



# Purchasing sustainable clothing

*The influence of Design and Sustainability factors on Purchase Intention of Sustainable clothing.*

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This thesis was written as a part of the Master of Science in Economics and Business Administration at NHH. Please note that neither the institution nor the examiners are responsible – through the approval of this thesis – for the theories and methods used, or results and conclusions drawn in this work.

# Executive Summary

The purpose of this study is to examine factors that influence consumers' intentions to buy sustainable clothing. The fashion industry poses many sustainability challenges that are widely recognized by consumers, manufacturers and regulators. Production of more sustainable clothing can improve the impact of the industry on the environment (Gazzola et al., 2020). Nevertheless, the sustainable fashion remains a niche market, accounting for less than 0.1% of the global fashion market (The business research company, 2020). The key barriers that prevent sustainable clothing from becoming mainstream are often associated with its design. However, neither scientists nor manufacturers know exactly what consumers expect and want from sustainable apparel.

This study aims to fill this gap by asking research question about the influence of design and sustainability factors on purchase intention of sustainable clothing. To answer the research questions, I used the model of Homburg et al. (2015) on the impact of the aesthetic, functional and symbolic aspects of product design on purchase intention and expanded it with the sustainability aspects of clothing. To structure the constructs, I used the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975, Ajzen and Fishbein 1980) and its extension the Theory of Planned Behavior (TPB) (Ajzen, 1985, 1988, 1991), which are often used to explain sustainable consumption. After theoretical research, six hypotheses were formulated about the influence of the aesthetic, functional and symbolic aspects of design, as well sustainability factors such as green aesthetics, green functionality and green symbolism, on the intention to purchase sustainable clothing. Hypotheses were validated using a quantitative survey among students in Norway, and 114 responses were analyzed in SPSS using factorial and regression analysis.

The study found that green functionality, aesthetic design and functional design are factors that influence the intention to buy sustainable clothing. Both symbolic design and green symbolism were insignificant to the purchase intention in the context of sustainable clothing in Norway. Green aesthetics was removed from the model due to the data validity issues.

# Preface

This master thesis combines my past experience and future aspirations. It is written as a part of the New Business Development master's program at Norwegian School of Economics (NHH). During the education, the NBD program raises questions about the importance of more sustainable ways of producing and consuming that triggered my interest. The combination of sustainability and design was my key desire when choosing a thesis topic.

I want to thank NHH for providing a high-quality education and excellent learning environment. During this difficult time of the pandemic, when access to the campus was limited, I had no difficulty in accessing literature, information and necessary software.

I would like to express special thanks to my supervisor Herbjørn Nysveen. During my work, he guided me in an attentive and thorough way, was a valuable source of knowledge and inspiration, constructively pointing out directions for improvement.

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# 1. Introduction

## 1.1 Background and motivation

The fashion industry satisfies basic human needs for protection and safety, and its importance cannot be overemphasized. However, during the twentieth century, the speed of changing fashion collections and the number of items sold increased so much that we can no longer talk about the satisfaction of basic needs by clothes. Consumers, interacting with fashion, seek pleasure, novelty and self-expression (Michaelidou and Dibb, 2006) and this approach comes at a price.

As a result of the speed of turnover and the growth of production and sales, the fashion industry has gone far beyond sustainable development. Today clothing industry is associated with many ecological and economic issues, such as water pollution, air pollution, overproduction, agriculture pollution, waste, unethical employment (Gazzola et al., 2020). The global fashion industry will emit carbon emissions equivalent to double the Paris Agreement limit by 2030 unless drastic action is taken, claims the new report 'Fashion on Climate' (McKinsey & Global Fashion Agenda, 2020). According to this research, the global fashion industry produced around 2.1 billion tons of GHG emissions in 2018, equaling 4% of the global total.

Sustainable issues in clothing industry are very complex. There are problems from both production and consumption. On the production side, the industry is focusing on increasing sales by producing new models faster and making consumers want to have new look as soon as they see it in the shop window. Although many companies in the industry admit sustainability issues, sustainability in clothing is assessed by manufacturers through a limited and very narrow lens, usually through the use of environmentally friendly materials and production methods (Beard, 2008; Fletcher, 2010). At the same time, the supply chain is often so fragmented, complex and global that it is nearly impossible to control ethical and environmental issues on the suppliers' side.

Sustainable clothing is much more than just its way of production: it should be produced to be used more, made to be made again, and be made from safe and recycled or renewable inputs (EllenMacarthur foundation, n.d.). These characteristics of sustainable clothing imply active participation of consumers in sustainable behavior towards clothing.

Sustainable purchase behavior requires that consumers either buy clothing made from environmentally friendly, recycled, upcycled or biodegradable fibers produced under fair working conditions, or buy clothing from second-hand stores or sharing economies (Armstrong et al., 2016). In the post-purchase phase, consumers can involve in sustainable behavior, extending the life of the garment through reuse (e.g., repair, cleaning), recycling and donation (Laitala and Boks, 2012; Armstrong et al., 2016; Rausch and Kopplin, 2021). However, today consumers act unsustainably towards clothing, buying more than they need, unconsciously using and disposing of them irrationally. Finally, most clothes end their life cycle in landfills, both because of consumers and producers.

Creating more sustainable clothing is an important challenge, that requires a comprehensive solution and is widely recognized by the global community. Various parts of a possible solution are reflected in the eight of the seventeen Sustainable Development Goals, such as: good health and well-being, clean water and sanitation, decent work and economic growth, industry, innovation and infrastructure, reduced inequalities, sustainable cities and communities, responsible consumption and production, partnerships for the goals (United Nations, no date).

Because of all these challenges related to the fashion industry, it is important to improve our knowledge of how we can nudge consumers to buy more sustainable clothes. Hence, *the purpose of this thesis* is to study factors of importance for consumers' intention to buy sustainable clothes.

## 1.2 Research questions

Although increasing number of the consumers have positive attitudes towards sustainable products, they often end up not purchasing those products (Kollmuss and Agyeman, 2002; Morwitz et al., 2007; Young et al., 2009). Indeed, sustainable clothing markets have expanded only very slowly and constitute less than 0.1% of global fashion market (The business research company, 2020). The question arises as to why this growing environmental consumer interest does not show up in purchasing behavior.

Joergens (2006) argues that the consumer does not actually have a real opportunity to choose sustainable clothing, because almost all garments are produced in cheap Asian countries, prices are not comparable in sustainable clothing, and the design and appearance of



eco-clothing are *unfashionable and unattractive* or do not suit the consumer's wardrobe needs or *his/her personal style*. Beard (2008) states that it is not enough that the clothes are only produced sustainably, but they also have to be *fashionable and suit the consumer's aesthetic needs*. Otherwise, sustainable clothes remain a niche market since they do not reflect the broad scope of consumers' lifestyles. Environmental aspects have to be combined with *good design* and fashion to produce more desirable sustainable clothing (Beard, 2008).

Clothing has to interconnect strongly to a person's own self-image and identity, and sustainable clothing is no exception. Until recently, however, most sustainable clothing has had a distinct design style: hemp and other clearly recognizable eco-friendly materials created a certain aesthetic style of clothing that didn't appeal to the majority of consumers (Niinimäki, 2010).

According to Rausch and Kopplin (2021), manufacturers, designers and retailers still do not fully understand what consumers want and expect from sustainable fashion, and therefore current trends in sustainable apparel are only attractive to the aesthetics of a limited number of consumers. As a result, today's environmentally conscious consumers are faced with the conflict between sustainable and fashionable choices (Joergens, 2006; Niinimäki, 2010; Bray et al., 2011; McNeill & Moore, 2015; Rausch and Kopplin 2021).

We need to better understand the attitudes, intentions, values and needs among sustainable fashion consumers in order to design and manufacture more attractive sustainable garments that meet their needs and aesthetic expectations. Both sustainability and design factors should be considered, and the right balance should be established between the two, when studying purchase intentions towards sustainable clothing.

Based on this discussion, I will study the following research questions in this thesis:

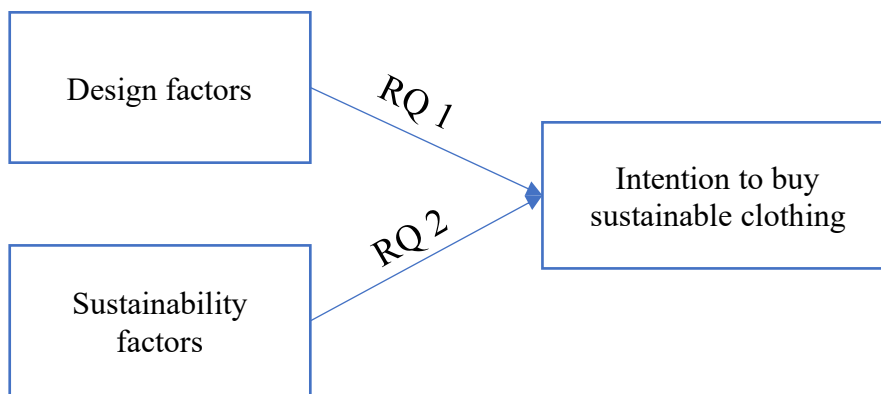
Research question 1

What are the influences of design factors on consumers' intention to buy sustainable clothes?

Research question 2

What are the influences of sustainability factors on consumers' intention to purchase sustainable clothes?

At an overarching level, the research questions can be illustrated as shown in Figure 1.

**Figure 1: Research questions.**

This study draws on the understanding that design is an important factor in consumer decision-making to buy clothing and an important barrier to widespread adoption of sustainable clothing. According to many studies, unaesthetic appearance and sensitivity to fashion trends are major barriers for consumers to buy sustainable clothing (Joergens, 2006; Connell, 2010; Niinimäki, 2010; McNeill & Moore, 2015; Rausch and Kopplin 2021).

### 1.3 Theoretical and managerial contributions

Present research investigates how design factors, such as aesthetic, functional and symbolic dimensions of design and sustainability factors, such as green aesthetics, green functionality and green symbolism, influence purchase intention towards sustainable clothing. These factors are studied through the perspective of the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975, Ajzen and Fishbein 1980) and its extension the Theory of Planned Behavior (TPB) (Ajzen, 1985, 1988, 1991).

