (cf. Eggers et al., 2022).

Conjoint analysis methods are called stated or static methods, since they do not adapt to responses given in the survey (Eggers et al., 2022; Rao, 2014).

In traditional conjoint analysis, combinations of attribute levels are presented to respondents for evaluation in the form of rankings or ratings (Chrzan & Orme, 2000). The downside of this type of manifestation of preferences is that it does not mimic consumers' actual behavior and choices (Eggers et al., 2022). In 1983, choice-based conjoint analysis was introduced as a form of conjoint analysis where respondents choose their preferred option among the ones presented instead of rating them. This new form of conjoint analysis represents the actual purchase decision in the marketplace (cf. Chrzan & Orme, 2000). Developed on the basis of discrete choice analysis, one of the main applications of the choice-based method is to predict choices made by samples of consumers for new items described by a set of attributes used in the study (Rao, 2014).

The advantages of choice-based conjoint analysis compared to traditional conjoint analysis are the use of choices instead of ratings for measuring preferences, the ability to value brand-based attributes and assess competitive effects on choice as well as sensitivity to price differences and an improved prediction of authentic choices in the marketplace (Rao, 2014). At the same time, the efficiency of experimental designs improved and the design and completion of the experiments are facilitated (Chrzan & Orme, 2000).

Figure 7 shows the process of a choice-based conjoint analysis according to Rao (2014). First, depending on the purpose of the conjoint study, the researcher needs to decide on the approach and identify the product attributes and levels. In this case, the approach would be choice-based, as opposed to a ratings-based approach. The choice sets are designed using the identified attributes and levels. Next, data is collected and analyzed. The part-worth functions and attribute trade-offs found in the analysis are used according to the study purpose. Concerning the application of this model in this particular case, the selection of the method has been described in the beginning of this chapter. I will elaborate on the selection of the attributes and levels as well as the design of the choice sets in the following. Later on, in Chapters 4 and 5, I will discuss the data collection and analysis as well as the implementation of the results for the study purpose.

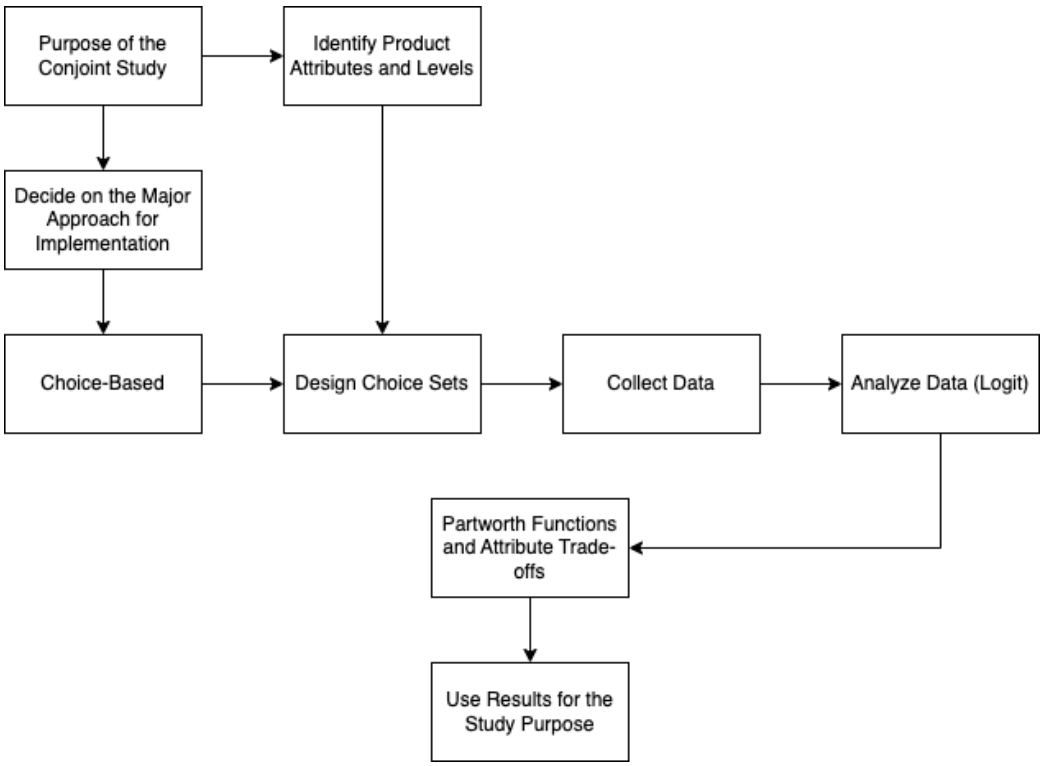

Figure 7: Major steps in a choice-based conjoint study based on Rao (2014)

Conjoint analysis has been used to test which product attributes influence consumers' purchasing decisions for sustainable apparel products by various researchers, such as Norum and Ha-Brookshire (2011), Oh and Abraham (2016) and Wang et al. (2022).

3.2 Attributes and Levels

In the following, I will specify the attributes used for the choice-based conjoint analysis with their respective levels, i.e. the different options provided for each attribute. The attributes 'price', 'sustainability certification', 'origin' and 'material' have been described in detail in the previous chapter. Table 1 summarizes the four key product attributes and their individual levels.

Price	Sustainability certification
Low	Fairtrade
Medium	EU Ecolabel
High	No certification
Origin	**Material**
Austria	Conventional cotton
EU	Organic cotton
Developing country	Recycled cotton

Table 1: Attributes and levels

Price: The first attribute is the product's price. For the purpose of the survey, it was categorized into three levels: low, medium and high. Since the same price might be perceived to be low by one consumer and high by another and the aim of the survey is to reflect consumers' individual perception, these levels have been chosen in order not to bias the responses by using specific numbers. In the survey, the participants are asked for their understanding of a low, medium and high price for a t-shirt, in order to get an idea of their perception of prices. The variable price corresponds to Hypotheses 1b, 2b and 3b which are related to testing consumers' willingness to pay for sustainable products, and have been introduced in the chapter on key product attributes.

Sustainability certification: As the second attribute, sustainability certification is used. The analysis distinguishes between products holding a sustainability label and products without a sustainability label. Among the products with a label, the Fairtrade and the EU Ecolabel are further differentiated in order to find out which label influences consumer decisions the most. The survey provides a definition of the two labels to make sure the participants can distinguish between the two of them. The variable sustainability certification relates to Hypotheses 1a and 1b, which describe the general preference as well as the willingness to pay for sustainability certified products.

Origin: The origin of the product represents the third attribute. The countries and regions of origin used in the survey are Austria, the European Union and developing countries. These levels represent regions

of different proximity to the Austrian market, as well as different regulations in terms of sustainability and working conditions. In terms of origin of products, Hypotheses 2a and 2b state that consumers prefer and are willing to pay more for locally produced products.

Material: The fourth and final attribute is the product's material. This attribute is divided into conventional cotton, organic cotton and recycled cotton. These materials have been chosen due to their distinct properties in terms of sustainability, as represented in their classification according to the Environmental Benchmark of Fibres, which was introduced in the literature review section of this thesis. Hypotheses 3a and 3b assume that customers prefer products made from sustainable materials and are willing to pay a higher price for these products.

3.3 Survey Design

The empirical analysis will be based on the results of an online survey. The respondents have been chosen based on convenience sampling. The survey is conducted using Sawtooth Lighthouse Studio, which offers student grants for one-year subscriptions.

Online questionnaires are an efficient and convenient way of collecting data for various reasons. The method is time and cost saving, since it allows for the collection of large amounts of data in a short time frame. It also protects against potential loss of data and simplifies the transfer of the acquired data into external databases for analysis purposes (cf. Lefever et al., 2007). The anonymity in online surveys can help in reaching respondents that would normally be difficult to reach. Also, it can make it easier for participants to share their personal experiences and opinions, especially for sensitive topics (cf. Van Selm & Jankowski, 2006). Some researchers argue that online surveys provide better response rates than conventional data collection methods; however, others have found participation rates to be lower. In order for online questionnaires to provide valuable results, the survey has to be designed in a way that is simple for respondents to complete. Possible limitations of this data collection method are potential technical issues, as well as respondents not answering truthfully due to anonymity (cf. Lefever et al., 2007).

In the beginning of the survey, there is an introduction to the topic of the master's thesis as well as some general instructions for the survey. In order to ensure the participants' understanding of sustainability, definitions are provided for both environmental and social sustainability. The definitions used in the survey differ from the more complex ones used in this thesis for an easier understanding. Therefore, environmental sustainability is defined as "the responsible management of natural resources" (Southern New Hampshire University, 2024), while social sustainability is defined as "a measure of the human's welfare" (Mohamed & Paleologos, 2021). The participants are asked to rate the importance of environmental and social sustainability in their purchasing decisions in order to get an idea of their attitude towards different aspects of sustainability. Each of the variables is tested on a 5-point Likert scale reaching from very important to not important at all. Next, the respondents are asked whether they are familiar with the sustainability labels used in the survey, i.e. the Fairtrade label and the EU Ecolabel. This is to gain an understanding of Austrian consumers' knowledge of sustainability labels and compare it to what was found in previous studies on the topic. There are also questions asking which aspects the participants associate with the two labels. The suggested aspects include protection of farmers, fair prices, quality, less pollution, decent working conditions and sustainable materials. In case the respondents are not familiar with the labels, they are asked to tick the aspects they might associate with the labels. The survey then provides a brief explanation of what the two labels stand for, in order to make sure all participants are aware of their meaning.

> *"Fairtrade stands for social sustainability including better prices, decent working conditions and a fairer deal for farmers and workers in developing countries. The label is awarded to products produced worldwide."*(Fairtrade International, n.d.)
>
> *"The EU Ecolabel stands for quality while meeting the highest environmental standards such as sustainable materials and less pollution. The certification is awarded to products manufactured in the European Union as well as imported products."* (European Commission, n.d.-b)

Before answering the choice-based questions, respondents are inquired about their personal definition of a low, medium and high price for a t-shirt in order to be able to assess their individual willingness to pay. There are three suggested price ranges for each of the levels 'low', 'medium' and 'high' which the participants can choose from.

For the choice-based conjoint analysis, respondents are asked to imagine a situation where they want to buy a t-shirt. They are provided with instructions on how to answer the following questions.

> *"In the following, you are going to be presented with nine buying situations. In each situation you get to choose between three almost identical t-shirts which differ only in their price, origin, sustainability certification and material."*

They are then presented with t-shirts of the same color and shape with variations in the attributes 'price', 'sustainability certification', 'origin' and 'material', as discussed above. The attributes with their corresponding levels are summarized in Table 1. There are nine tasks, for each of which the participants are asked to choose their preferred option out of three t-shirts. The number of tasks was set to nine because Sawtooth Software (n.d.) generally recommends using between 8 and 15 tasks, while for web-based interviewing, fewer tasks are required. If the participants would not buy any of the presented products, they are asked to choose the no-choice option.

> *"Please select your preferred option in each task. If none of the provided options meets your preferences, you can select 'none' as a response."*

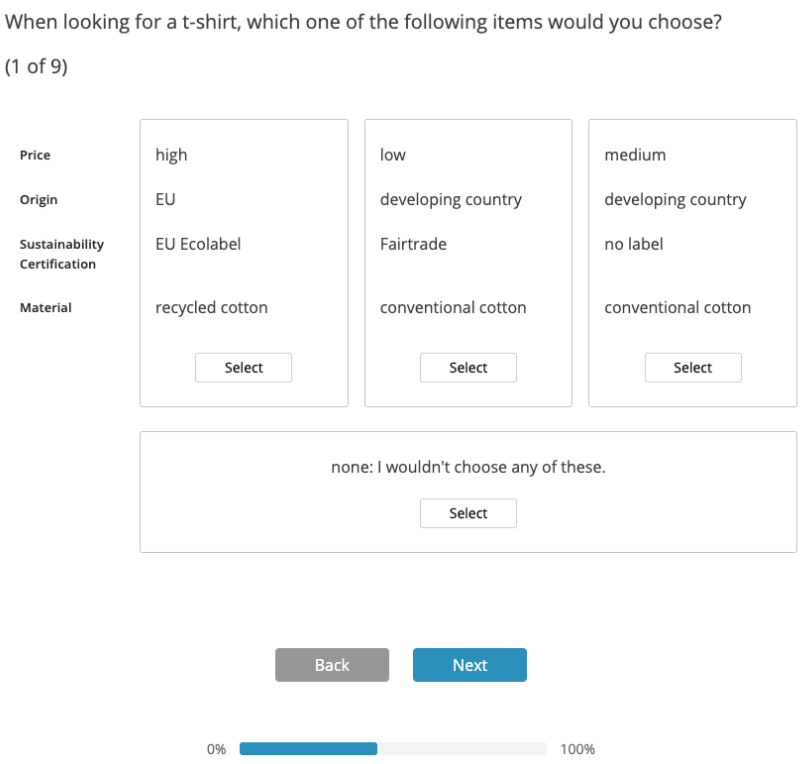

Figure 8: Sample choice-based question

Figure 8 shows an example of the choice-based questions. Screenshots of all survey questions can be found in the appendix to this thesis.