To the best of my knowledge, no research has studies both the design and sustainability aspects of clothing, and especially design factors have been overlooked in the context of sustainable clothing purchasing decisions.

Another theoretical contribution of this study is an empirical testing of the Homburg et al. (2015) framework in the context of sustainable clothing in Norway.

For managers, this study will provide a guidance on how to promote more sustainable clothing that can drive commercial success. One of the main barriers to the spread of sustainable clothing is its appearance (Joergens, 2006; Connell, 2010; Niinimäki, 2010;

McNeill & Moore, 2015). This study will help manufacturers find the right balance between design and sustainable features of a sustainable garment.

## 1.4 Assumptions

Sustainable clothing is not uniformly defined and terms like ‘eco-conscious’ and ‘eco-friendly’ (Hiller Connell, 2010; Laitala and Boks, 2012), ‘ethical’ (Joergens, 2006; Wigley et al., 2012), ‘green’ (D’Souza et al., 2007), and ‘organic’ (Hustvedt and Dickson, 2009) are used more or less interchangeably in the literature (Rausch & Kopplin, 2021). This study is using terms ‘sustainable clothing’ and ‘sustainable fashion’, when I am not referring to previous research. When formulating hypotheses, I use the word ‘green’ to describe the sustainable feature of a garment, as it makes it easier to understand the meaning of the concept, e.g. ‘green aesthetics’ better reflects the embedded meaning than ‘sustainable aesthetics’.

Present study examines consumers purchase intention towards sustainable clothing among students in Norway. Age, occupancy and culture can influence attitudes, subjective norms and factors of behavioral 2control; therefore, the results of this study are limited to the described research group.

## 1.5 Outline

The research is structured in 7 chapters. Chapter 2 offers an outline of the current state of fashion and sustainable fashion market globally and in Norway. Definition of sustainable clothing is presented in this chapter. Chapter 3 presents the TRA model as a framework for the current research; it contains discussion about design factors and sustainability factors that can influence consumers purchase intention of sustainable apparel. Chapter 4 presents the hypotheses about the potential impact of the design and sustainability factors on purchase intentions for sustainable garments. A more detailed research model is presented here. Chapter 5 describes the research design and presents validation of the data. Results of the empirical study are presented in chapter 6. Finally, in chapter 7, theoretical and managerial implications are provided in addition to a discussion of limitations of the research and directions for future research.

## 2. Context

### 2.1 The clothing and fashion industry

Fashion is versatile: when we dress, we put messages on the body about our vague perceptions of beauty, our personality and accepted social norms (Kaiser et al., 1991). We can speak about fashion as style in the time or as a global industry, as necessity or as indulgency, or as social and cultural phenomenon. Fashion is defined in Wikipedia as ‘an aesthetic expression, at a particular period and place and in a specific context, of clothing, footwear, lifestyle, accessories, makeup, hairstyle, and body proportions’ (Wikipedia, n.d.-a). In fashion, the garment design stands for a certain time period and simultaneously its appearance is a product of particular time. Basically, fashion means that the product is able to signify the present (Kaiser et al., 1991).

The fashion industry can be described as global enterprise devoted to the business of making and selling clothes. Some experts distinguish between the fashion industry, producing ‘high fashion’, and the clothing industry, producing casual wear or ‘mass fashion’. According to Kaiser et al. (1991), as a concept fashion differs from clothing, which is material production and something that fulfils our physical needs for protection and functionality. Unlike clothing, fashion merges us with our emotional needs; it expresses our inner individual personality by external marks and symbols, brands and status items.

However, the border between fashion and clothing is almost blurred today. The fashion industry encompasses design, production, distribution, marketing, retail and promotion of all types of clothing, shoes and accessories from the most sophisticated and expensive haute couture (literally ‘high sewing’) to casual everyday clothes. In fact, it is more accurate to use the term ‘fashion industries’ to describe the multitude of industries and services that employ millions of people around the world.

Today the fashion industry is a business with a global turnover of \$ 1.5 trillion, employing over 300 million people worldwide (Statista, 2021; BOF & McKinsey, 2021). The largest markets by revenue are the United States (\$ 360 billion) and China (\$ 325 billion), followed by Japan (\$ 82.5 billion) (Statista, 2020a).

The industry has been deeply affected by the pandemic. The Global Fashion Index (BOF & McKinsey, 2021) estimates economic profit in the industry to be down 93% in 2020

and being first time on decline since 2017 and that revenues in 2020 will fall by 27-30 percent compared to 2019 globally. The BOF & McKinsey's (2021) analysis shows that without subsidies and other government support, 75% of European companies will find themselves in dire financial straits, but government support will keep about half of the companies afloat. That will consequently trigger a wave of consolidation in 2021.

The crisis hit different segments and channels unequally. In terms of the segments, luxury and affordable luxury continued to do business while value and discount suffered the most, perhaps reflecting relatively less uncertainty about the spending of the wealthiest consumers. In addition, in the segment of discounts and value sales, the share of e-commerce is small, influencing those companies due to the redistribution of purchases across the off-line and on-line channels. Unsurprisingly, physical retail is under historical pressure today due to covid-related restrictions around the world. In the United States alone, up to 25,000 stores were expected to close in 2020, more than double the number in 2019 (BOF & McKinsey, 2021).

In 2021, experts describe industry sentiment as 'fear and uncertainty,' but the analysis also shows signs of a slow recovery as fashion companies begin to adjust to new norms and rethink their strategic ambitions (BOF & McKinsey, 2021). Fashion players are under pressure to be digital-first and fully leverage new technologies, to improve diversity across their assortments and organizations and to address growing demand for the industry to face the sustainability agenda head-on (BOF & McKinsey, 2021).

Despite pressing challenges, industry sustainability will remain a hot topic on the agenda. This is because expectations of consumers and regulators to reduce the environmental impact of the industry have been growing in recent years, and more and more information about sustainability issues is emerging in the industry (BOF & McKinsey, 2021).

According to Ellen Macarthur Foundation (n.d.), 53 million tons of fiber are produced annually for the clothing industry, out of which 97% come from the virgin feedstock, mainly from plastic (63%) and cotton (26%). Only 3% of fibers are produced with recycled feedstock or within closed – loop recycling. This is reflected in the fact, that 73% of all produced fiber finish landfilled or incinerated.

The fashion industry uses more than 98 million tons of non-renewable resources annually, including oil to make synthetic fibers, fertilizer for cotton plantations, and chemicals to make, dye and finish fibers and fabrics (Gazzola et al., 2020). Added to this are 93 billion

cubic meters of water, emissions of about 1.2 billion tons of CO<sub>2</sub> and 500 thousand tons of microplastic fibers being poured into the oceans (Gazzola et al., 2020). The social consequences are also dramatic: employment in the textile sector in underdeveloped countries is often associated with low wages, increased working hours, child labor and conditions of slavery (Gazzola et al., 2020).

Sustainability issues are widely acknowledged by the industry and many players are interested in changing it. As will be described further, the market for sustainable clothing is growing, responding to the actions from various stakeholders. Sustainability awareness is increasingly impacting purchasing behaviors, although there remains a big gap between what people say and what they do (Rausch & Kopplin, 2021). Still, fashion can no longer afford to ignore its customers' preferences, even in the midst of confusion about what sustainability really means. Some players in the industry are taking steps towards sustainability, such as developing new fabrics, reducing the destruction of unsold goods, and making products repairable or recyclable (BOF & McKinsey, 2021).

## 2.2 Sustainable clothing and fashion

Sustainable clothing is not uniformly defined and there are often used interchangeably terms like eco-conscious and eco-friendly (Connell, 2010; Laitala and Boks, 2012), ethical (Joergens, 2006), green (D'Souza et al., 2007) and organic (Hustvedt and Dickson, 2009) across the literature. This study will use the terms 'sustainable clothing' and 'sustainable fashion', which can be defined as clothing that is designed for a long lifetime use, causes little or no environmental impact and is made of environmentally preferable, recycled, upcycled, or biodegradable fibers manufactured under fair working conditions (Joergens, 2006; Fletcher, 2010; Rausch and Kopplin, 2021). Ellen MacArthur Foundation describes the following characteristics of sustainable garments: they are produced to be used more, made to be made again, and are made from safe and recycled or renewable inputs (Ellen MacArthur Foundation, n.d.).

At the same time, there is a consensus in the literature that success of sustainable clothing depends as well on the behavior of consumers, that implies pro-environmental actions at every stage of the life cycle of clothing from purchase, through usage, maintenance, and also discard (Rausch and Kopplin, 2021).

Although sustainability issues in the fashion industry have been discussed for decades, only as late as in 2009 the Copenhagen Fashion Summit launched the first sustainability program for fashion companies. It identified seven priority actions that are beneficial for building resilience within the industry: supply chain traceability, saving water, energy and chemicals, worker safety and respect, sustainable materials mix, circular fashion system, better wage system and the digital revolution. The goal of the program is to encourage fashion leaders to create durable products that promote fiber disassembly and recyclable clothing (Gazzola et al., 2020).

The global sustainable clothing market is growing, reflecting consumer's efforts to make positive impact and the pressure of authorities, but still constitutes less than 0.1% of the global fashion market (The business research company, 2020). According to the survey conducted by Agbanrin (2019), 64% of respondents globally stated that they try to make a positive impact on the environment through their daily activities. The business research company published in the end of 2020 a report on the global ethical fashion market, which includes sustainable fashion market. According to the report, the global ethical fashion is growing at a compound annual growth rate of 8.7% since 2015. The market is even expected to accelerate its growth to reach \$ 15.2 billion in 2030. According to the research, Western Europe is the second largest region in the global market for ethical fashion after Asia Pacific (The business research company, 2020).

This growth is driven mainly by the increasing awareness of the role of the fashion industry in the sustainability issues, and it is expected that increased awareness, social media, growth of e-commerce and government initiatives will drive the market (The business research company, 2020).

The next chapter describes the sustainable apparel and fashion market in Norway, where current research is being conducted.

## 2.3 Sustainable clothing and fashion in Norway

Sustainability is an integral part of Norwegian culture and 70% of Norwegians say that sustainability influences their behavior (Statista, 2018). According to Christensen, CEO of the Norwegian fashion event 'Oslo Runway', sustainability is embedded in the Norwegian clothing industry. Furthermore, several advantages could allow the industry to rapidly shift

towards sustainability, namely technology, knowledge and intention, as well as a long history of design, good raw materials and clean energy (The explorer, n.d.).

Norway started manufacturing industrial textiles in the mid-1800s. The industry was fueled by traditional handicrafts combined with the availability of wool and hydropower. By the mid-1900s, companies had moved their factories overseas. Interest in Norwegian fashion has skyrocketed in the 2010s thanks to the growing international interest in everything Scandinavian - be it politics, design or lifestyle. Various designers and companies have managed to gain a foothold abroad, creating enduring brands based on quality natural materials, sophisticated designs and intriguing notion of the Scandinavian lifestyle (Norwegian fashion hub, n.d.). The Norwegian fashion and textile industry currently has an annual turnover of about NOK 67 billion and employs approximately 42.000 people. Since 2016, exports of textiles, clothing and leather goods have increased by almost 8%. The potential is enormous, but the industry needs a radical restructuring towards sustainability to align this growth with the ethical and environmental values embedded in Norwegian philosophy. And actors of Norwegian fashion industry are interested to move.

Norwegian Fashion Hub has a few ongoing projects to face sustainability challenge, such as Oslo Fashion & Textile Lab that investigates opportunities of technology and digitalization to design and produce new clothing sustainably. New technologies and more sustainable materials are seen as the main drivers of innovation. On the other side, as sustainable fashion designer Pedersen observed, much of the materials used in fashion can last a lifetime. She sees the root of sustainability problems in the structure of consumption: visually, clothes become obsolete after one season (Norwegian fashion hub, n.d.).

The main reasons for clothing disposal in Norway are described by Laitala & Boks (2012) as following: changes in garments, size and fit issues, taste-related unsuitability, situational reasons, functional shortcomings and fashion or style changes. As Laitala & Boks (2012) posits, design solutions can enable the users to keep and use the clothes longer, and reduce the need for laundering, thus potentially decreasing the total environmental effects of clothing consumption. Per capita consumer spending on clothing & footwear in Norway is on the third place globally, following Luxemburg and Switzerland. In Norway, average consumer spends \$ 1 327 on fashion during the year (Statista, 2020a). This high value can be attributed to both high prices and high consumption.

Statista (2019) studied the expectations of Norwegian adults for sustainable clothing. When asked, what environmental elements are important when shopping for clothes, 29



percent of Norwegians said that garments should be produced cruelty-free. Products made from environmentally friendly fabrics / materials were named by 27 percent of respondents, while clothing containing fewer or less chemicals was named by 23 percent of respondents.

According to another survey about barriers to buy sustainable clothing (Statista, 2020c), 30 percent of Norwegians cited the high cost of ethical and sustainable clothing as a reason for not buying them. The fact that sustainable brands are difficult to recognize was another reason cited by 26 percent of respondents, while 24 percent found it difficult to find ethical and sustainable clothing. 24 percent of respondents do not understand which environmental aspects of clothing are fulfilled.

With regard to the relationship between fashion, age and sustainability, according to the report 'Millennials vs Generation Z' (PwC, 2018), Millennials and Generation Z are driving the sustainable fashion concept. According to the generation theory, Millennials were born between 1980 and 1994 and Generation Z were born after 1995. Among these generations, 37 percent prefer to buy organic products with a willingness to spend more on buying a responsible product (Gazzola et al., 2020).

The sustainability of clothing begins with its design and consumption that is determined by design. Therefore, I will take a closer look at the importance and significance of design in the fashion industry.

## 2.4 Design in clothing and fashion

The fashion industry is driven by design to the degree where most of the companies outsource the manufacturing process, doing design and sales 'in-house'. The design process is synonymous with fashion creation.

According to Wikipedia, 'fashion design is the art of applying design, aesthetics, clothing construction and natural beauty to clothing and its accessories. It is influenced by cultural and social attitudes, and has varied over time and place' (Wikipedia, n.d. - b). Fashion designers conduct research on fashion trends and interpret them for the target audience of their brands.

The most successful fast fashion brands today release about 52 'micro-seasons' a year—or one new 'collection' a week, with a design-to-retail cycle of five weeks (Cline, 2013). And before the pandemic the global fashion leaders planned to speed up their supply

chains, according to the report 'Fast Fashion Speeding Towards Ultrafast Fashion' (Coresight research, 2017).

It wasn't always like this in the fashion industry. Several decades ago clothing companies used to produce several collections in a year and it took months from presenting a new collection on the fashion runway to producing it and selling in the stores. 'Fast fashion' brands disrupted the market by speeding up their supply chain and offering a new business model (Howland, 2017). These brands produce big number of items in a small quantity and use customer feedback and an efficient production network to replenish stores with best-sellers and new products weekly (Wikipedia, n.d.-c). This business model fueled consumer demands for immediate availability of the latest styles. In a while high-profile fashion brands adopted this strategy and have also drastically reduced the time they take to bring designs to market after fashion shows.

And this race is still going on. New digitalized fashion companies can produce merchandise in two to four weeks (Howland, 2017). These companies often operate only online stores and are able to replicate streetwear and fashion week trends as they appear in real-time. Basically, these companies can create new, desirable styles weekly. The brands then have massive amounts of clothing and can ensure that customers never tire of inventory.

As a result of competitive battles between fashion brands, consumers are able to feel that they are behind trends as soon as they see new fashion style being worn.

According to the Ranzetta (2019), the average person today buys 60 percent more items of clothing than they did 15 years ago. But consumers keep that clothing for only half as long as they used to. For example, a survey done in Britain found that one in three young women consider clothes 'old' after wearing them once or twice and one in seven consider it a fashion faux-pas to be photographed in an outfit twice (Ranzetta, 2019). Simply put, young people today crave newness, while at the same time, younger generations are interested in sustainable clothing. Rental, resale and refurbishment models lengthen the product lifecycle while offering the newness that consumers desire (Ranzetta, 2019)

Consumers from USA appear to be the most active shoppers, with the average consumer buying one garment per week or 53 garments per year. By comparison, in the UK, where GDP per capita is similar to the US, consumers buy on average 20 fewer pieces of clothing per year (33 versus 53), but spend about 70% more on each item (Commonobjective, 2020).

## 2.5 Main takeaways

The fashion industry is a huge global network for the creation, production and distribution of clothing, that employs millions of people, uses vast amount of natural resources and creates numerous challenges to sustainable development (Gazzola et al., 2020). The fashion industry is facing huge challenges today due to the corona virus pandemic, but experts predict recovery and future growth. Apparently, the pandemic will boost the development of online channels.

Online sales are associated with an even higher turnover rate for fashion items. If the current industry leaders have moved from fashion to fast-fashion by cutting supply chain times to 6 weeks, the next generation of online stores is able to do the same job in just 2 weeks (Howland, 2017). Higher consumption rates, as well as the immediate obsolescence of the new style, are associated with increasing sustainability challenges in the industry.

At the same time, modern consumers value brands that make sustainability efforts and are pushing industry to become more socially-responsible and environmentally-friendly. The market for sustainable fashion is growing, but still remains a niche market. One of the reason behind this is that manufacturers do not really know what consumers want and expect from sustainable fashion, and therefore current trends in sustainable apparel only appeal to a limited number of consumers and their aesthetics (Rausch & Kopplin, 2021). Because of the discussed above sustainability issues in the apparel industry, it is important to improve our knowledge of how we can influence or nudge consumers to buy more sustainable clothing. The next chapter discusses the theoretical underpinnings of consumer decision making process and the factors that are important for the formation of the intention to buy sustainable clothing.

### **3. Discussion of theory.**

The scientific literature is limited when it comes to researching the factors that influence the intention to purchase sustainable clothing (Niinimäki, 2010; Cowan and Kinley, 2014; Paul et al., 2016; Rausch and Kopplin, 2021). Little attention was put to the appearance of the garment itself, although the importance of design factors in purchase intention has been well studied regardless of the product category (Bloch, 1995; Homburg et al., 2015; Candi et al., 2017). Understanding consumer needs and wants for sustainable clothing requires a holistic approach that matches consumer expectations of both fashion and sustainable products.

In general, buying behavior of sustainable products is well described by the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975; Ajzen and Fishbein 1980) and its extension the Theory of Planned Behavior (TPB) (Ajzen, 1985, 1988, 1991). TRA is based on a multi-attribute model and provides insight into how people will behave based on their behavioral intentions, when they are aware of their actions and can control them. The TRA helps to understand the factors that determine consumer behavioral intentions and these factors are related either to attitude or to social norms (Fishbein and Ajzen, 1975). The TPB is an extension of the TRA and it explains behaviors over which people have incomplete volitional control by describing additionally factors that are associated with behavioral control (Ajzen, 1991).

This chapter will look at how factors, related to attitude, social norms and behavioral control can influence intention to purchase sustainable clothing. Factors such as aesthetics, functionality and symbolism of product design, and green aesthetics, green functionality and green symbolism will be described and explored as applied to sustainable clothing.

#### **3.1 Models explaining purchase intentions**

To understand how a person will act, scientists often study behavioral intentions, which are direct predictors of actual behavior (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980; Wang and Tsai, 2014; Rausch and Kopplin, 2021). Behavioral intention has been described by Fishbein and Ajzen (1975) as ‘the subjective likelihood of performing a particular behavior’

(p.12). Intentions reflect motivational factors of behavior and indicate how hard people are willing to try to perform the particular behavior. The TRA explains that intention is influenced by person's attitudes and perceived subjective norms towards behavior. Purchase is a form of behavior that can as well be described by the TRA. Purchase intention is defined by Wang and Tsai (2014) as 'the likelihood that a customer will buy a particular product' (p.29).

However, intention to perform a behavior does not end in the execution of that behavior in cases where people have incomplete volitional control. There is a recognized gap between intention and behavior, as various situational factors can prevent a person from performing the intended behavior (Hoyer et al., 2013). For example, a person may intend to buy a luxurious car but will buy economy-car due to the lack of money. This intentional – behavior gap was acknowledged and the TRA model was extended with behavioral control construct to overcome this limitation, thus, the TPB was formulated (Ajzen, 1985, 1991).