For the design generation of the choice-based questions, Sawtooth Software offers four different methods: complete enumeration, shortcut, random and balanced overlap. When using complete enumeration, frequencies of level combinations between attributes are equally balanced, which leads to little repetition or overlap of attribute levels within choice sets. In shortcut, choice sets are designed using the attributes least frequently used for the respective respondent, which again leads to minimal overlap. With the random design option, profiles are randomly constructed and put into choice sets. Overlap does occur in this method; however, no two profiles can be identical within one choice set. The fourth approach, balanced overlap, is a combination of the methods complete enumeration and random design, which means there is more overlap than in complete enumeration but less overlap than in the random method (cf. Chrzan & Orme, 2000). For the survey conducted for this master's thesis, a random design was applied.

Sawtooth provides the possibility to prohibit certain combinations of attribute levels in surveys when the respective combinations are unrealistic or impossible to find. For the purpose of this survey, the combination of the levels 'EU Ecolabel' and 'conventional cotton' was prohibited. Since, as discussed earlier, the EU Ecolabel requires products to contain at least a certain amount of organic or recycled materials, it is not realistic to find a t-shirt made from only conventional cotton that holds the EU Ecolabel. Within the scope of the research of this thesis, it was not possible to include any other prohibitions, since the introduction of prohibitions leads to a lower efficiency of the analysis when the number of participants is relatively small. The number of participants was limited due to the scope of the thesis. Sawtooth Software (n.d.) recommends to avoid prohibitions wherever possible and rather to provide survey respondents with options that are rare but not impossible to find on the market. If the user tries to specify more prohibitions than recommended for their respective research design, the Software sends a warning and does not allow them to proceed. Otherwise, it would have been advisable to prohibit other combinations like products made in Austria or Fairtrade products that are sold at a low price, since these products are rather unrealistic to find as well. With the included prohibition, the four

attributes ‘price’, ‘sustainability certification’, ‘origin’ and ‘material’ are presented in all possible combinations, expect for the combination of the EU Ecolabel and conventional cotton, as previously mentioned.

Following the choice-based questions, respondents are asked to rate the Fairtrade label and the EU Ecolabel in terms of their trust in the labels. The questions are again based on a 5-point Likert scale reaching from strongly trustworthy to strongly untrustworthy. The answers are supposed to give an insight into the participants’ attitude towards sustainability labels, which should help interpret the results of the survey. In the end, the respondents are asked to answer some demographic questions which include the variables age, gender, highest completed level of education, current occupation and net income. The results are used to find potential relations between the respondents’ demographic data and their preferences and willingness to pay for sustainable apparel.

3.4 Testing the Survey Design

As recommended by Sawtooth Software (n.d.), the design of the choice-based conjoint questions was tested before the publication of the survey. Sawtooth provides researchers with a test design function, which allows them to test the absolute precision of the parameters given the experimental design and the expected number of participants. This test is advisable, especially if there are any prohibitions included in the survey or if the sample size, i.e. respondents multiplied by tasks, is rather small. When running the test design, the software simulates random respondent answers to the survey questions and reports the respective standard errors in order to test the efficiency of the design. The estimated standard errors for the levels of each attribute are recommended to be lower than 0.05. The no-choice option can be ignored in this context (cf. Sawtooth Software, n.d.).

As shown in Table 2, the standard errors for all attribute levels of this survey are below the recommended value of 0.05. The test design was conducted for an expected number of participants of 140. The result of the design testing indicates that for a sample of 140 or more participants in the survey, the analysis is expected to provide significant results.

Attribute	Level	Std. Error	Label
1	1	0.04987	high
1	2	0.04966	medium
1	3	0.04975	low
2	1	0.04967	Austria
2	2	0.04973	EU
2	3	0.04975	developing country
3	1	0.04991	EU Ecolabel
3	2	0.04958	Fairtrade
3	3	0.04947	no label
4	1	0.04958	recycled cotton
4	2	0.04989	organic cotton
4	3	0.04964	conventional cotton
none		0.08350	

Table 2: Design Testing

After designing and testing the survey questionnaire as described in this chapter, the research design was implemented and the analysis was conducted as elaborated on in the following chapter.

4. Empirical Analysis

The survey was published online on Sawtooth Software's server and was accessible from May 15, 2024 to May 31, 2024. The participants of the survey were contacted directly via email, text or WhatsApp message. In addition, postings were made on different social media platforms, i.e. Facebook and Instagram. After removing all 38 incomplete questionnaires, a total of 149 fully completed questionnaires remained, which were used for the analysis. All participants who submitted fully completed questionnaires spent at least 2:18 minutes responding to the survey questions. The median time spent on the questionnaire was 7:15 minutes (IQR: 6:08 minutes). The respondents were predominantly from Austria. The following analysis was conducted using Sawtooth Lighthouse Studio as well as SPSS.

4.1 Sample Description

In this chapter, the demographic data of the survey sample will be described in detail. This includes their gender, age, level of education, occupation status and income.

Concerning gender, as shown in Figure 9, a slight majority of the 149 survey participants were female. However, the sample was rather balanced between female and male with 53.7% of participants identifying as female and 44.3% as male. Additionally, 2% of participants identified as diverse.

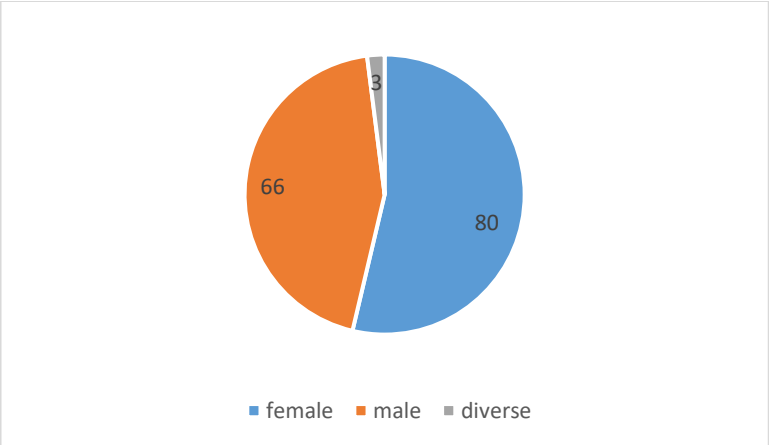

Figure 9: Distribution of gender in the sample

In terms of age, with 51.7%, more than half of the respondents were between 25 and 34 years old. This is because the survey was sent out to a large number of other master's students in the university environment of the researcher. Concerning the other age groups, 13.4% of the participants were between 18 and 24 years old, 6.7% between 35 and 49, 26.2% between 50 and 64 and 2% of participants were 65 or older. The distribution of age can be found in Figure 10.

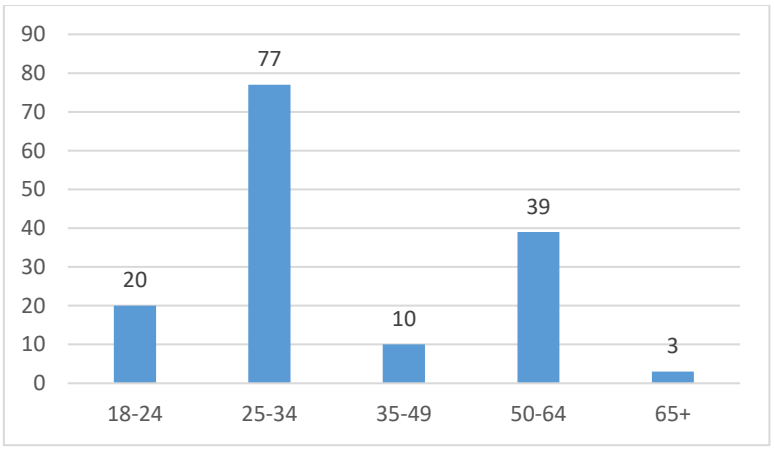

Figure 10: Distribution of age in the sample

When it comes to the level of education, most of the participants were certified with either a bachelor's or a master's degree. Out of all 149 respondents, 2% had completed compulsory school, 4% had completed an apprenticeship and 19.5% held a high school diploma. Concerning academics, 32.9% held a bachelor's degree, 35.6% had a master's degree or Magister and 6% had a PhD or Doktor. The fact that the majority of participants were academics can again be explained by the large number of university students in the researcher's environment. The distribution of level of education is illustrated in Figure 11.

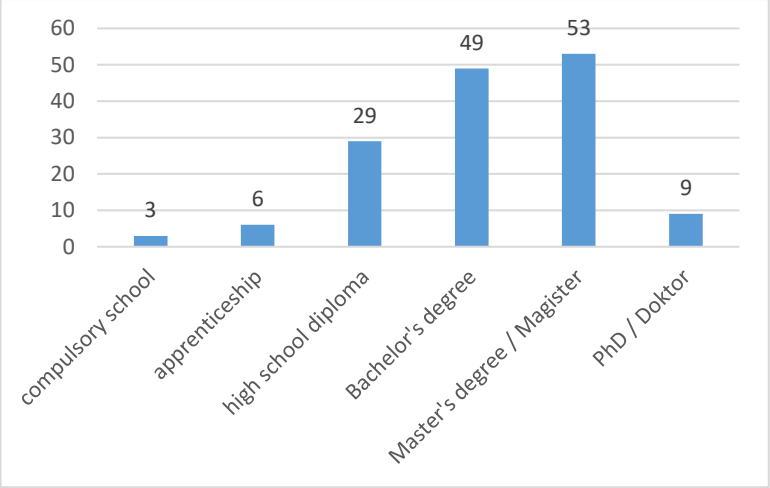

Figure 11: Distribution of level of education in the sample

Concerning the participants' occupation, as shown in Figure 12, two thirds of the survey's respondents were employed. Overall, 20.8% were students, 66.4% were employed, 7.4% self-employed, 1.3% were unemployed and 4% retired. This trend somewhat resembles the distribution of occupation among the Austrian population, with small deviations in some of the categories, e.g. unemployment (Statistics Austria, n.d.).

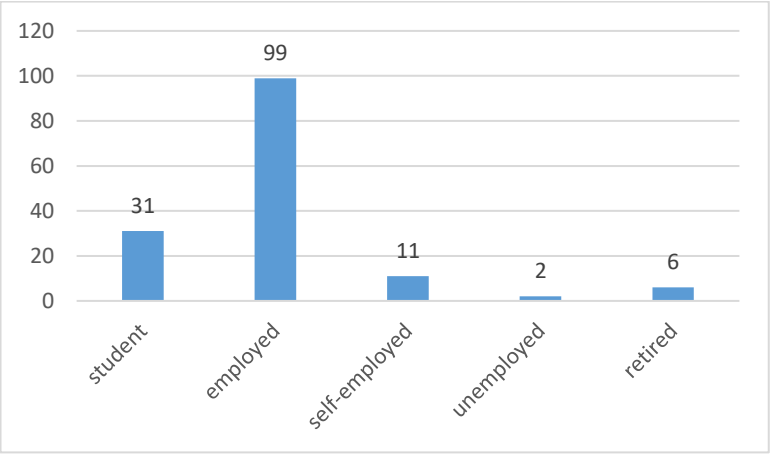

Figure 12: Distribution of occupation in the sample

Finally, the respondents' current monthly net income was assessed as shown in Figure 13. 18.1% of respondents had a net income of less than €1000, 20.8% earned between €1000 and €2000 per month, 22.8% between €2000 and €3000, 20.8% between €3000 and €5000 and 6% had an income of more

than €5000. 11.4% of participants preferred not to disclose their income. When it comes to net income, the sample is rather balanced between the categories chosen for the analysis, apart from those earning more than €5000.

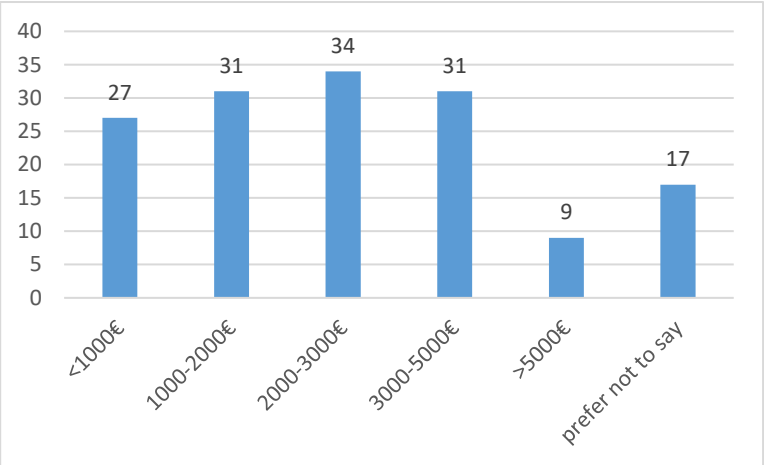

Figure 13: Distribution of net income in the sample

4.2 Attitude towards sustainability and prices

In this chapter, I will assess the perceived importance of different aspects of sustainability for purchasing decisions. In addition, I will elaborate on the participants' awareness of and trust in sustainability labels as well as their perception of prices.

Attitude towards sustainability

After being provided with definitions of environmental and social sustainability, the survey's participants were asked to rate the importance of the two aspects of sustainability in their purchasing decisions. The results are shown in Figure 14.

When it comes to making purchasing decisions, 21.5% of respondents stated that environmental sustainability was very important to them and 64.4% rated it as somewhat important. 9.4% of participants were neutral about environmental sustainability in their purchasing decisions, while 3.4% rated it as somewhat unimportant and 1.3% as not important at all.

Social sustainability was rated as very important for their purchasing decisions by 22.1% of respondents and as somewhat important by 55% of respondents. 19.5% of participants were neutral about social sustainability in this context, while 2% rated it as somewhat unimportant and 1.3% as not important at all.

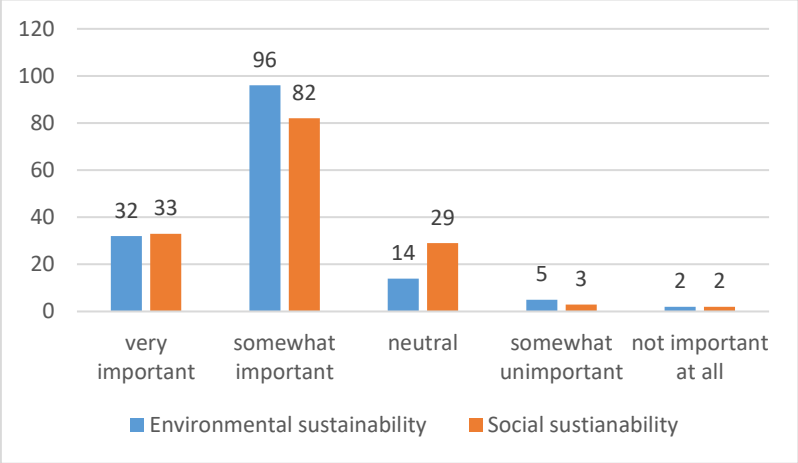

Figure 14: Importance of environmental and social sustainability for survey participants

In comparison, 85.9% of respondents stated that environmental sustainability was somewhat or very important for their purchasing decisions, while only 77.2% stated that social sustainability was somewhat or very important in this context. Therefore, it can be concluded that more participants take environmental sustainability into account when deciding on which products to purchase.

Awareness of Sustainability Labels

Before answering the choice-based questions, the participants were asked whether they were familiar with the Fairtrade label as well as the EU Ecolabel. As shown in Figure 15, out of the 149 participants, 96.6% stated that they were familiar with the Fairtrade label and only 3.4% stated that they did not know the label.

Concerning the EU Ecolabel, the results were quite different. Only 33.6% of participants stated that they were familiar with the label, while 66.4% of respondents did not know the label. These results show that the Fairtrade label is a lot more well-known among consumers than the EU Ecolabel. The

rate of awareness of the EU Ecolabel matches the one found by the European Commission (European Commission. Directorate General for Environment., 2023) to a certain extent, as stated earlier in this thesis.

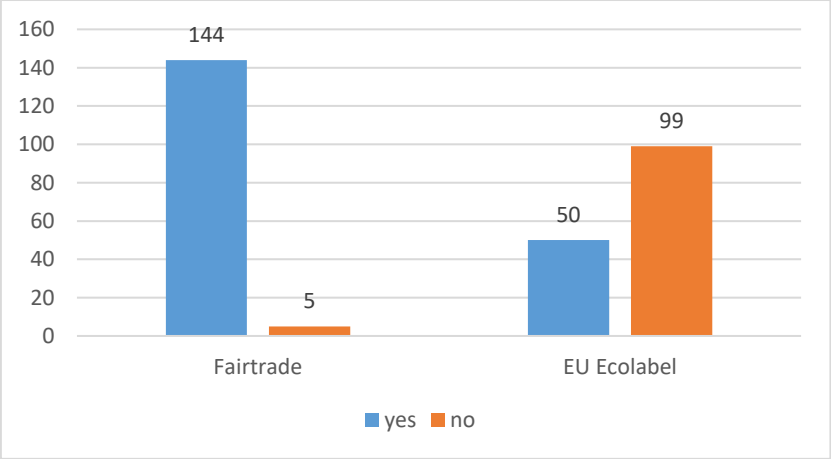

Figure 15: Participants' awareness of sustainability labels

Figure 16 illustrates the aspects the survey respondents associated with each of the labels, regardless of whether they had previously been familiar with the label or not. The concepts mostly associated with the Fairtrade label were decent working conditions, protection of farmers and fair prices, selected by 81.9%, 77.2% and 74.5% of participants, respectively. Furthermore, 35.6% of respondents associated Fairtrade with quality, 33.6% with sustainable materials and 22.1% with less pollution. These results are consistent with the definition of Fairtrade, which includes decent working conditions, the protection of farmers and fair prices (Fairtrade International, n.d.).

The aspects most participants associated with the EU Ecolabel were less pollution and sustainable materials, selected by 65.8% of respondents each. In addition, 39.6% of participants associated the label with quality, 32.2% with decent working conditions, 26.8% with fair prices and 26.2% with protection of farmers. These associations are not as accurate as for Fairtrade but mostly correct, as the label's definition includes less pollution, sustainable materials and quality (European Commission, n.d.-b).

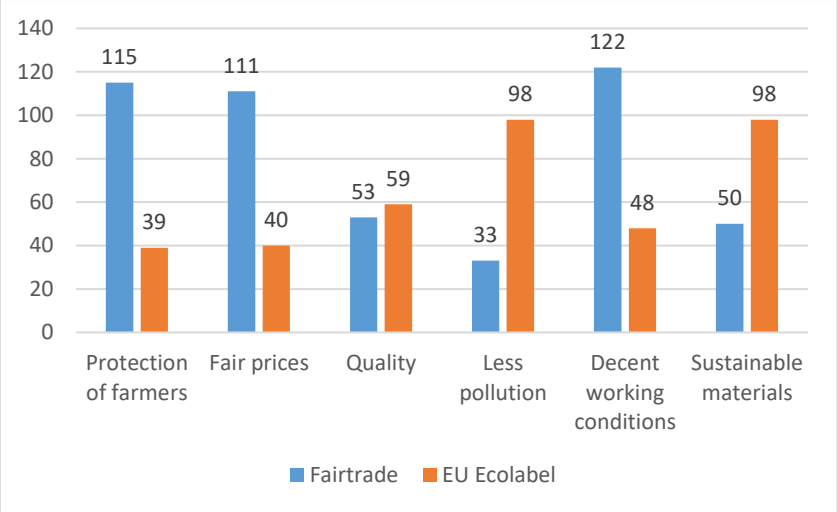

Figure 16: Aspects participants associated with sustainability labels

Trust in Sustainability Labels

With 64.4%, a majority of participants rated the Fairtrade label as trustworthy. Furthermore, 10.7% of the overall sample selected strongly trustworthy, while 19.5% selected neutral and 5.4% rated it as untrustworthy. None of the participants rated the Fairtrade label as strongly untrustworthy. The results are shown in Figure 17.

For the EU Ecolabel, 55.7% of participants selected trustworthy and only 3.4% rated it as strongly trustworthy. 36.2% of respondents see the label as neutral and 4.7% selected untrustworthy. Like for Fairtrade, none of the participants rated the EU Ecolabel as strongly untrustworthy.

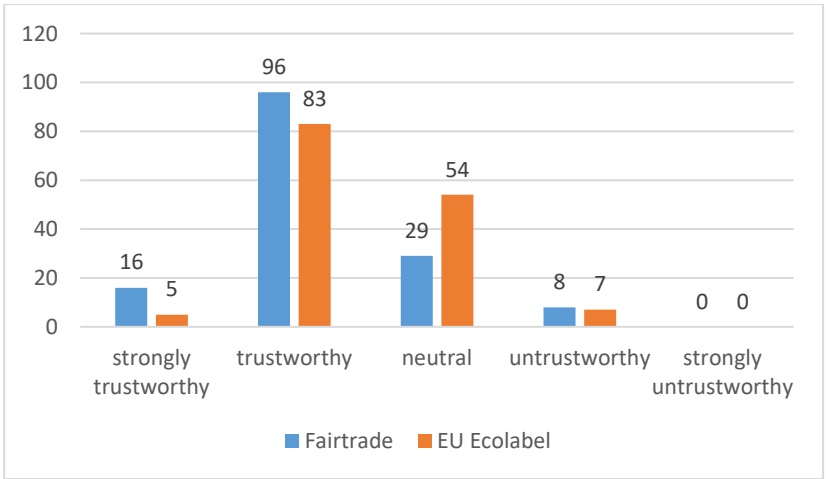

Figure 17: Participants' trust in sustainability labels

Perception of Prices

When asked to rate prices for a t-shirt, the participants answered as illustrated in Figure 18. 54.3% of participants selected less than €10 as a low price for a t-shirt, 37.6% rated €10-20 as a low price and 8.1% selected €20-30. Concerning a medium price for a t-shirt, 34.2% of respondents chose €15-25, 50.3% selected €25-35 and 15.4% of participants ticked €35-45. 28.2% of respondents stated that €30-40 would be a high price for them, while 28.9% chose €40-50 and 43% selected more than €50.

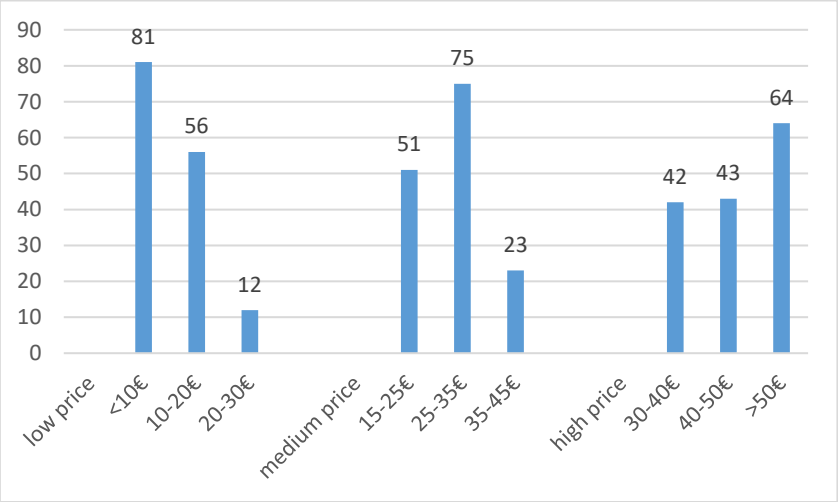

Figure 18: Participants' perception of low, medium and high prices

4.3 Estimation of Utilities

Relative Impact of Attributes

In order to assess the relative impact of the individual attributes, I have conducted a counting analysis using Sawtooth Lighthouse's analysis manager. Counting analysis calculates the main effects and joint effects for the choice-based conjoint data collected. The program divides the number of times a concept including the respective level is chosen by the number of times a concept including the level was offered in the choice task. That way, the proportion of wins for each level can be calculated. In addition, the counting program reports a Chi Square statistic for each main and joint effect, which indicates whether the proportions for that attribute differ significantly from one another. The difference is significant for p values of <0.05 as well as <0.01 (cf. Sawtooth Software, n.d.).

The counting analysis conducted for the purpose of this research showed the results summarized in Table 3. For the attribute 'price', the result was significant ($\chi^2(2) = 260.043$, $p<.01$), which means that the proportions of choice of the levels for price differed significantly from each other. The preferably chosen level of price was 'low', which was selected in 46% of the cases, 'medium' was chosen by 35.7% of respondents and 'high' only by 12%. The attribute 'origin' again showed a significant difference in the number of times participants chose the respective levels of origin ($\chi^2(2) = 168.291$, $p<.01$). The level chosen by most of the respondents, i.e. 44.9%, was Austria, followed by the EU with 31.9% and developing country with 17%.

When it comes to the attributes 'sustainability certification' and 'material', the differences between the number of times the respective levels were chosen was not as clear as for the other two attributes. Still, both attributes showed significant differences between their levels in terms of Chi Square. For both attributes, there were two levels for which the proportion of choice was rather similar, while the third level was less preferred by respondents. For sustainability certification, the counting analysis showed that most of the respondents chose either the level 'EU Ecolabel', which accounted for 38.7%, or the level 'Fairtrade', with 37.7%. Only 17.8% chose products without a label ($\chi^2(2) = 120.619$, $p<.01$). Finally, for material, the preferred level was organic cotton with 36.1%, followed by recycled cotton with 34.1% and conventional cotton with 23.2% ($\chi^2(2) = 40.739$, $p<.01$).

In conclusion, all four attributes 'price', 'origin', 'sustainability certification' and 'material' showed significant results, which indicates that for all the attributes, there was a significant difference in the number of times each level was chosen. The participants prefer low-priced products that are made in Austria. Also, respondents prefer products certified with either the EU Ecolabel or the Fairtrade label and made from organic or recycled cotton.

Price		**Origin**	
	Total		Total
Total respondents	149	Total respondents	149
high	0.120	Austria	0.449
medium	0.357	EU	0.319
low	0.460	developing country	0.170
Within Att. Chi-Square	260.043	Within Att. Chi-Square	168.291
D.F.	2	D.F.	2
Significance	p < .01	Significance	p < .01
Sustainability Certification		**Material**	
	Total		Total
Total respondents	149	Total respondents	149
EU Ecolabel	0.387	recycled cotton	0.341
Fairtrade	0.377	organic cotton	0.361
no label	0.178	conventional cotton	0.232
Within Att. Chi-Square	120.619	Within Att. Chi-Square	40.739
D.F.	2	D.F.	2
Significance	p < .01	Significance	p < .01

Table 3: Counting Analysis

Interaction

An interaction effect occurs when the utility of two or more levels combined differs from the simple sum of their separate utilities (Sawtooth Software, n.d.). To assess the significance of the interaction effects between attributes, Chi Square tests for the interactions between all four attributes have been conducted. In the case of this study, only one of the interaction effects between variables showed significant results, i.e. the interaction between the attributes 'origin' and 'sustainability certification' ($\chi^2(4) = 16.870$, $p<.01$). The combination preferred by a majority of respondents (55.1%) was a product made

in Austria and certified with the EU Ecolabel. For products made in Austria, the preferred sustainability label was the EU Ecolabel, while for products made in the EU, the preference for both labels was rather similar and for products made in developing countries, the respondents preferred the Fairtrade label. No label was the least chosen option in all scenarios. All values are summarized in Table 4 and visualized in Figure 19.