At the basic level, the TPB explains that behavior is a function of (1) salient information, or beliefs, relevant to the behavior and (2) evaluation of these particular beliefs (Ajzen, 1991; Hoyer et al., 2013). Among great amount of beliefs that every person can hold about any particular behavior, three general types of salient beliefs are distinguished: behavioral beliefs that influence attitudes towards behavior, normative beliefs that shape perceptions of subjective norms, and control beliefs that provide the basis for perception of behavioral control (Ajzen, 1991).

Including behavioral control reduces some of the potential gap between intention and behavior – but not all of it. There exists a well-documented but not fully explained gap in the area of sustainable consumption. Although consumers pretend a pro-environmental attitude and intention, they often do not translate this into sustainable purchasing (Kollmuss & Agyeman, 2002; Young et al., 2009; Rausch & Kopplin, 2021), particularly when it comes to the purchasing of sustainable clothing.

Understanding the mechanisms that influence purchase intentions is crucial for nudging consumers to buy more sustainable clothing.

### **3.1.1 Attitude as antecedent of intention**

The first factor that Fishbein and Ajzen (1975) describe as influencing actual behavior is a person's attitude. An attitude is 'an overall evaluation that expresses how much we like or dislike an object, issue, person, or action' (Hoyer et al., 2013, p.122). Attitude is a function of

a consumer's expectation that a product or service possesses an attribute to fulfil particular work, and affective evaluation towards that attribute (Fishbein & Ajzen, 1975; Keller, 1993). It's important to understand, that in different situations and markets, consumers' attitudes towards the same attributes may differ (Day et al., 1979). This is why it is so important to study consumer attitudes in a specific cultural and product context.

People have attitudes towards brands, products, advertisements, stores, activities and so forth. According to Hoyer et al. (2013), attitudes are important because of how they guide our thoughts, affect our feelings, and how they affect our behavior. The four features of attitude include emotions, intentions, knowledge and values (Ajzen, 1991).

### **3.1.2 Subjective norms as antecedent of intention**

The second factor influencing actual behavior is associated with subjective norms, according to the TRA and TPB. Subjective or social norms are defined as 'the person's perception that most people who are important to him think he should or should not perform the behavior in question' (Fishbein and Ajzen, 1975, p. 302).

Subjective norms take into account that a person is subject to social influences. In other words, the intention to behave or buy a product is influenced not only by personal attitudes towards such behavior, but also by the opinions of other people about a particular behavior. Subjective norms are also determined by a person's normative beliefs and motivation to comply with them. According to Aizen (1991), the stronger the social pressure, the more the subjective norms will influence behavioral intentions.

### **3.1.3 Perceived behavioral control**

According to Ajzen (1991), the actual performance of behavior depends as well on such restricting factors as opportunities and resources, for example time, money, skills, etc. These factors represent people's actual control over behavior. In the TPB model (Ajzen, 1985, 1988, 1991), attitudes and subjective norms perform motivational part of purchase decision process, while behavioral control reflects abilities to perform this action.

Ajzen (1991) highlights, that there is a difference between actual and perceived behavioral control and for the actual behavior the latter plays more important role (Ajzen, 1991). The perceived behavioral control can be described as 'judgments of how well one can execute courses of action required to deal with prospective situations' (Bandura, 1982, p.122,

as referred by Ajzen 1991). In other words, people's behavior is influenced by their confidence in their ability to perform this behavior. According to the TPB, perceived behavioral control can be a direct predictor of actual behavior, while attitudes and social norms influence behavior indirectly through the intentions (Ajzen, 1991).

In general, the more favorable the attitude and subjective norms towards the behavior, and the greater the perceived behavioral control, the stronger should be an intention to perform this behavior. The relative importance of these factors can vary across different situations (Ajzen, 1991).

## 3.2 Explaining purchase intention for sustainable clothing.

Across a variety of research in sustainability context, both the TRA and the TPB were applied to investigate green purchase behavior in general and sustainable apparel consumption in particular (Chan, 2001; Wiernik et al., 2013; Paul et al., 2016; Hwang and Griffiths, 2017; Ng et al., 2018). Various factors are described in current chapter as influencing purchase intentions for sustainable clothing through the lens of the TRA and the TPB models.

### 3.2.1 Sustainability factors, related to attitude.

Many scholars strongly emphasize the role of attitudes as predictors of sustainable clothing purchasing (Hustvedt and Dickson, 2009; do Paço et al., 2013; Jacobs et al 2018). As discussed above, attitudes towards the same attributes may differ from market to market (Day et al., 1979). However, several factors are discussed more or less consistently in the literature, they are presented in the current chapter.

#### 3.2.1.1. *Green functionality*

There is a consensus in the literature, that when purchasing for sustainable products, consumers look for the additional, '*green*' *functional* benefits on top of the basic functionality of a product (Hwang and Griffiths, 2017; Lin et al., 2017b; Schuitema & De Groot, 2015 as referred by Papista et al., 2018). For sustainable clothing, *green functional* benefits may reflect a product's ability to meet functional environmental performance and enhance consumer perception that a brand fulfils its environmental commitments (Lin et al., 2017b).

Hustvedt and Dickson (2009) observed two groups of *green functional benefits* of the organic cotton apparel purchase: self-centered and altruistic. Self-centered benefits are related to potential benefits to a person, e.g. health, while altruistic outcomes are related to the industry and the environment in general, e.g. supporting organic cotton producers. Their research showed, that self-centered *green functional benefits* were more important for consumers of organic cotton than altruistic.

Several studies came to conclusion that *green functionality* of sustainable brands is the most important or among the most important factors, influencing adoption of a sustainable product (Koller et al, 2011; Hwang and Griffiths, 2017; Lin et al., 2017; Ng et al., 2018; Papista et al., 2018; Rizkalla and Setiadi., 2020).

However, *green functionality* doesn't reduce the demand for high-quality products (Dickson and Littrell, 1997). Even when people consume environmentally-friendly products, they look for the regular functional benefits (Bech-Larsen, 1996 as referred by Lin et al., 2017a; Sriram and Forman, 1993 as referred by Lin et al., 2017a). Moreover, consumers are unwilling to sacrifice 'expected' functional performance when considering the purchase of a green brand (Ginsberg & Bloom, 2004, Schuitema & De Groot, 2015 as referred by Papista et al., 2018).

At the same time, as long as the regular functional performance of the green brand is satisfactory, the green attributes further positively influence purchase intentions (Papista et al., 2018). According to Ng et al. (2018), consumers are willing to pay more for environmentally friendly product as long as they do not have to compromise on product quality.

That's why it's important to study separately green functionality and design functionality of a sustainable product. The role of the functional design dimension in purchase intention of a sustainable garment will be discussed further.

### **3.2.1.2. Green aesthetics**

The second factor that can influence consumer attitudes towards a piece of sustainable clothing is *green aesthetics* (Niinimäki, 2014). It is argued that there is a link between aesthetics of a sustainable product and ecological goodness (Carlson, 2001; Niinimäki, 2014; Quoquab et al. 2020). This phenomenon is described in literature as '*green aesthetics*' (Niinimäki, 2014) or 'environmental aesthetics' (Quoquab et al. 2020). The concept of '*green aesthetics*' is based on the notion that people are embedded in and intertwined with the nature



and suggests appreciation of natural environments in a way that Carlson, A. (2001) describes as 'looking as they should'.

If the traditional aesthetic dimension is based on the art world (Naukkarinen, 1998 as referred by Niinimäki, 2014), the *green aesthetic* dimension is based on ecological values and ethics (Niinimäki, 2014). *Green aesthetics* can be considered a way of evaluating a product by combining the aesthetic values with the environmental values (Jordan, 2002; Niinimäki, 2014). Zafarmand et al. (2003) distinguish 7 aesthetic attributes of clothing that can promote product sustainability and support long term use: aesthetic durability, cultural identity, diversity, functionality, upgradeability, simplicity and naturalness of both forms and materials.

Environmental aesthetics helps consumers to see the environmental value of a product (Quoquab et al. 2020) and in this way, it can participate in purchase decision process. Perhaps this is the reason why marketers often associate 'natural', 'health' and 'beauty' to promote aesthetic values of the environmentally-friendly products (Quoquab et al., 2020).

### 3.2.1.3. Other factors

Many different factors that are not inherent in a product itself are discussed in the literature as influencing attitudes towards sustainable clothing. Beliefs about environmental issues or 'environmental concern' play a key role in formation of positive attitudes towards sustainable clothing and sustainable consumption in general (Shaw and Clarke, 1999; Joergens, 2006; Hustvedt and Dickson, 2009; Wiernik et al., 2013; Cowan and Kinley, 2014; Paul et al., 2016; Jacobs et al., 2018). The term 'environmental concern' refers to values, attitudes, emotions, perceptions, knowledge and behaviors related to the environment (Bamberg, 2003).

Greenwashing concern is also widely discussed across the literature as factor, influencing attitude towards sustainable clothing (Lin et al., 2017a; Rausch & Kopplin, 2021). While high level of perceived green transparency can have a positive impact on consumer-firm relationships, many consumers bear skeptical attitudes towards corporate green initiatives (Vaccaro and Echeverri, 2010 as referred by Lin et al., 2017a).

Another factor, often discussed in the literature, is 'warm glow of giving' (Lin et al., 2017b) or 'ethical hedonism' (Szmigin and Carrigan, 2005; Bly et al., 2015; Papista et al., 2018) that reflects a feeling of moral satisfaction when involving the common good. Choosing environmentally-friendly products make consumers feel content and proud of themselves for

contributing to environmental sustainability. According to Bly et al. (2015) sustainable fashion consumer's behavior is motivated by the 'ethical hedonism'.

To sum it up, scientific literature suggests that consumers' attitude towards purchasing sustainable fashion is determined by *green functionality* and *green aesthetics* of a product and by consumer's level of environmental concern, hedonic response and skepticism about greenwashing concern (Hustvedt and Dickson, 2009; do Paço et al., 2013; Cowan and Kinley 2014; McNeill and Moore, 2015; Hwang and Griffiths, 2017; Lin et al., 2017a; Lin et al., 2017b; Papista et al, 2018; Quoquab et al. 2020).

### **3.2.2 Sustainability factors, related to subjective norms.**

Regarding subjective norms and opinions of important others, there are two opposite views on the importance of these factors on purchase intentions for sustainable clothing.