Origin x Sustainability Certification		
		Total
Total respondents		149
Austria	EU Ecolabel	0.551
Austria	Fairtrade	0.492
Austria	no label	0.308
EU	EU Ecolabel	0.390
EU	Fairtrade	0.399
EU	no label	0.167
developing country	EU Ecolabel	0.215
developing country	Fairtrade	0.240
developing country	no label	0.060
Interaction Chi-Square		16.870
D.F.		4
Significance		$p < .01$

Table 4: Interaction origin x sustainability certification

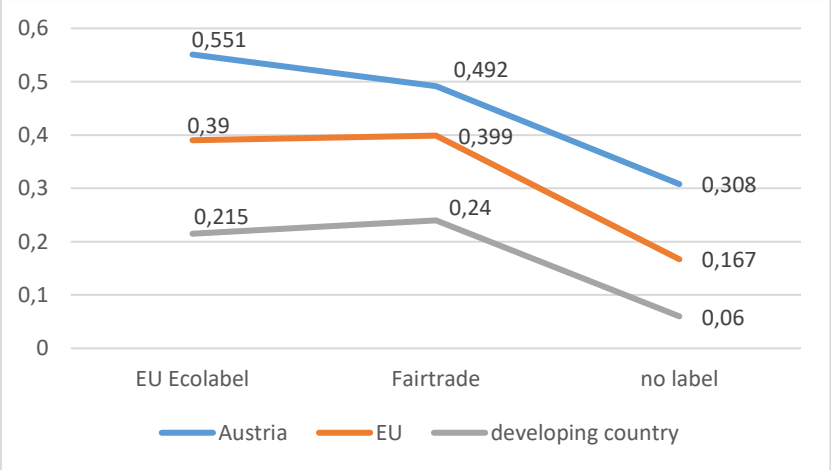

Figure 19: Interaction origin x sustainability certification

Hierarchical Bayesian Estimates

Hierarchical Bayesian Estimation is a method to estimate part-worths for choice-based conjoint questionnaires. It provides the ability to estimate individual part-worths given only few choices by each individual. It does so by using population information such as means and covariances describing the preferences of other individuals in the same dataset. Hierarchical Bayesian Estimation is more effective than other methods since it requires fewer choices from each respondent. The conjoint utilities or part-worths obtained through this method are interval data which are scaled to sum up to 0 within each attribute. Therefore, attribute levels that are less attractive than other levels can receive a negative score, even if they are acceptable for the respondents (cf. Orme, 2016).

The utilities obtained through Hierarchical Bayesian Estimation are shown in Table 5. For the attribute 'price', the level 'low' was the option preferred by the respondents. The least chosen option for this attribute was high. For origin, the respondents mainly chose products made in Austria. The level 'developing country' received the lowest score, which means it was the least preferred option. Concerning sustainability certification, the respondents preferred the option Fairtrade, while the no label-option was the least chosen. Finally, for material, the option organic cotton was chosen the most. Conventional cotton was the least preferred option.

Except for the attribute ‘sustainability certification’, the preferences obtained through Hierarchical Bayesian Estimation align with the relative impact of attributes derived from the counting analysis. While according to the Hierarchical Bayesian Estimation, there is a strong preference towards the Fairtrade label compared to the EU Ecolabel, the counting analysis showed very similar results for both labels with a slight preference towards the EU Ecolabel.

Label	**Utility**
Price	
high	-84.02
medium	31.18
low	52.84
Origin	
Austria	46.79
EU	5.64
developing country	-52.44
Sustainability Certification	
EU Ecolabel	17.74
Fairtrade	32.58
no label	-50.32
Material	
recycled cotton	7.65
organic cotton	15.78
conventional cotton	-23.42
none	-58.34

Table 5: Part-worth estimates using Hierarchical Bayesian Estimation

Importance Scores

Importance scores provide an idea of how much impact each attribute can have upon the choice of a product. They are obtained through Hierarchical Bayesian Estimation by calculating the utility range of one attribute relative to the total utility range of all attributes in the conjoint study (cf. Orme, 2002). An example of the calculation is shown in Figure 20. The scores are computed as a percentage score for each attribute and therefore sum up to 100. They are ratio data, which means that an attribute with an importance of 20, i.e. 20%, is twice as important as an attribute with an importance of 10, i.e. 10%. An attribute's importance depends on the other attributes used in the respective study. Attributes can be compared within a conjoint study, however, not across studies using different attribute lists (cf. Orme, 2002).

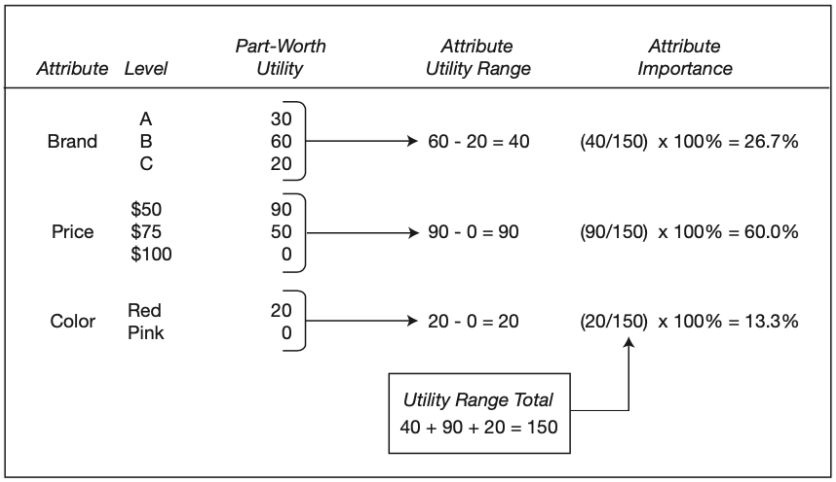

Figure 20: Calculation of Attribute Importance (Orme, n.d.)

The importance scores obtained in the present study are shown in Figure 21. The results illustrate that when it comes to making purchasing decisions for apparel, the price is the most important product attribute with a score of 38.98. The second most important attribute is the product's origin with a score of 25.71. Sustainability certification received an importance score of 22.03. Finally, with a score of only 13.28, the product's material is the least important attribute for purchasing decisions in this context.

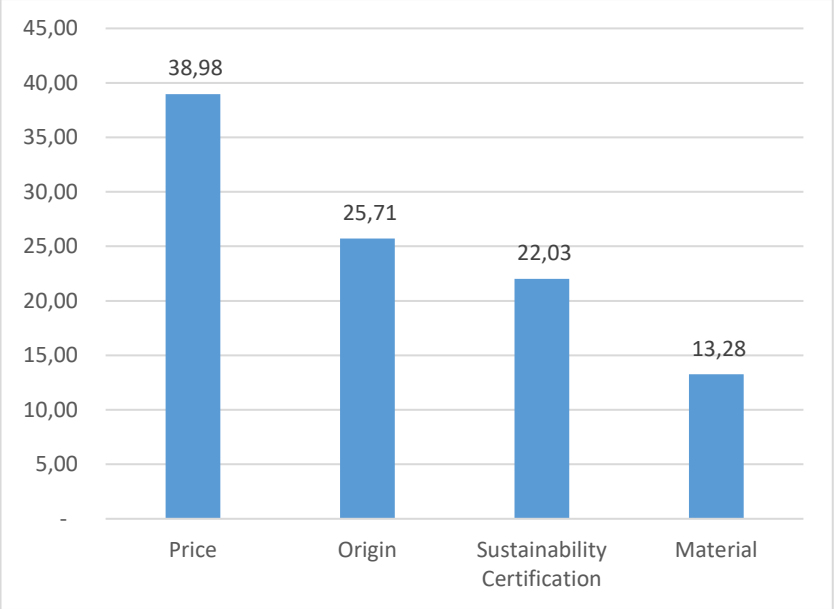

Figure 21: Importance Scores calculated with Hierarchical Bayesian Estimation

4.4 Market Simulation

Sawtooth Lighthouse Studio includes a choice simulator, or market simulator, which uses the part-worth utilities obtained through choice-based questionnaires. The choice simulator provides the ability to compute the share of respondents that would prefer each of a set of product concepts as if these were the only products available. It does so by introducing products within a simulated market scenario and reporting the percentages of respondents choosing each product. That way, the simulation allows researchers to gain more practical and useful insights than those obtained by simply examining part-worth utilities and importance scores. In practice, these insights can help improve already available products or offer additional alternatives which would be preferred by consumers. It is used by analysts and managers in the context of product design, product positioning and pricing strategy. It is important to differentiate the preference shares computed by market simulation from actual market shares, which include external influences such as advertising and product availability (cf. Sawtooth Software, n.d.).

For the purpose of this thesis, the choice simulator was used to assess the willingness to pay depending on each of the attributes ‘origin’, ‘sustainability certification’ and ‘material’. Each attribute

was simulated against the no-choice option at an increasing price. In order to make the scenarios comparable, the remaining attributes were kept the same, i.e. at the level which received the highest utility score in the Hierarchical Bayesian Estimation. Those were Austria for the origin, Fairtrade for the sustainability certification and organic cotton for the material. The results for each attribute will be elaborated on in the following.

Label	**Share of Preference**
Austria	
Austria/low price	97.3%
none	2.7%
Austria/medium price	96.8%
none	3.2%
Austria/high price	68.7%
none	31.3%
EU	
EU/low price	95.7%
none	4.3%
EU/medium price	96.0%
none	4.0%
EU/high price	59.2%
none	40.8%
developing country	
developing country/low price	86.4%
none	13.6%
developing country/medium price	86.3%
none	13.7%
developing country/high price	37.5%
none	62.5%
Parameters kept constant: Sustainability certification: Fairtrade, Material: organic cotton	

Table 6: Choice Simulator - Impact of origin

Table 6 shows the results regarding the willingness to pay depending on the origin of the product. While each level of the attribute 'origin' was tested against the no-choice option at each level of the attribute 'price', the attributes 'sustainability certification' and 'material' were kept constant at the levels 'Fairtrade' and 'organic cotton', respectively. In a first step, products made in Austria were simulated against the no-choice option at an increasing price in order to assess the willingness to pay for those products. With a price increase from low to medium, the share of participants who preferred the product over the 'none' option only slightly decreased from 97.3% to 96.8%. However, when the price was increased from medium to high, there was a significant drop to 68.7% in the willingness to pay. The same can be observed when testing products made in the EU. While the willingness to pay only slightly decreased, by 0.3%, when the price was raised from low to medium, there was a decrease of 36.8% when the price was raised to high. Finally, for products made in developing countries, the willingness to pay for low-priced products was lower than for the other levels of origin, i.e. 86.4%. It stayed almost constant for medium-priced products and decreased to only 37.5% for high-priced products.

In Table 7, the results of the market simulation for different levels of sustainability certification are summarized. In order to test the levels of sustainability certification against the 'none' option at an increasing price, the attributes 'origin' and 'material' were kept constant at the levels 'Austria' and 'organic cotton'. For products holding the EU Ecolabel as well as the Fairtrade label, there was again a slight decrease in willingness to pay a medium price compared to a low price, i.e. 1.1% and 0.5%, respectively. For the EU Ecolabel, the willingness to pay dropped by 31.7% for a high price. For the Fairtrade label, the decrease was 28.1%. While around 97% of respondents chose the products at a low or medium price, only 64.6% chose them at a high price for the EU Ecolabel and 68.7% for the Fairtrade label. For the no label option, the results were somewhat different since there was a drop in willingness to buy of 3.4% already with a price increase from low to medium. When the price was further raised to high, the decrease in participants choosing the products was 43.6%.

Label	Share of Preference
EU Ecolabel	
EU Ecolabel/low price	97.4%
none	2.6%
EU Ecolabel/medium price	96.3%
none	3.7%
EU Ecolabel/high price	64.6%
none	35.4%
Fairtrade	
Fairtrade/low price	97.3%
none	2.7%
Fairtrade/medium price	96.8%
none	3.2%
Fairtrade/high price	68.7%
none	31.3%
no label	
no label/low price	90.0%
none	10.0%
no label/medium price	86.6%
none	13.4%
no label/high price	43.0%
none	57.0%
Parameters kept constant: Origin: Austria, Material: organic cotton	

Table 7: Choice Simulator - Impact of sustainability certification

Finally, the results of the simulation for the attribute 'material' are shown in Table 8. In this scenario, the attributes 'origin' and 'sustainability certification' were kept constant at the levels 'Austria' and 'Fairtrade label'. The levels of material were tested against the no-choice option at an increasing price. The willingness to pay according to material was rather similar to the one for the attributes tested before. For all three levels of material, the difference in willingness to pay a low and medium price was minimal, i.e. between 0.3% and 1.1%. For recycled cotton, the share of participants choosing the product at a high price dropped to 64.8% compared to a medium price with 96%. The same occurred for organic

cotton, were the share decreased from 96.8% for a medium price to 68.7% for a high price. The effect was even stronger for conventional cotton, where the willingness to pay decreased from 93.9% to 57.9%.

Label	**Share of Preference**
recycled cotton	
recycled cotton/low price	96.3%
none	3.7%
recycled cotton/medium price	96.0%
none	4.0%
recycled cotton/high price	64.8%
none	35.2%
organic cotton	
organic cotton/low price	97.3%
none	2.7%
organic cotton/medium price	96.8%
none	3.2%
organic cotton/high price	68.7%
none	31.3%
conventional cotton	
conventional cotton/low price	95.0%
none	5.0%
conventional cotton/medium price	93.9%
none	6.1%
conventional cotton/high price	57.9%
none	42.1%
Parameters kept constant: Origin: Austria, Sustainability certification: Fairtrade	

Table 8: Choice Simulator - Impact of material

After conducting the market simulation and assessing the willingness to pay for all three attributes, it can be concluded that the participants were generally willing to pay a medium price for the products offered. However, when the price was increased to high, the percentage of respondents choosing the

product over the no-choice option decreased significantly for all product attributes. The decrease in the number of people choosing the products even at a high price was significantly stronger in the case of the levels ‘developing country’ for the attribute ‘origin’, ‘no label’ for the attribute ‘sustainability certification’ and ‘conventional cotton’ for the attribute ‘material’. This indicates that the willingness to pay is higher for the more sustainable product options concerning all three attributes.

4.5 Utilities according to Demographic Variables

For this part of the analysis, the sample was divided into segments according to demographic variables. These segments were analyzed according to Hierarchical Bayesian Estimation using Sawtooth Lighthouse’s analysis tool. Since samples must contain at least 30 individuals in order to be representative for the population (Field, 2009), only those segments were taken into consideration for the following analysis. Some segments were combined for this purpose. Following the Hierarchical Bayesian Estimation, an Independent Samples t Test was conducted using SPSS. The results of the t Test were used to assess the significance of the values obtained in the analysis. The results of the test can be found in the appendix.

Preferences according to Gender

From the variable gender, only the groups female and male were used for the analysis as they contained more than 30 respondents, i.e. 80 and 66, respectively. Table 9 shows the utility scores for all four attributes for females and males. Also, the scores of the total sample have been included in the table for comparison. When it comes to the preferred level of each of the attributes, there are no differences between the gender groups. The attribute levels preferred by both females and males are low price, produced in Austria, Fairtrade certified and made from organic cotton. These preferences align with those of the total sample.

Label	Utility		
	Total	Female	Male
Price			
high	-84.02	-81.31	-87.83
medium	31.18	26.90	36.17
low	52.84	54.41	51.65
Origin			
Austria	46.79	48.31	45.11
EU	5.64	5.36	5.90
developing country	-52.44	-53.67	-51.02
Sustainability Certification			
EU Ecolabel	17.74	17.72	18.05
Fairtrade	32.58	35.87	28.11
no label	-50.32	-53.59	-46.15
Material			
recycled cotton	7.65	9.61	3.99
organic cotton	15.78	15.88	16.33
conventional cotton	-23.42	-25.50	-20.31
none	-58.34	-59.94	-57.48

Table 9: Utilities according to gender

The results obtained in the Hierarchical Bayesian Estimation are expressed in zero-centered scores, which are raw scores transformed into scores using the same interval for all participants. Therefore, they are comparable between segments, not only in their ranking but also concerning the height of the scores (cf. Sawtooth Software, n.d.). An Independent Samples t Test has been conducted in order to find out whether there are any significant differences in the utilities for both genders (see Appendix: 2.

Independent Samples t Test: Gender). For the gender-comparison, significant results have been found in the attributes ‘price’ and ‘sustainability certification’. Concerning price, there is a significant difference in the utilities for the level ‘medium’ between men and women. The utility of a medium price is higher for men than for women. When looking at the utility scores for sustainability certification, there is a significant difference in the utilities for the level ‘Fairtrade’. Women showed a higher utility score for products certified with the Fairtrade label than men. For all four attributes, the ranking of the levels is the same for both genders.

When it comes to the importances assigned to the four attributes, Table 10 summarizes the differences between female and male respondents. The most noticeable difference can be found in the numbers for the attribute ‘price’. The importance score for men is 45%, while the score for women is only 34%. This result shows that for men, price is more important in their purchasing decisions than for women. For the other three attributes, the scores for the female participants are slightly higher than those of the male participants, which indicates that women value the attributes ‘origin’, ‘sustainability certification’ and ‘material’ somewhat more than men.

Attribute	**Importance**		
	Total	Female	Male
Price	38.98	34.47	45.02
Origin	25.71	27.43	23.27
Sustainability Certification	22.03	24.54	19.01
Material	13.28	13.56	12.70

Table 10: Importance Scores according to gender

Label	Utility		
	Total	Younger (≤ 34)	Older (≥ 35)
Price			
high	-84.02	-93.52	-66.31
medium	31.18	31.59	30.42
low	52.84	61.93	35.89
Origin			
Austria	46.79	42.39	55.01
EU	5.64	7.85	1.53
developing country	-52.44	-50.23	-56.55
Sustainability Certification			
EU Ecolabel	17.74	18.57	16.18
Fairtrade	32.58	30.40	36.65
no label	-50.32	-49.97	-52.84
Material			
recycled cotton	7.65	6.34	10.08
organic cotton	15.78	14.68	17.82
conventional cotton	-23.42	-21.03	-27.90
none	-58.34	-58.16	-58.69

Table 11: Utilities according to age

Preferences according to Age

Concerning age, the sample was divided into two age groups, the first one being 34 or younger and the second one 35 or older. This resulted in a sample size of 97 and 52, respectively. Again, the ranking of preferences for the four attributes is the same in both groups. However, in the Independent Samples t Test conducted (see Appendix: 3. Independent Samples t Test: Age) significant differences in utilities

between the younger and the older group have been found in all four attributes. When it comes to price, the younger respondents showed a significantly lower utility for high prices and a significantly higher utility for low prices, compared to the older participants. This result indicates that for younger consumers, the price of a product is significantly more important. For the attributes 'origin' and 'sustainability certification', the older group had significantly higher utilities for the levels 'Austria' and 'Fairtrade'. Finally, the results for the attribute 'material' showed a significantly lower utility score for conventional cotton among older participants. These findings indicate that for consumers older than 35, products made in Austria and certified with the Fairtrade label are more valuable than for younger consumers, while products made from conventional cotton are less valuable. The results are summarized in Table 11.

When it comes to the importance scores, it is striking that for the older group, the attributes 'price' and 'origin' of the product are almost equally important, with 29% each. However, for the younger group, with 43%, price is considerably more important than origin with just under 24%. The scores of the remaining attributes are slightly higher for the older group, which means for them the attributes are somewhat more important. The exact scores can be found in Table 12.

Attribute	**Importance**		
	Total	Younger (≤ 34)	Older (≥ 35)
Price	38.98	43.01	29.01
Origin	25.71	23.72	29.04
Sustainability Certification	22.03	21.11	25.70
Material	13.28	12.16	16.25

Table 12: Importance Scores according to age

Label	Utility		
	Total	Non-Academics	Academics
Price			
high	-84.02	-74.72	-87.21
medium	31.18	28.84	31.98
low	52.84	45.88	55.23
Origin			
Austria	46.79	52.63	44.79
EU	5.64	1.04	7.22
developing country	-52.44	-53.68	-52.01
Sustainability Certification			
EU Ecolabel	17.74	14.10	18.98
Fairtrade	32.58	35.05	31.74
no label	-50.32	-49.15	-50.72
Material			
recycled cotton	7.65	14.70	5.23
organic cotton	15.78	10.77	17.49
conventional cotton	-23.42	-25.46	-22.73
none	-58.34	-61.79	-57.17

Table 13: Utilities according to education

Preferences according to Education

The variable education was divided into two subgroups, i.e. academics and non-academics. Academics include those possessing a bachelor's, master's or PhD degree. Non-academics are respondents that have completed compulsory school, an apprenticeship or high school. The sample sizes in this case are 111 for academics and 38 for non-academics. Looking at the utility scores, the attribute levels preferred

by both groups are low price, made in Austria and Fairtrade certified. Again, an Independent Samples t Test has been conducted in order to find potential significant differences in utilities across the two groups (see Appendix: 4. Independent Samples t Test: Education). There are no significant differences in the utilities for price, origin and sustainability certification. However, when it comes to material, significant differences have been found in the utilities of recycled and organic cotton. Specifically, non-academics prefer recycled cotton while academics prefer organic cotton. These results can be found in Table 13.

When comparing groups according to education, the importance scores are rather similar compared to other variables. However, price is more important for academics, with a score of 40%, than for non-academics, with a score of almost 34%. Origin and sustainability certification, on the other hand, are slightly more important for respondents without a university degree. The scores for material are almost the same between the two groups. The results are summarized in Table 14.

Attribute	**Importance**		
	Total	Non-Academics	Academics
Price	38.98	33.86	40.13
Origin	25.71	27.82	24.58
Sustainability Certification	22.03	24.70	21.44
Material	13.28	13.62	13.84

Table 14: Importance Scores according to education

Preferences according to Occupation

Concerning occupation, only the segments of student and employed were used in this part of the analysis, since the other categories contained less than 30 respondents. There were 31 students and 99 employees in the sample. Their results are shown in Table 15. Like for the total sample, the preferred product for both groups is low-priced, made in Austria, Fairtrade certified and made from organic cotton. However, as shown by the Independent Samples t Test (see Appendix: 5. Independent Samples t

Test: Occupation), for the attribute ‘origin’, there is a significant difference in the utility of products made in Austria. The utility of these products is significantly higher among employed participants than among students. No significant differences between students and employees have been found for the remaining attributes.

Label	**Utility**		
	Total	Student	Employed
Price			
high	-84.02	-94.92	-78.52
medium	31.18	28.45	31.48
low	52.84	66.47	47.04
Origin			
Austria	46.79	39.58	50.91
EU	5.64	8.98	4.50
developing country	-52.44	-48.56	-55.41
Sustainability Certification			
EU Ecolabel	17.74	18.54	17.19
Fairtrade	32.58	29.27	32.62
no label	-50.32	-47.81	-49.80
Material			
recycled cotton	7.65	7.49	7.63
organic cotton	15.78	13.04	16.78
conventional cotton	-23.42	-20.53	-24.42
none	-58.34	-52.96	-61.09

Table 15: Utilities according to occupation

As shown in Table 16, the importance scores between students and employees again differ the most in terms of price. While for students, price has an importance score of over 46%, for employees the score is only 35%. For the other three attributes 'origin', 'sustainability certification' and 'material', the scores are somewhat higher for employees.

Attribute	**Importance**		
	Total	Student	Employed
Price	38.98	46.51	35.15
Origin	25.71	22.09	28.05
Sustainability Certification	22.03	19.98	21.38
Material	13.28	11.41	15.42

Table 16: Importance Scores according to occupation

Preferences according to Income

The sample was divided into two segments based on the variable income. The first group contains all respondents earning up to €2000 per month and the second group those earning more than €2000. Those respondents who chose not to share their income were left out for the purpose of this analysis, since their number was below 30. The lower income group contains 58 participants and the higher income group 74. Table 17 shows the respective results. The rankings of the attribute levels again match those of the total sample. Still, for the attribute 'price' there are significant differences between participants receiving a lower income and those receiving a higher income. While the utility of low-priced products is significantly higher among those earning less, the utility of high-priced products is significantly lower compared to those earning more. For the remaining attributes, the analysis did not show significant differences related to income. The significant differences were proven by the Independent Samples t Test conducted for the two income groups (see Appendix: 6. Independent Samples t Test: Income).

Label	Utility		
	Total	Income ≤ €2000	Income > €2000
Price			
high	-84.02	-98.09	-75.37
medium	31.18	34.10	29.25
low	52.84	64.00	46.12
Origin			
Austria	46.79	39.99	50.37
EU	5.64	9.86	4.09
developing country	-52.44	-49.85	-54.46
Sustainability Certification			
EU Ecolabel	17.74	19.54	17.49
Fairtrade	32.58	28.62	34.95
no label	-50.32	-48.17	-52.44
Material			
recycled cotton	7.65	4.11	10.65
organic cotton	15.78	16.08	14.92
conventional cotton	-23.42	-20.20	-25.58
none	-58.34	-46.90	-66.22

Table 17: Utilities according to income

The results summarized in Table 18 show that in terms of importance, the most noticeable differences can again be found in the scores for the attribute 'price'. For respondents with lower incomes, price has an importance score of 45%, while for those with higher incomes it is only 32%. In turn, the other three attributes are slightly more important for participants earning higher incomes.

Attribute	**Importance**		
	Total	Income ≤ 2000€	Income > 2000€
Price	38.98	45.20	32.36
Origin	25.71	23.56	28.05
Sustainability Certification	22.03	19.94	24.72
Material	13.28	11.31	14.87

Table 18: Importance Scores according to income

After comparing the utilities and the importance scores on the basis of demographic variables, it can be concluded that while the rankings of the attributes are rather similar between the different groups, significant differences in utilities can be found concerning all demographic variables and attributes.