In several studies, subjective norms as approval of 'significant others' were found to be a non-significant predictor of sustainable products purchase intention (Tarkiainen and Sundqvist 2005; Paul et al., 2016; Kumar et al., 2017; Papista et al., 2018; Rizkalla and Setiadi, 2020). Kumar et al., 2017 conclude, that subjective norms are not significantly related to the purchase intention in a collectivistic culture. Rizkalla and Setiadi (2020) in their research about recycled shoes observed that social value was insignificant in explaining environmentally-friendly purchase intention. Rizkalla and Setiadi (2020) conclude, that consumers consider other factors for their decision making and that respondents do not feel that the environmentally-friendly product can enhance their self-image and social recognition. Another explanation is provided by Papista et al., (2018) who propose on the example of detergents that for some product categories social invisibility prevents consumers from demonstrating their environmental consciousness to others.

Another opinion, described in the literature, is that subjective norms influence the purchasing behavior of sustainable products (Koller et al., 2011; Cowan and Kinley, 2014; McNeill and Moore 2015). Cowan and Kinley (2014) in their research found strong positive correlation between subjective norms and intention to purchase sustainable clothing. An individual who feels more social pressure to purchase environmentally friendly clothing will likely intend to purchase it. Cowan and Kinley (2014) distinguish between subjective norms that encompass societal norms in general, reference groups and culture, and normative structure, that specifies friends, classmates, professors and parents as influencing behaviors.

According to their finding, society as a whole may have more persuasion on environmental behavior than particular people. They give an example of areas in California, where stores cannot give out plastic shopping bags and consumers have to bring their own bags. Thus, carrying environmentally friendly tote bags has become a symbol of being part of the society.

According to Koller et al., (2011) social facets are tightly connected to the individual's self-perception. In this manner, sustainable products can offer consumers a *symbolic* means of expressing their self-concept to a public audience. Lin et al. (2017b) discuss, that sustainable products tend to satisfy consumers' needs for social approval and address the consumers' outer-directed self-esteem. Finally, sustainability is trendy because there is a growing consensus in society that something needs to be done about environmental issues (Koller et al., 2011). According to Yoo et al. (2013, as referred by Rizkalla and Setiadi, 2020), at least for some consumers, the purchase of an environmentally-friendly product is a manifestation of their *symbolic* identification.

Research of Ng et al. (2018) observed that self-expressive benefit of electric vehicles had significant positive influence on willingness to pay a premium. Consumers of electric vehicles were motivated by possible satisfaction from the symbolic effects or because they perceived that engaging in green consumption is a superior way of lifestyle. Ng et al. (2018) propose, that through buying green products, consumers may project a socially visible image of a good citizenship and a kind neighborhood, and they may gain gratification by receiving others' appreciation.

Later in this study, I refer to the ability of a sustainable clothing to communicate environmental values of an owner as '*green symbolism*'.

Another construct, 'social guilt' is included in the idea of normative influence (Schlegelmilch et al 1997 referred by Cowan and Kinley, 2014). This notion suggests that those who believe that their clothing purchasing behavior affects the environment, feel environmental guilt, the type of social pressure to act green. Cowan and Kinley (2014) confirmed in their study that environmental guilt does have a moderately strong effect on sustainable clothing purchase intentions.

### **3.2.3 Sustainability factors, related to behavioral control.**

Factors of behavioral control may override consumers' desires for sustainable choices in spite of positive attitudes and encouraging subjective norms (Shaw and Clark, 1999; Dobers

and Strannegard, 2005; Cowan and Kinley, 2014).

For some consumers, high prices are barriers for adoption of sustainable apparel. While several studies posit that some consumers are ready to pay more for sustainable clothing (Niinimäki, 2010; Cowan and Kinley, 2014), economic consideration is well described as important constraint for purchasing sustainable products in general (Shaw and Clark, 1999; Dobers and Strannegard, 2005) and clothing in particular (Joergens, 2006; Hustvedt and Dickson, 2009; Young et al., 2009; Niinimäki, 2010; Chang et al., 2018).

Research by Chang et al. (2018) found a significant effect of perceived availability of money on behavioral control in the context of purchasing sustainable clothing. Another study by Carrington et al. (2010) described that people are more likely to believe they can buy sustainable friendly clothing if they think they have more money.

Convenience is widely discussed as an important regulator in sustainable purchasing (Shaw and Clark, 1999; Dobers and Strannegard, 2005; Cowan and Kinley, 2014; Jacobs et al, 2018; Chang et al, 2018). The research of Jacobs et al. (2018) indicates that an affinity to online and catalogue shopping enhance sustainable clothing purchases. According to Chang et al. (2018), perceived store accessibility influences sustainable apparel consumption. Finally, people who know where to find sustainable clothing are more likely to buy it (Joergens, 2006; Cowan and Kinley, 2014).

As D'Souza (2004) posits, only consumers with high environmental concern actively seek out environmentally friendly clothing despite higher prices or inconvenience.

Another important factor of perceived behavioral control is previous experience, both in terms of recency and frequency (Bagozzi and Warshaw,1990). As with various products, the degree of consumer loyalty to the brand does not allow switching existing brands to more sustainable ones (D'Souza et al., 2007). The literature supports continuation of environmentally friendly product purchases; people who have previously opted for environmentally-friendly options are more likely to choose the same products in the future (Abdul-Muhmin, 2007 as referred by Cowan and Kinley, 2014).

In relation to sustainable clothing, the survey by Cowan and Kinley (2014) shows, that past purchases matter more to future buying intentions than price issues. They conclude, that the challenge for the producers lies in the initial trial and can be overcome by price lining strategies.

### 3.2.4 Other factors

Other variables influencing the purchase of sustainable clothing are age and gender.

Gender differences in consumption behavior have been extensively investigated by many researches (Han et al., 2009). In the context of the sustainable products buying behavior, women are described as being more environmentally conscious than men, they are more likely to buy sustainable products and are willing to pay more for them (Laroche et al., 2001; Han et al., 2009; Gazzola et al., 2020). Brough et al. (2016) revealed the stereotypical association between green behavior and femininity, that may prevent men from engaging in green product consumption behavior.

Age is another important determinant of buying behavior, although results on the role of age in sustainable buying behavior are mixed. Earlier studies have shown that older people are more likely to engage in environmentally friendly shopping behavior (Sandahl and Robertson, 1989, as referred by Han et al., 2009; Vining and Ebreo, 1990, as referred by Han et al., 2009). At the same time, a recent study by Gazzola et al. (2020) highlighted the growing attention that the younger generation is placing on sustainability. PricewaterhouseCoopers market research (2018) named Millennials and Generation Z the guardians of sustainable fashion. After all, it is young people who tend to be innovators in adopting a new product that can be considered sustainable clothing (Im et al., 2003, as referred by Han et al., 2009).

## 3.3 The role of design in explaining purchase intention for fashion.

In the clothing industry, fashion and trends and the desire to renew one's appearance lead consumer choices (Solomon and Rabolt, 2004). And as argued by Jorgens (2006), sustainable clothing is not exception: the decision to buy sustainable clothing is influenced not only by environmental concerns, but as well by beauty, fashion, trends, emotions, desires and social acceptance. Successful sustainable products must not only meet the environmental demands, but they also must fulfil the market requirements. Environmental concerns should be translated into the product design and design should be appealing for the targeted consumers (Niinimäki, 2010).

Design is considered as the most important determinant of new product performance and sales success both by scholars and practitioners (Cooper and Kleinschmidt, 1987, as cited by Bloch, 1995; Bruce and Whitehead, 1988, as cited by Bloch, 1995). Even the receipt of design awards is positively associated with average profit margins and sales growth (Holbrook and Zirlin, 1985, as referred by Bloch, 1995). Product design is an important source of differentiation for various product categories (Noble and Kumar, 2010; Candi, 2010).

According to Homburg et al. (2015), product design ‘refers to a set of constitutive elements of a product that consumers perceive and organize as a multidimensional construct comprising the three dimensions of *aesthetics*, *functionality*, and *symbolism*. Because these constitutive elements can be both visual and nonvisual, this definition of product design applies to both visual and nonvisual examination of products’ (p. 44). *Aesthetics* refers to the level of perceived beauty (Desmet and Hekkert, 2007), *functionality* indicates the utilitarian value (Bloch, 2011), and *symbolism* represents the perceived meaning of product design (Creusen and Schoormans, 2005).

However, at the present time, little is explained about the role of design in shaping attitude towards buying sustainable clothing. Perceived aesthetics and aspects of self-identity, which are considered to be important mediators in the decision to purchase fashion in general, remain largely unexplored for sustainable apparel (Niinimäki, 2010; Connell, 2010; Harris et al., 2016).

Next chapter discusses how the dimensions of clothing design influence the purchase intention through the lens of the TRA model. The functional and the aesthetic dimensions of design influence attitude and the symbolic dimension of design is linked to subjective norms; thus, this chapter focuses on attitude and social norms.

### **3.3.1 Design factors, related to attitude**

#### **3.3.1.1. Aesthetic design**

*Aesthetic* characteristics of a design explain whether a product has visually appealing and pleasing attributes, stimulating all human senses. *Aesthetics* refers to the perceived appearance and beauty of a product (Desmet and Hekkert 2007; Bloch 2011). The idea of *aesthetics* originated from Western philosophers who evaluated beauty and the scope of the aesthetic experience (Sibley, 2001 as referred by Lee, 2018) and is applied in various disciplines, from art to industrial products.

Perception of *aesthetics* is usually described as affective, emotional and thus subjective response to the appearance and beauty of an object (Bloch, 1995; Homburg et al., 2015; Candi et al., 2017; Gilal et al., 2018). Norman (2004) posits, that aesthetic recognition is often sensory in nature. Consumers often attach great importance to the *aesthetic* properties of design, which can be ‘intuitive’ and subconscious in nature (Rindova & Petkova, 2007; Noble and Kumar, 2016). At the same time, Crilly et al. (2004) suggest that an aesthetic impression can elicit a cognitive response to the appearance of a product through perceptions of the attractiveness (or unattractiveness) of the product. Tractinsky et al. (2000) showed that there is a strong correlation between perceived *aesthetics* and perceived usability of computerized application.