5. Discussion and Limitations

In this chapter, I will discuss and interpret the results obtained in the empirical analysis conducted on purchasing behavior for sustainable apparel. I will use the results to answer the research questions as well as the hypotheses, as stated below. Furthermore, I will discuss the influence of demographic variables on willingness to buy sustainable apparel. Finally, I will elaborate on limitations of the present study as well as possibilities for future research.

5.1 Key Product Attributes of Sustainable Apparel

The first research question "*Which product attributes motivate consumers to buy sustainable apparel?"* relates to Hypotheses 1a, 2a and 3a. The hypotheses are based on the product attributes 'sustainability certification', 'origin' and 'material', respectively. The aim of this research question was to find out which of these attributes have a significant influence on purchasing decisions for apparel, more specifically for sustainable apparel products. For this purpose, I calculated the utilities of the different levels of each attribute, as discussed in the empirical analysis chapter.

Sustainability certification: The utility scores obtained in the empirical analysis showed considerably higher results for the Fairtrade label and the EU Ecolabel than for non-certified products. Accordingly, the number of participants who chose products certified by either of the two labels was significantly higher than the share of those who chose products without a label. Therefore, Hypothesis 1a was accepted. It can be concluded that the product attribute 'sustainability certification' motivates consumers to buy sustainable apparel. This finding aligns with the research of Gonçalves and Silva (2021) and Kianpour et al. (2012), who also found that consumers prefer products holding sustainability labels over non-certified products.

H1a: All other attributes equal, consumers choose apparel products certified with the Fairtrade label or the EU Ecolabel over non-certified apparel products.	***accepted***

Origin: For the attribute 'origin', products made locally in Austria received the highest utility score, followed by products made in the European Union. Products from developing countries received the lowest utility score. Similarly, products made in Austria were chosen by the participants significantly more often, followed by products made in the EU. Products imported from developing countries received the lowest share. Consequently, Hypothesis 2a could be accepted. A products' origin also motivates consumers to buy sustainable apparel. The researchers Norum and Ha-Brookshire (2011) and Hustvedt and Bernard (2008) came to similar conclusions.

H2a: All other attributes equal, consumers choose apparel products made in Austria or the EU over apparel products made in developing countries.	***accepted***

Material: When it comes to material, the more sustainable fibers recycled cotton and organic cotton received considerably higher utility scores than conventional cotton. Also, recycled and organic cotton were chosen by significantly more participants than the least sustainable option conventional cotton. Due to these results, Hypothesis 3a was accepted. Like sustainability certification and origin, a product's material motivates sustainable consumption. Similar results were found in previous studies, such as those by Delate et al. (2021) and Hustvedt and Bernard (2008).

H3a: All other attributes equal, consumers choose apparel products made from organic or recycled cotton over apparel products made from conventional cotton.	***accepted***

These results indicate that when faced with a purchasing decision, consumers prefer to buy the more sustainable option concerning the attributes included in the research, i.e. sustainability certification, origin and material. Specifically, consumers prefer to buy products made in Austria or the EU that contain recycled or organic cotton and are certified by either the EU Ecolabel or the Fairtrade label over the less sustainable options. To answer the first research question, sustainability certifications, local production and sustainable materials motivate consumers to buy sustainable apparel. The study's results comply with those of other researchers, as discussed in the literature review part of this thesis, such as Gonçalves and Silva (2021) for sustainability certification, Norum and Ha-Brookshire (2011) for origin and Delate et al. (2021) for material.

The following chapters will discuss the role of the products' price and consumers' willingness to pay for sustainable apparel as well as the influence of demographic factors.

5.2 Willingness to Pay for Sustainable Apparel

The second research question *"Which product attributes motivate consumers to pay a higher price for sustainable apparel?"* is connected to Hypotheses 1b, 2b and 3b. The hypotheses again relate to the attributes 'sustainability certification', 'origin' and 'material', respectively. The aim was to determine consumers' willingness to pay for sustainable clothing depending on these attributes. For this purpose, I conducted a market simulation to test what share of participants would choose specific attribute combinations at increasing prices. I will discuss the results for the tested attributes in the following.

Sustainability certification: The shares of preference for the attribute 'sustainability certification' show that, keeping the other attributes 'origin' and 'material' constant, the majority of participants chose a product certified by the EU Ecolabel over the 'none' option even at a high price, and an even larger number of participants preferred Fairtrade products at a high price. For products without a sustainability certification sold at a high price, the share of respondents choosing the product over the 'none' option was considerably lower, i.e. less than half of the participants were willing to pay a high price for products without a certification. This result indicates that the willingness to pay is higher for sustainability certified products. Therefore, Hypothesis 1b was accepted. These results match those of the studies by Gonçalves and Silva (2021) for the EU Ecolabel and Ruggeri et al. (2021) for Fairtrade.

H1b: All other attributes equal, consumers are willing to pay a higher price for apparel products certified with the Fairtrade label or the EU Ecolabel than for non-certified apparel products.	***accepted***

Origin: When looking at the shares of preference depending on the products' origin and keeping sustainability certification and material constant, 6 out of 10 participants were willing to pay a high price for products made in the EU and more than two thirds chose products made in Austria sold at a high price. Then again, only about one third still chose a product made in a developing country sold at a high

price over the 'none' option. Since the number of participants choosing the product at a high price was significantly higher for products made in Austria and the EU than for those produced in developing countries, it can be concluded that the willingness to pay is higher for products of local or European origin. Consequently, Hypothesis 2b could be accepted. Similarly, the results of the studies by Hustvedt and Bernard (2008) and Norum and Ha-Brookshire (2011) suggested that consumers are willing to pay a higher price for locally produced rather than imported cotton products.

H2b: All other attributes equal, consumers are willing to pay a higher price for apparel products made in Austria or the EU than for apparel products made in developing countries.	***accepted***

Material: Finally, for the attribute 'material' and keeping the remaining attributes 'origin' and 'sustainability certification' constant, the shares of preference show that almost two thirds of respondents were willing to pay a high price for a t-shirt made of recycled cotton and even more than two thirds for a product made from organic cotton. Then again, less than 6 out of 10 participants wanted to buy a product made from conventional cotton at a high price. This again indicates a higher willingness to pay among consumers for products made from sustainable – such as recycled and organic – materials than for those made from conventional fabric. However, looking at the willingness to pay a high price for recycled and conventional cotton, the difference is much smaller for material than for the other attributes 'sustainability certification' and 'origin'. Still, Hypothesis 3b could be accepted due to the difference found. This result aligns with the research by Delate et al. (2021), who also found consumers to be willing to pay more for sustainable materials.

H3b: All other attributes equal, consumers are willing to pay a higher price for apparel products made from organic or recycled cotton than for apparel products made from conventional cotton.	***accepted***

The market simulation showed that all of the tested attributes, i.e. origin, sustainability certification and material influence consumers' willingness to pay for sustainable apparel. Specifically, the majority of

study respondents chose products made in Austria or the EU from recycled or organic cotton and holding either the EU Ecolabel or the Fairtrade label even at a high price. To answer the second research question, sustainability certifications, local production and sustainable materials motivate consumers to pay a higher price for sustainable apparel products. Similar results have been found in previous studies by researchers such as Gonçalves and Silva (2021) for sustainability certification, Norum and Ha-Brookshire (2011) for origin and Delate et al. (2021) for material.

5.3 Influence of Demographic Factors

In addition to the general preferences and willingness to pay for sustainable apparel, I have incorporated demographic factors into the analysis as moderating variables. Chapter 4.5 of this thesis discussed the influence demographic factors have on the perceived utility of product attributes. The utility of the attributes 'price', 'sustainability certification', 'origin' and 'material' have been analyzed in relation to the demographic variables gender, age, education, occupation and income. I have found significant differences between the demographic groups in relation to some of the attributes for all variables.

In terms of gender, significant differences have been detected for the attributes 'price' and 'sustainability certification'. Men showed a higher utility score for medium-priced products than women did, which means that the product's price is more significant for men. This finding is somewhat contradictory to the statement of Bloodhart and Swim (2020), who stated that since men earn higher salaries than women on average, they might not be as price sensitive when it comes to sustainable purchasing. Women, on the other hand, seem to care more about social sustainability than men since the utility of the Fairtrade label, which represents the social aspect, is significantly higher for women. This aligns with typically feminine values such as loving and caring for others and traditional caretaking roles of women (Bloodhart & Swim, 2020).

Out of all demographic variables tested, the highest number of significant differences has been found between younger and older participants, i.e. those aged 34 or younger and those aged 35 or older. These results indicate that, out of the demographic variables included in the analysis, age has the most

impact on product preferences. Specifically, significant differences have been found for all four attributes. Concerning price, the analysis showed a significantly higher utility of low prices as well as a significantly lower utility of high prices among the younger respondents compared to the older. This might be due to the relatively lower disposable incomes of younger compared to older people, which results in a lower purchasing power among this group (Kingman, 2012). In terms of origin of products, the utility of products made in Austria was significantly higher among the older group, which indicates that older consumers value local production more than younger consumers. When it comes to sustainability labels, the utility of the Fairtrade label was significantly higher among the older respondents. This result shows that older consumers put more emphasis on social sustainability than younger consumers. Finally, for material, the utility of conventional cotton was found to be significantly lower for older consumers, which indicates that this group has a stronger aversion to clothes made from conventional cotton. The preference for products that are locally produced and Fairtrade certified as well as the aversion against apparel made from conventional cotton suggest a stronger tendency to buy sustainably among older consumers. These results align with the findings of Diamantopoulos et al. (2003), however contrast with those of Dudhale et al. (2019) and Niinimäki and Hassi (2011), who found more sustainable purchasing behaviors among younger consumers.

Comparing respondents on the basis of education, i.e. academics and non-academics, showed significant differences in utilities only for the attribute ‘material’, specifically for recycled and organic cotton. Academics showed higher utility scores for organic cotton than non-academics, while non-academics showed higher utilities for recycled cotton. This indicates that, while all of them valued sustainable materials more than conventional materials, these groups prefer different types of sustainable materials. This result is somewhat different from that of Chekima et al. (2016) who found that individuals with lower education levels are generally less likely to engage in sustainable consumption than those with higher education levels.

I have found little prior research on a potential influence of consumers’ occupational status on their tendency to buy sustainably. When it comes to occupation, the only significant difference found between students and employees in the present study was in the attribute ‘origin’. Specifically, the

utility score of products made in Austria was higher among employees than students. This result indicates that employees, more than students, value local production of apparel.

Finally, I drew a comparison on the basis of income, i.e. participants earning a monthly salary of less than €2000 and those earning more than €2000. Prior research on income and sustainable purchasing behavior did not provide conclusive findings, since both high consumption levels (Gatersleben, 2001) as well as sustainable consumption (Chekima et al., 2016) can be related to status, and therefore to high income. However, the present study showed significant results for the attribute 'price'. For the lower income group, the utility of high prices was significantly lower, and the utility of low prices was significantly higher compared to the higher income group. Again, this can be traced back to the reduced purchasing power of the lower income group.

In summary, it can be concluded that all demographic variables included in the present study had an impact on preference for sustainable apparel products, at least concerning some of the tested product attributes, i.e. price, sustainability certification, origin and material. These findings mostly align with those of other researchers who examined the relation between demographic variables and green purchasing behavior, as discussed above.

5.4 Limitations and Future Research

One of the main limitations of choice-based conjoint analysis is that it cannot capture the large number of attributes included in real marketing problems (Wyner, 1992). Due to the nature of the research method and the scope of the research conducted for the purpose of this thesis, the number of product attributes used for the choice-based conjoint analysis was limited. Future research could investigate the influence other product attributes have on purchasing decisions for sustainable apparel. Attributes proposed by other researchers that were left out of this study would be the product's brand (Grewal et al., 1998; Malik et al., 2013), durability or lifespan (Kianpour et al., 2012), and fiber production method (Hustvedt & Bernard, 2008; Norum & Ha-Brookshire, 2011).

In the choice-based questions of this thesis' study, the price levels used were low, medium and high instead of specific numbers in order not to bias the respondents' perception of the prices. On the

downside, the use of these terms instead of numbers made it impossible to determine the exact willingness to pay for each product feature. In future research, specific prices could be set in order to be able to determine the participants' willingness to pay more precisely.

As mentioned in Chapter 3.3, due to the relatively small sample size of 149 participants, it was not possible to include more than one prohibition of combinations of attributes in the choice-based questions. Therefore, the choice tasks included somewhat unrealistic combinations of attributes, such as products made in Austria or Fairtrade products sold at a low price. This was due to the scope of the thesis. However, in future research a larger sample could be tested including further prohibitions, to make sure no unrealistic combinations of product features appeared in the survey.

The research method itself also entails some more limitations and has therefore been criticized by researchers in the past. Urama and Hodge (2006) concluded that the stated preferences in a hypothetical market situation, i.e. intended behavior, do not necessarily resemble actual market behavior. Therefore, analysis methods focusing on the former often get to different conclusions than those using the latter. Another issue is that with conjoint analysis, the consumer is assumed to choose one of the product options offered, or the 'none' option. However, they cannot choose two equally preferred products (Wyner, 1992).

6. Conclusion

The aim of this master's thesis was to investigate which product attributes influence consumers' preference for sustainable compared to non-sustainable apparel products, as well as their willingness to pay for sustainable products considering the usually higher price of such products. In the literature review conducted for the purpose of this thesis, the most important attributes influencing consumer purchasing decisions were detected: price, origin, sustainability certification and material. These attributes were used in the empirical analysis. Besides the product attributes, the theoretical part of this thesis discussed relevant aspects of sustainability in general and in the apparel industry, as well as factors motivating sustainable consumption. From the literature review, two research questions were derived:

I. *Which product attributes motivate consumers to buy sustainable apparel?*

II. *Which product attributes motivate consumers to pay a higher price for sustainable apparel?*

In order to answer the research questions, a choice-based conjoint analysis was conducted using an online questionnaire. Various analyses, such as counts analysis and Hierarchical Bayesian Estimation, were performed on the obtained data to investigate the participants' preferences. Additionally, a market simulation was conducted in order to test the respondents' willingness to pay. Finally, the influence of various demographic factors on purchasing decisions and preferences was examined.

To answer the first research question, all tested attributes 'origin', 'sustainability certification' and 'material' were found to be factors favoring the consumption of sustainable apparel products. Specifically, concerning origin, the highest preference scores were found for products made in Austria. Products originating from EU countries received the second highest preference scores, while products from developing countries were the least chosen by the respondents. For sustainability certification, the preferred attributes were the EU Ecolabel as well as the Fairtrade label, compared to products without a sustainability label. For material, the participants preferred recycled as well as organic cotton over conventional fabric.

Concerning the second research question, the market simulation showed that the willingness to pay was higher for the more sustainable options in all three tested attributes. This means that the participants were willing to pay a higher price for products made in Austria and the EU than in developing countries, for products certified by the EU Ecolabel or the Fairtrade label than for products without a label and finally for products made from recycled or organic cotton than for those made from conventional cotton.

The demographic factors found to have the most significant influence on product preferences and willingness to pay in this context were gender and age. Especially for different age groups, significant differences were found in preferences in terms of all four attributes. This indicates that out of the demographic variables tested, age has the most significant influence on product preferences.

The following managerial implications can be drawn from the results of the analyses conducted for this thesis. The findings indicate that from a strategic and marketing point of view, the product attributes found to have a significant influence on purchasing decisions for sustainable apparel should be stressed in order to motivate sustainable consumption and promote products possessing these attributes. It can also be concluded that a higher price can be charged for products produced locally, from sustainable materials and certified by a sustainability label without a high risk of losing significant shares of consumers, since the willingness to pay for these products is significantly higher than for non-sustainable alternatives.

Finally, in terms of sustainability, the results of the analysis conducted for this master's thesis contribute to the knowledge base on which factors motivate consumers to buy green products. Knowing which factors motivate sustainable consumption makes a valuable contribution to a more sustainable future of the apparel industry. However, there is still a large potential for change in terms of more sustainable production methods as well as awareness among consumers.

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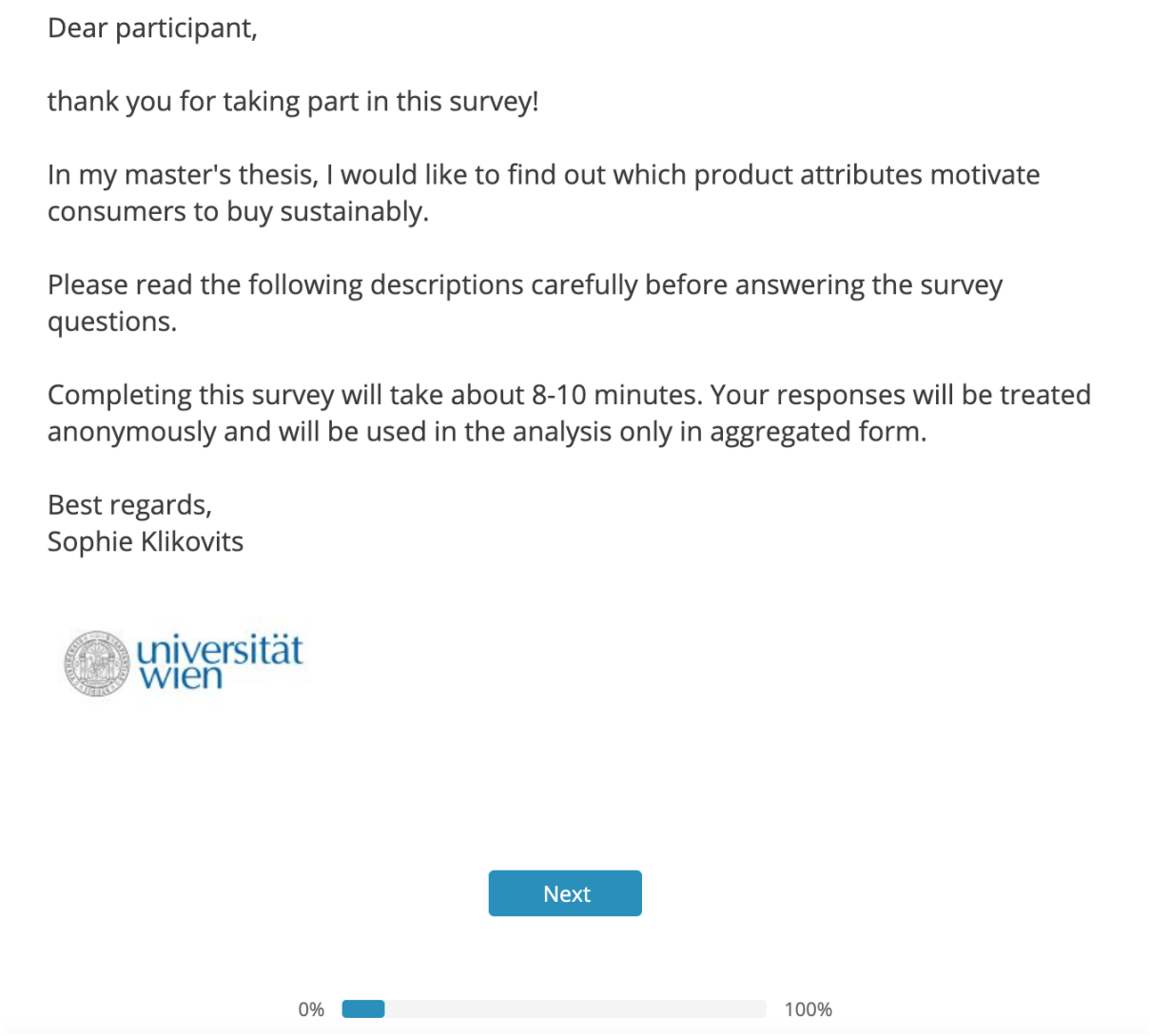
Appendix

1. Survey Screenshots



Environmental sustainability refers to the responsible management of natural resources.

How important is environmental sustainability to you when making purchasing decisions?

- ◯ very important
- ◯ somewhat important
- ◯ neutral
- ◯ somewhat unimportant
- ◯ not important at all

Social sustainability is defined as a measure of the human's welfare.

How important is social sustainability to you when making purchasing decisions?

- ◯ very important
- ◯ somewhat important
- ◯ neutral
- ◯ somewhat unimportant
- ◯ not important at all

Back Next

0% 100%

Are you familiar with the Fairtrade label?

- ◯ yes
- ◯ no

Which aspects **do** you associate with the Fairtrade label? If you answered 'no' in the previous question, consider what you **might** associate with the label.
(Multiple repsonses possible)

- ☐ Protection of farmers
- ☐ Fair prices
- ☐ Quality
- ☐ Less pollution
- ☐ Decent working conditions
- ☐ Sustainable materials

Back Next

0% 100%

Are you familiar with the EU Ecolabel?

- ◯ yes
- ◯ no

Which aspects **do** you associate with the EU Ecolabel? If you answered 'no' in the previous question, consider what you **might** associate with the label.
(Multiple repsonses possible)

- ☐ Protection of farmers
- ☐ Fair prices
- ☐ Quality
- ☐ Less pollution
- ☐ Decent working conditions
- ☐ Sustainable materials

Back Next

0% 100%

Fairtrade:

Fairtrade stands for social sustainability including better prices, decent working conditions and a fairer deal for farmers and workers in developing countries. The label is awarded to products produced worldwide.

EU Ecolabel:

The EU Ecolabel stands for quality while meeting the highest environmental standards such as sustainable materials and less pollution. The certification is awarded to products manufactured in the European Union as well as imported products.

Back Next

0% 100%

Now imagine yourself in a clothing store. When you are buying a t-shirt, ...

... what would you consider to be a low price?

- ◯ <10€
- ◯ 10-20€
- ◯ 20-30€

... what would you consider to be a medium price?

- ◯ 15-25€
- ◯ 25-35€
- ◯ 35-45€

... what would you consider to be a high price?

- ◯ 30-40€
- ◯ 40-50€
- ◯ >50€

Back Next

0% 100%

In the following, you are going to be presented with nine buying situations. In each situation you get to choose between three almost identical t-shirts which differ only in their price, origin, sustainability certification and material.

Please select your preferred option in each task. If none of the provided options meets your preferences, you can select 'none' as a response.

Back Next

0% 100%

When looking for a t-shirt, which one of the following items would you choose?

(1 of 9)

Price	high	low	medium
Origin	EU	developing country	developing country
Sustainability Certification	EU Ecolabel	Fairtrade	no label
Material	recycled cotton	conventional cotton	conventional cotton
	Select	Select	Select

none: I wouldn't choose any of these.

Select

Back Next

0% 100%

How would you rate the Fairtrade label on the following scale?

- ◯ strongly trustworthy
- ◯ trustworthy
- ◯ neutral
- ◯ untrustworthy
- ◯ strongly untrustworthy

How would you rate the EU Ecolabel on the following scale?

- ◯ strongly trustworthy
- ◯ trustworthy
- ◯ neutral
- ◯ untrustworthy
- ◯ strongly untrustworthy

Back Next

0% 100%

How old are you?

- ◯ 18-24
- ◯ 25-34
- ◯ 35-49
- ◯ 50-64
- ◯ 65+

What is your gender?

- ◯ female
- ◯ male
- ◯ diverse

What is your highest completed level of education?

- ◯ compulsory school
- ◯ apprenticeship
- ◯ high school diploma
- ◯ Bachelor's degree
- ◯ Master's degree / Magister
- ◯ PhD / Doktor

What is your current occupation?

- ◯ student
- ◯ employed
- ◯ self-employed
- ◯ unemployed
- ◯ retired

What is your current monthly net income?

- ◯ <1000€
- ◯ 1000-2000€
- ◯ 2000-3000€
- ◯ 3000-5000€
- ◯ >5000€
- ◯ prefer not to say

Back Next

0% 100%

Thank you for taking this survey! Your responses have been submitted successfully.

0% 100%

2. Independent Samples t Test: Gender

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
high	equal variances assumed	.353	.553	-.782	144	.218	.435	-6.51705	8.33156	-22.98500	9.95091
	equal variances not assumed			-.775	132.856	.220	.440	-6.51705	8.40990	-23.15166	10.11757
medium	equal variances assumed	3.108	.080	2.613	144	.005	.010	9.27361	3.54944	2.25787	16.28934
	equal variances not assumed			2.571	127.814	.006	.011	9.27361	3.60650	2.13743	16.40978
low	equal variances assumed	2.503	.116	-.344	144	.366	.732	-2.75656	8.02311	-18.61485	13.10172
	equal variances not assumed			-.337	126.155	.368	.736	-2.75656	8.16867	-18.92192	13.40879
Austria	equal variances assumed	.415	.520	-.615	144	.270	.540	-3.20163	5.20952	-13.49863	7.09537
	equal variances not assumed			-.621	142.937	.268	.536	-3.20163	5.15590	-13.39330	6.99003
EU	equal variances assumed	.363	.548	.169	144	.433	.866	.54589	3.23225	-5.84289	6.93468
	equal variances not assumed			.168	137.352	.433	.866	.54589	3.24042	-5.86168	6.95346
developing country	equal variances assumed	.368	.545	.598	144	.275	.551	2.65574	4.44121	-6.12265	11.43414
	equal variances not assumed			.601	141.297	.274	.549	2.65574	4.41741	-6.07702	11.38850
EU Ecolabel	equal variances assumed	.069	.793	.116	144	.454	.908	.32377	2.79405	-5.19887	5.84642
	equal variances not assumed			.115	136.300	.454	.908	.32377	2.80595	-5.22506	5.87260
Fairtrade	equal variances assumed	.082	.776	-2.658	144	.004	.009	-7.76354	2.92058	-13.53628	-1.99080
	equal variances not assumed			-2.674	141.554	.004	.008	-7.76354	2.90301	-13.50241	-2.02468
no label	equal variances assumed	.372	.543	1.961	144	.026	.052	7.43977	3.79326	-.05790	14.93744
	equal variances not assumed			1.947	134.364	.027	.054	7.43977	3.82070	-.11672	14.99625
recycled cotton	equal variances assumed	1.317	.253	-1.494	144	.069	.137	-5.63245	3.76886	-13.08189	1.81699
	equal variances not assumed			-1.471	127.953	.072	.144	-5.63245	3.82879	-13.20838	1.94349
organic cotton	equal variances assumed	.535	.466	.168	144	.433	.867	.44486	2.64429	-4.78177	5.67150
	equal variances not assumed			.167	135.819	.434	.867	.44486	2.65757	-4.81071	5.70043
conventional cotton	equal variances assumed	.219	.640	1.733	144	.043	.085	5.18759	2.99287	-.72804	11.10321
	equal variances not assumed			1.722	134.952	.044	.087	5.18759	3.01189	-.76902	11.14419
none	equal variances assumed	.186	.667	.285	144	.388	.776	2.46135	8.64267	-14.62153	19.54424
	equal variances not assumed			.288	143.187	.387	.774	2.46135	8.54487	-14.42904	19.35174