*Aesthetic* perception can be the result of a holistic product design or an individual design element, and a positive perception of the aesthetic design can create a sense of superiority over other design elements (Tan and Sie, 2015; Hsu et al., 2018).

*Aesthetic* considerations in apparel design deal with the elements like line, form, color, texture and pattern, that create a pleasing perception of a design (Lamb and Kallal, 1995). A garment’s aesthetics proved to be an important predictor of purchase intention in fashion (Niinimäki, 2010; Connell, 2010; Harris et al., 2016).

### 3.3.1.2. *Functional design*

*Functional* dimension of a product design reflects consumer considerations related to the utility of a garment. These considerations include the perception of product features, durability, quality, price, reliability and technical sophistication (Crilly et al., 2004; Gilal et al., 2018). Many scholars agree, that functional evaluations of product design are cognitive in their nature and are important factors in shaping the purchasing intention across various product categories (Homburg et al. 2015; Gilal et al., 2018; Lee, 2018). These evaluations are elicited by the assessment of product features that deliver specific benefits for the consumer. Although these benefits are mostly realized through the product use (Srinivasan et al., 2012), scholars acknowledge that functionality of the product can also be assessed through the seeing (Hoegg and Alba, 2011; Radford and Bloch, 2011; Homburg et al., 2015). Hoegg and Alba (2011, p. 346) argue, that *functionality* of a product design can be ‘a reliable indicator of functional performance’ and thus can improve consumers’ cognitive and affective attitudes.

*Functionality* of design is a meaningful predictor of customer behavior. When the design of a product meets or exceeds utilitarian expectations, customers’ satisfaction is

enhanced (Chitturi et al., 2008), and their behavioral responses are positive (Candi et al., 2017; Lee 2018).

For apparel garment *functionality* of design can include fit, ease of movement, comfort, durability, thermal control and protection (Lamb & Kallal, 1992; Niinimäki, 2010; Laitala & Boks, 2012). These considerations may be more important for some types of apparel, such as rainwear, thermal underwear or sportswear.

### **3.3.2 Design factors, related to subjective norms**

#### **3.3.2.1. Symbolic design**

There is a consensus in the scientific literature that consumers are looking for fashionable clothing to express themselves (Max-Neef, 1992; Dodd et al., 2000; Michaelidou and Dibb, 2006) and to connect with society (Elliott, 2006).

From the TRA point of view, the ability of clothing to represent one's identity can influence attitudes, is influenced by social norms and is embedded in a garment's style. Style is related to *the symbolic* and *aesthetic* dimensions of clothing design and is discussed by scholars as one of the most important factors influencing purchase intention in fashion (Iwanow et al 2005; Niinimäki, 2010; Valaei & Nikhashemi, 2017). According to Valaei & Nikhashemi (2017), at least Generation-Y's fashion apparel consumers would establish a positive attitude towards the product when they find similarity between themselves and the style of a fashion apparel product.

With regard to social norms, *style* of clothing relates to how it is used by individual to gain social approval (Michaelidou and Dibb, 2006). Kaiser et al. (1991) argue that clothes can be seen as a fundamental part of our communication and social interaction; fashion enables participation in social groups and class and identification with them.

Ability of clothing to interact with society in this way is embedded in the *symbolic* dimension of a product design. The *symbolic* dimension of design identifies how product communicates a consumer self- and social identity both to her- or himself and to the general public (Bloch, 2011; Homburg et al., 2015; Crilly et al., 2004; Gilal et al., 2018).

Clothing is consumed in public setting, and for such products social-expressiveness is believed to be a particularly strong determinant of purchase intention (Thorbjørnsen et al 2007; Cowan and Kinley, 2014; McNeill and Moore, 2015). As stated by Auty and Elliott (2001), at



least Generation Y consumers base their clothing choices on what is acceptable to their group members rather than expressing their own identity. Barnes and Lea-Greenwood (2006) indicated in their study an important relationship between influence of peer groups of the clothing choices and level of consumer knowledge about fashion products. The more fashion – concerned is a person, the greater importance play social factors manifested through the design of a garment.

Homburg et al. (2015) confirm that *symbolic design* has a significant influence on the consumers purchase intentions. Gilal et al. (2018) argue that consumers who perceive product design as reinforcing their identity may become more and more engaged with the brand. It can be explained by the idea that the symbolic dimension of product design can help consumers maintain or protect their self-concept (Tian et al., 2001). When consumers can foster an understanding of who they are, products that are associated with this self-sustaining function receive better psychological responses (Hsu et al., 2018).

The study by Hsu et al. (2018) found that the influence of the *symbolic* dimension of design is greater on affective responses, than on cognitive responses.

Summarizing, the *aesthetic* and the *functional* dimensions of clothing design influence attitudes and the *symbolic* dimension of design is influenced by subjective norms. In accordance with the TRA, through these mechanisms design of sustainable clothing influences the purchase intention.

## 4. Hypotheses

The following chapter presents more detailed exploratory model with hypotheses. The TRA and the TPB are employed to organize factors influencing the purchase intention of sustainable clothing. This study formulates hypotheses about influences of the design factors, such as aesthetics, functionality and symbolism, and the sustainability factors, such as green aesthetics, green functionality and green symbolism.

### 4.1 Sustainability

#### 4.1.1 Factors related to attitude

##### 4.1.1.1 Influences of green aesthetics

Green aesthetics is an attitudinal factor, as discussed in chapter 3.2.1.2. As posit the TRA (Fishbein and Ajzen, 1975, Ajzen and Fishbein 1980) and the TPB (Ajzen, 1985, 1988, 1991), attitude influences the purchase intention. Hence, green aesthetics can be expected to influence the intention to purchase sustainable clothing.

Previous studies suggested that there is a link between the environmental or green aesthetics and individual preferences towards sustainable products (Carlson, 2001; Quoquab et al., 2020). Thanks to the green aesthetics consumers' may be able to recognize the environmental characteristics of a product, such as 'natural' and 'healthy' (Quoquab et al. 2020). The environmental aesthetics indicates the protection of the natural human environment (Shapshay, et al., 2018) and thus can support sustainability claims of a brand.

Building on this, I assume that green aesthetics is important for consumers of sustainable clothing, as green aesthetics may reflect their environmental values (Niinimäki, 2014). Therefore, this study formulates a hypothesis, that green aesthetics has a positive influence on purchase intention of sustainable clothing.

*H1: Green aesthetics has a positive influence on purchase intention of sustainable clothes.*

##### 4.1.1.2 Influences of green functionality

Green functionality is an attitudinal factor, as discussed in chapter 3.2.1.1. According

to the TRA (Fishbein and Ajzen, 1975, Ajzen and Fishbein 1980) and TPB (Ajzen, 1985, 1988, 1991), attitude influences the behavioral intention. Thus, green functionality can be expected to influence the intention to purchase sustainable clothing.

Scientific literature proposes, that in addition to design functionality, when purchasing for sustainable products, consumers look for the ‘green’ benefits (Hwang and Griffiths, 2017; Lin et al. 2017b). Moreover, according to an array of studies, green functionality is one of the most important attributes that influences consumers purchase intention of sustainable products (Koller et al, 2011; Hwang and Griffiths, 2017; Lin et al., 2017; Ng et al. 2018; Papista et al, 2018; Rizkalla and Setiadi, 2020).

Green functionality implies some objective and sustainable quality of a product (Koller et al., 2011) and enhances consumers’ perception that the brand fulfils its environmental commitments (Lin et al., 2017b).

Therefore, this study formulates a hypothesis, that green functionality influences positively purchase intention towards sustainable clothing.

*H2: Green functionality has a positive influence on purchase intention of sustainable clothes.*

## **4.1.2 Factors related to social factors**

### *4.1.2.1 Influences of green symbolism*

Green symbolism is a social mechanism for communicating with society, as discussed in chapter 3.2.2. According to the TRA and TPB, social norms influence purchase intention. Hence, I expect green symbolism to influence the intention to purchase sustainable clothing.

However, there is seem to be a little consensus in the scientific literature about the significance of subjective norms in the decision to buy a sustainable product. Some scholars argue that approval of ‘significant others’ cannot predict sustainable products purchase intention (Tarkiainen and Sundqvist 2005; Paul et al., 2016; Kumar et al., 2017; Papista et al., 2018; Rizkalla and Setiadi, 2020).

At the same time, symbolism in form of a product self-expressiveness and social expressiveness is considered to be particularly strong determinant of purchase intentions of products that are consumed in public places, such as clothing (Iwanow et al. 2005; Niinimäki,

2010; Cowan and Kinley, 2014; McNeill and Moore, 2015; Valaei & Nikhashemi, 2017).

As suggested by Cowan and Kinley (2014), an individual who feels more social pressure to purchase sustainable clothing, especially in the form of the accepted norms by society as a whole, will likely intend to purchase it. Green symbolism of products allows consumers express themselves as being environmentally conscious (Noppers et al., 2014). Ng et al. (2018) propose, that through the use of green products, consumers may project a positive socially visible image and they may gain gratification by receiving others' appreciation. According to the research conducted by Lin et al., (2017b), provision of green self-expressive benefits directly enhances the brand's green image.

At the same time, the desire of average consumer to declare his/her sustainable values with their clothing is not yet explored. Most of the respondents in the survey conducted by Niinimäki et al. (2010) agreed that sustainable garments should be the same in appearance as all other garments. Only consumers with high environmental concerns are more willing to obviously show their environmental values through the apparel.

However, the most widespread approach assumes the influence of social factors on the purchasing behavior of sustainable products (Michele, 2008; Cowan and Kinley, 2014; McNeill and Moore 2015). Therefore, this study formulates the hypothesis that green symbolism has a positive influence on purchase intention towards sustainable clothing.

*H3: Green symbolism has a positive influence on purchase intention of sustainable clothes.*

## 4.2 Design

### 4.2.1 Factors related to attitude

#### 4.2.1.1 Influences of aesthetic design

Aesthetics is an attitudinal factor, and according to the TRA and the TPB, attitude influences behavioral intentions. In the model described by Homburg et al. (2015), the aesthetic dimension of design influences the purchase intention. Hence, aesthetics can be expected to influence the intention to purchase sustainable clothing.

Aesthetics is an important predictor of purchase intention in fashion in general (Niinimäki, 2010; Connell, 2010; Harris et al. 2016). In the research of Homburg et al. (2015), the aesthetic aspect of design showed influence on purchase intention indirectly through the brand attitude.

Influence of the aesthetic dimension of design is studied across product categories and services. For instance, Cyr et al. (2016, as cited by Lee, 2018) posits, that aesthetics of mobile commerce positively influences usefulness, ease of use and enjoyment of consumers. According to Baek and Ok (2017), aesthetic design positively affects customers' hotel booking intentions. Even in the context of industrial goods aesthetics turned out to be a powerful driver of attitude (Wiedmann et al., 2019). The study by Wiedmann et al. (2019) showed that product color affects attitude towards the product and that visual appeal and aesthetics of treatment chairs have the strongest effect on attitude towards the product, as compared to functional and symbolic dimensions.

Building on the discussion above, this study expects that high aesthetic value of a garment has a positive impact on purchase intention of sustainable clothing.

*H4: Aesthetic design has a positive influence on purchase intention of sustainable clothes.*

#### **4.2.1.2 Influences of functional design**

Functionality is an attitudinal factor, and as described by the TRA and the TPB, attitude influences behavioral intentions. In the model described by Homburg et al. (2015), the functional dimension of design influences purchase intention. Hence, functionality of design can be expected to influence the intention to purchase sustainable clothing.

Functional dimension of design can be a reliable indicator of a product function and product qualities and can increase the likelihood of purchase across various product categories (Crilly et al., 2004; Bao et al., 2011; Homburg et al., 2015). Functionality is associated with consumers' expectations for quality and may influence customer satisfaction and behavioral responses (Candi et al., 2017; Lee 2018; Gilal et al., 2018). According to Rizkalla and Setiadi (2020), the quality is significantly influencing purchase behavior for environmentally-friendly product.

This study expects, that functional design has a positive influence on purchase intention of sustainable clothes.

*H5: Functional design has a positive influence on purchase intention of sustainable clothes.*

## **4.2.2 Factors related to social norms**

### *4.2.2.1 Influences of symbolic design*

The symbolic meaning of clothing design is a social mechanism of interaction with society. According to the TRA and the TPB, social norms influence behavior. In the model described by Homburg et al. (2015), the symbolic dimension of product design influences purchase intention.

Products that through their design help to self-sustaining own identity are more likely to be bought, because consumers want to foster an understanding of who they are (Tian et al., 2001). As was discussed above, clothing may be considered a symbolic product as it is often consumed in public environments. For clothing, the symbolic dimension of design enables identity building, participation in social groups and at the same time shaping one's individuality and differentiation from others (Cowan and Kinley, 2014; McNeill and Moore, 2015).

The symbolic dimension is a strong driver of purchase intention, across various product categories, as concluded by Homburg et al. (2015). The study by Lee (2018) shows that the symbolic dimension of design influences connectivity needs fulfillment. Baek and Ok (2017) identify the positive role of symbolism in consumer emotional states in the context of hotel websites. Candi et al. (2017) highlights the importance of the symbolic product design in enhancing customer emotions in the context of online review. In the survey by Haase et al. (2018) advertisements with picture of a fruit and text about symbolic benefits (e.g. organic farming) worked the best for consumers.

Taking into account the importance of the symbolic dimension of design in fashion and across various categories, this study assumes, that high symbolic value of sustainable clothing has a positive influence on purchase intention.

*H6: Symbolic design has a positive influence on purchase intention of sustainable clothes.*

### 4.3 Control variables

As discussed in chapter 3.2.3, different factors can control buying behavior of sustainable clothing. This study will control for a few factors that are discussed more often in scientific literature and are applicable to sustainable clothing purchase behavior in conditions of Norway. They are: money availability, stores accessibility and past experience.

Since sustainable clothing is often considered more expensive than fashion in general, it is important to control money availability in the survey (Joergens, 2006; Hustvedt and Dickson, 2009; Young et al., 2009; Niinimäki, 2010; Chang et al, 2018). Ajzen (1991) emphasizes that the subjective perception of the availability of money in the TPB model is more important than the objective availability of money, thus, this study will control the subjective point of view.

Convenience of shopping is frequently discussed in the literature about sustainable clothing (Cowan and Kinley, 2014; Jacobs et al, 2018; Chang et al, 2018). Since sustainable clothing continues to be a niche market, store accessibility can influence purchase behavior and is therefore controlled in the study.

The next factor, controlled in my survey, is past purchase experience. Past experience can influence purchase behavior (Bagozzi & Warshaw, 1990; Cowan and Kinley, 2014). Due to the relative rareness of clothing purchases, this study takes into account the frequency over the past year.

There is common comprehension that gender and age (Valaei and Nikhashemi, 2017; Gazzola et al., 2020) may influence purchase behavior towards sustainable products and therefore they will be controlled as well.

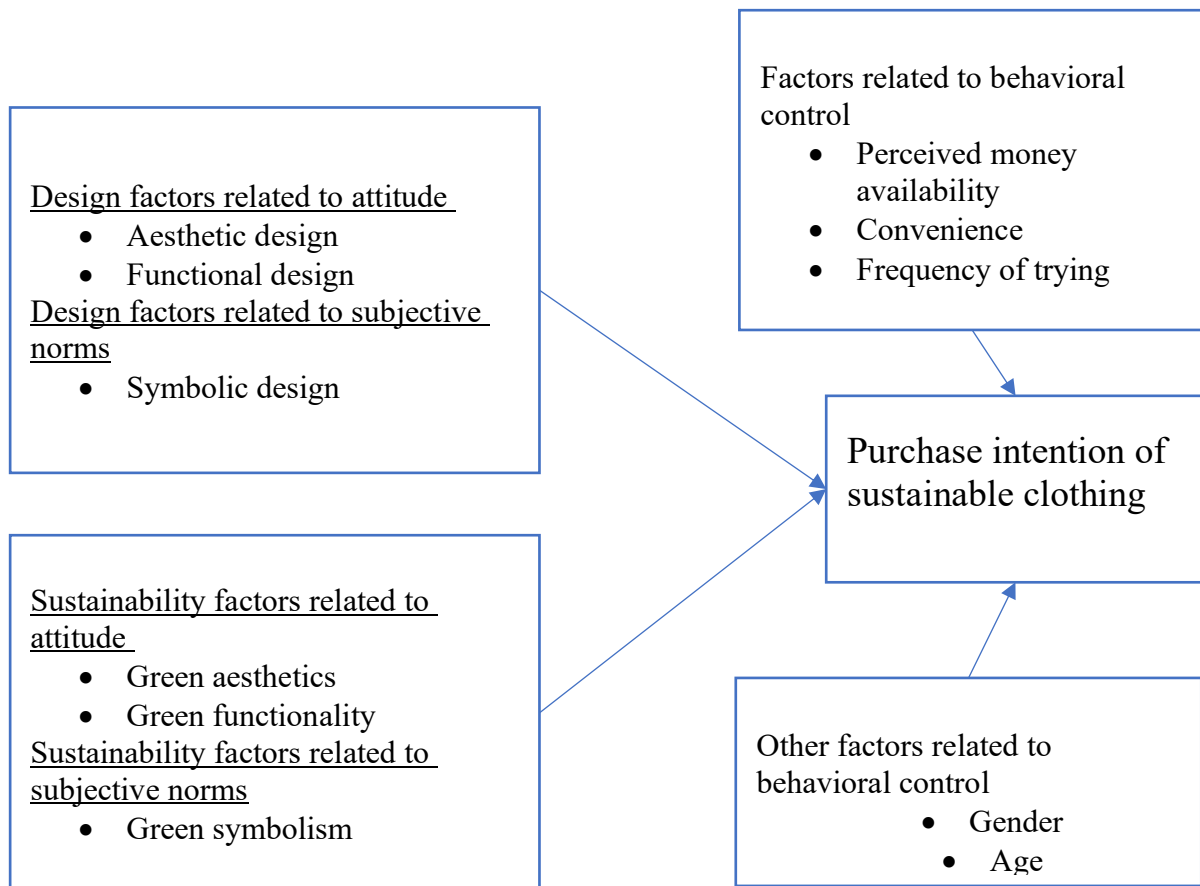
### 4.4 Research model

In this study, I predict the positive influence of design factors such as aesthetics, functionality, and symbolism and sustainability factors such as green aesthetics, green functionality, and green symbolism on purchase intention towards sustainable clothing. Thus, I apply the product design model described by Homburg et al. (2015) in the context of sustainable clothing and extend it with the sustainability constructs. I apply the TRA and the TPB to structure these factors through their relation to attitudes and subjective norms.

The design and sustainability factors are supposed to be mediated by such behavioral control variables as perceived money availability, convenience of shopping and frequency of trying, as well as gender and age.

The research model is shown on Figure 2.

**Figure 2. The research model**





## 5. Method

### 5.1 Data collection and sample

To test the hypothesis, I conducted an online survey in the period between April 20th and May 3d, 2021. The survey was constructed in Qualtrics and was distributed to students at Norwegian School of Economics (NHH) by email. In order to get a sufficient number of answers and robust findings, invitations to participate in the survey were sent in three rounds. First, an invitation (Appendix A) to participate in the survey was sent to 3185 students at NHH, which yielded 55 respondents. As this wasn't enough for robust findings, a reminder (Appendix B) to participate in the survey was sent out on the third day. In this round, the survey was additionally distributed in the community of students in Bergen, who live in Nattland Studentbyen and study in different schools. Among these students the survey was distributed through the Facebook group. This second wave of distribution yielded an addition of 79 responses. At last, a third reminder with new, more personal appeal (Appendix C), was sent to NHH students on April, 30th, which brought 60 additional responses and the total number made up 194 responses.

From the total number of replies, I removed all the incomplete ones, which turned out to be 74. Most of the respondents who did not complete the test, stopped in the beginning, after I asked to choose an experience they have had with purchasing a clothing item with eco-friendly (sustainable) features (Appendix D). It's possible to assume, that these participants perceive that they haven't purchased clothing with eco-friendly (sustainable) features.