3. Independent Samples t Test: Age

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
high	equal variances assumed	1.643	.202	-3.279	147	<.001	.001	-27.20506	8.29702	-43.60192	-10.80821
	equal variances not assumed			-3.155	93.602	.001	.002	-27.20506	8.62318	-44.32754	-10.08258
medium	equal variances assumed	3.790	.053	.313	147	.377	.754	1.167008	3.72335	-6.19113	8.52529
	equal variances not assumed			.292	85.533	.386	.771	1.16708	3.99896	-6.78320	9.11736
low	equal variances assumed	.164	.686	3.266	147	<.001	.001	26.03798	7.97197	10.28350	41.79246
	equal variances not assumed			3.228	100.920	<.001	.002	26.03798	8.06740	10.03427	42.04169
Austria	equal variances assumed	1.876	.173	-2.402	147	.009	.018	-12.62604	5.25557	-23.01227	-2.23980
	equal variances not assumed			-2.322	94.830	.011	.022	-12.62604	5.43681	-23.41971	-1.83236
EU	equal variances assumed	.690	.408	1.919	147	.028	.057	6.31266	3.28916	-.18749	12.81281
	equal variances not assumed			1.841	92.857	.034	.069	6.31266	3.42825	-.49531	13.12063
developing country	equal variances assumed	.399	.529	1.396	147	.082	.165	6.31338	4.52360	-2.62632	15.25308
	equal variances not assumed			1.366	98.283	.087	.175	6.31338	4.62064	-2.85581	15.48257
EU Ecolabel	equal variances assumed	1.390	.240	.828	147	.205	.409	2.38426	2.88107	-3.30940	8.07792
	equal variances not assumed			.792	92.142	.215	.431	2.38426	3.01125	-3.59622	8.36473
Fairtrade	equal variances assumed	3.295	.072	-2.059	147	.021	.041	-6.25111	3.03644	-12.25183	-.25039
	equal variances not assumed			-1.854	78.414	.034	.067	-6.25111	3.37141	-12.96251	.46029
no label	equal variances assumed	5.046	.026	.986	147	.163	.326	3.86685	3.92364	-3.88717	11.62087
	equal variances not assumed			.898	80.783	.186	.372	3.86685	4.30626	-4.70160	12.43531
recycled cotton	equal variances assumed	.718	.398	-.931	147	.177	.353	-3.73760	4.01467	-11.67151	4.19632
	equal variances not assumed			-.984	121.721	.164	.327	-3.73760	3.79921	-11.25869	3.78349
organic cotton	equal variances assumed	.260	.611	-1.142	147	.128	.255	-3.14117	2.74988	-8.57557	2.29322
	equal variances not assumed			-1.165	110.497	.123	.246	-3.14117	2.69545	-8.48265	2.20030
conventional cotton	equal variances assumed	.121	.729	2.223	147	.014	.028	6.87877	3.09499	.76234	12.99520
	equal variances not assumed			2.321	117.859	.011	.022	6.87877	2.96422	1.00874	12.7880
none	equal variances assumed	6.658	.011	.059	147	.477	.953	.52467	8.93006	-17.12321	18.17256
	equal variances not assumed			.051	70.867	.480	.960	.52467	10.33463	-20.08266	21.13200

4. Independent Samples t Test: Education

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
high	equal variances assumed	4.242	.041	1.337	147	.092	.183	12.48918	9.34244	-5.97366	30.95201
	equal variances not assumed			1.236	56.505	.111	.222	12.48918	10.10533	-7.75025	32.72860
medium	equal variances assumed	1.919	.168	-.771	147	.221	.442	-3.13585	4.06477	-11.16878	4.89708
	equal variances not assumed			-.694	54.347	.245	.491	-3.13585	4.51793	-12.19242	5.92073
low	equal variances assumed	2.969	.087	-1.040	147	.150	.300	-9.35333	8.99543	-27.13040	8.42374
	equal variances not assumed			-.956	56.009	.172	.343	-9.35333	9.78868	-28.96235	10.25569
Austria	equal variances assumed	.189	.665	1.347	147	.090	.180	7.84128	5.82310	-3.66653	19.34909
	equal variances not assumed			1.301	60.518	.099	.198	7.84128	6.02629	-4.21097	19.89353
EU	equal variances assumed	2.244	.136	-1.713	147	.044	.089	-6.17502	3.60582	-13.30096	.95092
	equal variances not assumed			-1.568	55.715	.061	.123	-6.17502	3.93803	-14.06474	1.71469
developing country	equal variances assumed	1.632	.203	-.335	147	.369	.738	-1.66626	4.97751	-11.50297	8.17045
	equal variances not assumed			-.311	56.860	.379	.757	-1.66626	5.36124	-12.40253	9.07001
EU Ecolabel	equal variances assumed	1.044	.309	-1.557	147	.061	.122	-4.87562	3.13218	-11.06554	1.31429
	equal variances not assumed			-1.646	71.236	.052	.104	-4.87562	2.96144	-10.78023	1.02898
Fairtrade	equal variances assumed	1.796	.182	.985	147	.163	.326	3.30696	3.35693	-3.32712	9.94104
	equal variances not assumed			.884	54.118	.190	.381	3.30696	3.74261	-4.19614	10.81007
no label	equal variances assumed	2.368	.126	.365	147	.358	.716	1.56866	4.30286	-6.93479	10.07211
	equal variances not assumed			.333	55.550	.370	.740	1.56866	4.70897	-7.86623	11.00355
recycled cotton	equal variances assumed	.841	.361	2.184	147	.015	.031	9.46524	4.33336	.90152	18.02896
	equal variances not assumed			2.084	59.289	.021	.041	9.46524	4.54214	.37737	18.55311
organic cotton	equal variances assumed	2.221	.138	-2.267	147	.012	.025	-6.72953	2.96898	-12.59692	-.86214
	equal variances not assumed			-2.415	72.299	.009	.018	-6.72953	2.78642	-12.28376	-1.17530
conventional cotton	equal variances assumed	.479	.490	-.797	147	.213	.427	-2.73571	3.43349	-9.52108	4.04965
	equal variances not assumed			-.758	59.051	.226	.451	-2.73571	3.60808	-9.95533	4.48390
none	equal variances assumed	.028	.866	-.474	147	.318	.636	-4.62304	9.75804	-23.90720	14.66112
	equal variances not assumed			-.468	62.844	.321	.641	-4.62304	9.87347	-24.35456	15.10848

5. Independent Samples t Test: Occupation

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
high	equal variances assumed	.242	.624	-1.537	126	.063	.127	-16.39126	10.66154	-37.49014	4.70762
	equal variances not assumed			-1.497	44.001	.071	.141	-16.39126	10.94622	-38.45191	5.66938
medium	equal variances assumed	1.098	.297	-.670	126	.252	.504	-3.03554	4.53334	-12.00689	5.93581
	equal variances not assumed			-.743	54.321	.230	.461	-3.03554	4.08481	-11.22398	5.15291
low	equal variances assumed	.114	.736	1.947	126	.027	.054	19.42680	9.97791	-.31919	39.17279
	equal variances not assumed			1.816	41.567	.038	.077	19.42680	10.69694	-2.16715	41.02075
Austria	equal variances assumed	4.035	.047	-1.758	126	.041	.081	-11.33161	6.44716	-24.09035	1.42713
	equal variances not assumed			-2.115	64.058	.019	.038	-11.33161	5.35789	-22.03503	-.62818
EU	equal variances assumed	.311	.578	1.052	126	.148	.295	4.48185	4.26212	-3.95277	12.91647
	equal variances not assumed			1.109	49.652	.136	.273	4.48185	4.04130	-3.63675	12.60045
developing country	equal variances assumed	2.264	.135	1.267	126	.104	.207	6.84976	5.40416	-3.84492	17.54443
	equal variances not assumed			1.417	55.104	.081	.162	6.84976	4.83256	-2.83451	16.53402
EU Ecolabel	equal variances assumed	1.244	.267	.365	126	.358	.715	1.35346	3.70406	-5.97677	8.68369
	equal variances not assumed			.393	51.288	.348	.696	1.35346	3.44580	-5.56333	8.27025
Fairtrade	equal variances assumed	.128	.721	-.889	126	.188	.376	-3.34777	3.76621	-10.80098	4.10544
	equal variances not assumed			-.982	53.833	.165	.331	-3.34777	3.41011	-10.18511	3.48957
no label	equal variances assumed	.211	.647	.410	126	.341	.683	1.99431	4.86700	-7.63733	11.62596
	equal variances not assumed			.428	48.814	.335	.671	1.99431	4.66291	-7.37706	11.36569
recycled cotton	equal variances assumed	1.168	.282	-.028	126	.489	.977	-.14671	5.15402	-10.34637	10.05295
	equal variances not assumed			-.032	56.677	.487	.974	-.14671	4.54208	-9.24320	8.94978
organic cotton	equal variances assumed	1.193	.277	-1.078	126	.142	.283	-3.74335	3.47304	-10.61639	3.12969
	equal variances not assumed			-1.160	51.371	.126	.252	-3.74335	3.22786	-10.22242	2.73572
conventional cotton	equal variances assumed	.051	.822	.961	126	.169	.338	3.89006	4.04677	-4.11839	11.89851
	equal variances not assumed			.927	43.404	.180	.359	3.89006	4.19658	-4.57087	12.35099
none	equal variances assumed	2.409	.123	.735	126	.232	.464	8.12355	11.05510	-13.75418	30.00127
	equal variances not assumed			.944	74.632	.174	.348	8.12355	8.60911	-9.02806	25.27515

6. Independent Samples t Test: Income

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
high	equal variances assumed	4.023	.047	-2.679	130	.004	.008	-22.72879	8.48412	-39.51361	-5.94396
	equal variances not assumed			-2.729	128.857	.004	.007	-22.72879	8.32982	-39.20970	-6.24787
medium	equal variances assumed	.001	.972	1.283	130	.101	.202	4.84681	3.77839	-2.62829	12.32191
	equal variances not assumed			1.287	124.036	.100	.200	4.84681	3.76596	-2.60706	12.30068
low	equal variances assumed	.935	.335	2.171	130	.016	.032	17.88197	8.23622	1.58761	34.17634
	equal variances not assumed			2.193	126.591	.015	.030	17.88197	8.15430	1.74559	34.01836
Austria	equal variances assumed	1.916	.169	-1.918	130	.029	.057	-10.38395	5.41445	-21.09579	.32789
	equal variances not assumed			-1.949	128.335	.027	0.54	-10.38395	5.32846	-20.92695	.15905
EU	equal variances assumed	.275	.601	1.745	130	.042	.083	5.76998	3.30715	-.77281	12.31277
	equal variances not assumed			1.767	127.369	.040	.080	5.76998	3.26625	-.69315	12.23311
developing country	equal variances assumed	1.722	.192	.974	130	.166	.332	4.61397	4.73955	-4.76267	13.99061
	equal variances not assumed			.993	129.190	.161	.322	4.61397	4.64508	-4.57631	13.80425
EU Ecolabel	equal variances assumed	1.370	.244	.688	130	.246	.493	2.04819	2.97630	-3.84005	7.93644
	equal variances not assumed			.697	127.650	.243	.487	2.04819	2.93665	-3.76263	7.85902
Fairtrade	equal variances assumed	3.271	.073	-1.963	130	.026	.052	-6.32300	3.22141	-12.69618	.05017
	equal variances not assumed			-2.055	127.355	.021	.042	-6.32300	3.07706	-12.41179	-.23422
no label	equal variances assumed	4.509	.036	1.044	130	.149	.298	4.27481	4.09314	-3.82298	12.37261
	equal variances not assumed			1.083	129.503	.140	.281	4.27481	3.94630	-3.53275	12.08237
recycled cotton	equal variances assumed	1.778	.185	-1.612	130	.055	.109	-6.53987	4.05774	-14.56762	1.48789
	equal variances not assumed			-1.648	126.493	.051	.102	-6.53987	3.96909	-14.39253	1.31279
organic cotton	equal variances assumed	.650	.421	.409	130	.341	.683	1.16266	2.84048	-4.45689	6.78222
	equal variances not assumed			.415	127.674	.339	.679	1.16266	2.80241	-4.38252	6.70784
conventional cotton	equal variances assumed	1.661	.200	1.646	130	.051	.102	5.37721	3.26749	-1.08713	11.84154
	equal variances not assumed			1.674	128.526	.048	.097	5.37721	3.21297	-.97997	11.73438
none	equal variances assumed	1.840	.177	2.160	130	.016	.033	19.31498	8.94353	1.62127	37.00870
	equal variances not assumed			2.098	106.047	.019	.038	19.31498	9.20679	1.06172	37.56825