Further, to minimize careless responses, the 6 answers from respondents who used less than 120 second to finalize the survey, were removed from the sample. The estimated time to complete the questionnaire was 5 to 6 minutes, and it would be impossible to complete it in less than 2 minutes if you read the questions carefully. The final number of answers suitable for analysis was 114.

In Table 1 the demographic characteristics for the sample of 114 are presented.

**Table 1. Sample demographics**

|               | <b>Sample<br/>(N=114)<br/>Frequency</b> | <b>Sample<br/>(N=114)<br/>%</b> |
|---------------|---|---------------------------------|
| <b>Gender</b> |   |                                 |
| Female        | 65                                      | 57.0                            |
| Male          | 47                                      | 41.2                            |
| Other         | 2                                       | 1.8                             |
| <b>Age</b>    |   |                                 |
| 18-24         | 65                                      | 57.0                            |
| 25-34         | 45                                      | 39.5                            |
| 35-44         | 3                                       | 2.6                             |
| 55-64         | 1                                       | 0.9                             |

Table 1 includes characteristics of the sample, such as age and gender, in frequency and percentage of the sample. The average age for the sample is 25, which reflects well the age distribution of students at NHH. The participants are dominated by women (65%), which is the opposite to the gender distribution among NHH students, where women represent 43% of all students (Litland & Ghaderi, 2020). This gender disproportion may be related to the topic of the survey on sustainable fashion. At the same time, both in terms of age and gender, the sample is not representative of the Norwegian society as a whole, where the median age is 39.8 and the percentage of women and men is almost equal (SSB, 2018).

## 5.2 Research design and method bias

The results of the test can be influenced by method bias. Method bias may affect item validity, item reliability and covariation between latent constructs (MacKenzie & Podsakoff, 2012). Various factors may cause method bias by undermining the respondent's capabilities, making it difficult to answer accurately, reducing the motivation to answer accurately, and making it easier for respondents to satisfy. There will always be a chance of participant being biased (Podsakoff et al., 2003). However, various measures can be taken to reduce the likelihood of such bias. Measures and factors, that have been considered during creation of my questionnaire are discussed below.

To lessen the opportunity of appearance of common method bias, all items used in the

questionnaire were based on the previously validated scales. Only for the green aesthetics I combined the two scales of Homburg et al. (2015) and Quoquab et al. (2020), as I have not found a green aesthetics measurement scale that has been validated in the product context. However, adaptation of scales for the purposes of the research and the outline of the questionnaire could create possibilities of different biases.

The roots of method bias lay in the fact, that respondents seek easier ways to generate their answers in accordance with their ability, capability and motivation (MacKenzie & Podsakoff, 2012). My questionnaire was created in English and taking into account, that English is the second language for potential participants, complex words and words with multiple meanings were avoided in the questions. Word 'sustainability' was explained as 'eco-friendly' to make it more obvious and simple.

Furthermore, I relied on the retrospective recall in the survey, that makes it harder to retrieve the information than questions about the current state (Krosnick, 1991 as referred by MacKenzie & Podsakoff, 2012). However, I had to accept this bias due to the methodology choice. To make for respondents easier to recall their experience I started with easier questions about design and then moved to questions regarding sustainability characteristics of the garments (Schröder, 2011 as referred by MacKenzie & Podsakoff, 2012).

Important for the accuracy of answers is motivation of the respondents (MacKenzie & Podsakoff, 2012). To motivate the respondents, I explained that the survey is about sustainable clothing and their answers are very valuable to me. Since participation in the survey was voluntary and wasn't rewarded, I believe that the people who took part in the survey should have found the topic relevant to them and be motivated.

To avoid the bias of social acceptability, full anonymity was guaranteed for the participants in the invitation letters and in the cover page. No ip address was collected and questions, that could establish the personality, were avoided. This kind of bias is based on the desire of respondents to provide answers that are perceived to be correct and socially acceptable (MacKenzie & Podsakoff, 2012). In the cover story (Appendix D), I highlighted that there are no right or wrong questions and only respondent's experience is valued.

In creation of questionnaire I assumed possible fatigue and lengthy scales bias. MacKenzie and Podsakoff (2012) posit that unending stream of questions may cause respondents to become fatigued or irritated. Several adjustments to the survey should have helped to prevent this bias: the questions were blocked to have an observed ending of each block, amount of questions and wording was shortened as much as possible. In order to facilitate the process of filling out the questionnaire, I used matrices to represent questions so

as not to duplicate the scale (Appendix E). Finally, two different types of scale, 7-point Likert scale and semantic differential scale were employed to make a respondent more alert. The semantic differential scale was used to measure attitude, while all other items, except age and gender, were measured on the Likert scale. Also, the easiest questions about age and gender were put in the end and were accompanied with explanation that they are the last questions.

For the methodological reasons, three items with similar meanings were used to measure each factor. This could create a general scale bias due to the perceived similarity and abundance of elements. In order to minimize the negative effects of such similarities and to avoid irritation of the respondents, I announced this feature of the method on the cover page.

The preliminary test was conducted by two respondents who checked the timing and overall flow of the test. After their responses, the estimated time to complete the test was made at 5-6 minutes. One respondent noted that at first she responded about her experience with sustainable clothing in general, and not with a specific piece of clothing. Because of this comment, I changed the wording to make it clearer that the answers should be specific to the particular piece of clothing they bought earlier and selected for this survey.

### 5.3 Measures

To capture the variables in the research model I mainly used measures that are well established in the product design literature. I adapted the measures of the variables to the specific context of sustainable clothing. Design dimensions were measured using the Homburg et al. (2015) scale. To measure factors, related to sustainability of clothing, I adopted the wording from various authors. To measure green aesthetics, I used Quoquab et al. (2020) survey about nutricosmetic products. This wording faced the biggest adjustments, and I merged it with items from Homburg et al. (2015), that measure aesthetic design. For green functionality, I adapted items to measure purchase intention towards recycled clothing from Chen and Chang' (2012), and measures for green symbolism are based on Lin et al. (2017b). Every independent variable was measured using three items (see Table 2).

In the survey was used 7-point Likert scale (1 = 'totally disagree', 7 = 'totally agree') to measure all items, except semantic differential scale for attitude (from 1 to 7) and control variables of age and gender. Literature suggests that optimal for data accuracy is Likert scale of five or seven points (Johns, 2010), where odd number of alternatives should allow for a neutral response.

Attitude towards the piece of clothing that a participant has chosen for the survey was measured using Hwang and Griffiths (2017) scale with 3 items. Purchase intention was measured with two items which were based on Ng et al. (2018) study of adoption of electric vehicles.

As for control variables, money availability and convenience were based on Chang et al. (2018), and past experience on the theory of trying by Bagozzi & Warshaw (1990). The control variables, since they are not the main constructs in the test, were mono-operationalized to reduce the number of questions and possible fatigue of the respondents.

Table 2 below presents original and adapted item for each measure.

**Table 2. Item wording.**

| <b>Construct</b>         | <b>Item</b>       | <b>Description original</b>   | <b>Description adapted</b>   |
|--------------------------|-------------------|---|--|
| <i>Aesthetic design</i>  | AD1<br>AD2<br>AD3 | * This dress is visually striking<br>* This dress is good looking<br>* This dress looks appealing<br><i>Homburg et al. (2015)</i>   | * This piece of clothing was visually striking<br>* This piece of clothing was good looking<br>* This piece of clothing looked appealing   |
| <i>Functional design</i> | FD1<br>FD2<br>FD3 | * This dress is likely to perform well<br>* This dress seems capable of doing its job<br>* This dress seems to be functional<br><i>Homburg et al. (2015)</i>  | * This piece of clothing was likely to perform well<br>* This piece of clothing seemed capable of doing its job<br>* This piece of clothing seemed to be functional  |
| <i>Symbolic design</i>   | SD1<br>SD2<br>SD3 | * This dress would help me in establishing a distinctive image<br>* This product would be helpful to distinguish myself from the mass<br>* The product would accurately symbolize my achievements<br><i>Homburg et al. (2015)</i>                   | * This piece of clothing would help me in establishing a distinctive image<br>* This piece of clothing would be helpful to distinguish myself from the mass<br>* This piece of clothing would accurately symbolize my achievements |
| <i>Green aesthetics</i>  | GA1<br>GA2        | * I consume nutricosmetics products because it has natural and nutritional values.<br>* I consume nutricosmetics products because of its attractive eco-friendly features (e.g. green color. recycle symbol. tidy man sign. green dots sign. etc.). | * The piece of clothing had visual eco-friendly features (e.g green color, recycle symbols, organic certificate)<br>* The piece of clothing looked natural to me<br>* The piece of clothing was made from appealing traditional    |

|  |                   |  |   |
|--|-------------------|--|---|
|  | GA3               | <p>* I consume nutricosmetics products that are made from traditional herbs<br/><i>Quoquab et al. (2020)</i></p> <p>* This dress is visually striking<br/>* This dress is good looking<br/>* This dress looks appealing<br/><i>Homburg et al. (2015)</i></p>   | fabrics (e.g. hemp, linen, cotton, wool)  |
| <i>Green functionality</i>                     | GF1<br>GF2<br>GF3 | <p>* The recycled clothes' environmental functions provide good value to me</p> <p>* I purchase recycled clothes because it is environmentally friendly</p> <p>* I purchase recycled clothes because it has more environmental benefit than conventionally produced clothes<br/><i>Chen and Chang (2012)</i></p> | <p>* The piece of clothing provided good environmental value to me</p> <p>* The piece of clothing was environmentally friendly</p> <p>* The piece of clothing had environmental benefits</p>  |
| <i>Green symbolism</i>                         | GS1<br>GS2<br>GS3 | <p>* With this brand, I can express my environmental concern</p> <p>* With this brand, I can demonstrate to my friends that I care about environmental conservation</p> <p>* With this brand, my friends perceive me to be concerned about the environment<br/><i>Lin et al. (2017b)</i></p>                     | <p>* With this clothing, I could express my environmental concern</p> <p>* With this clothing, I could demonstrate to my friends that I care about environmental conservation</p> <p>* With this clothing, my friends would perceive me to be concerned about the environment</p> |
| <i>Purchase intention</i>                      | PI1<br>PI2        | <p>* Given the chance, I intend to buy an EV</p> <p>* Given the chance, I predict that I should buy an EV in the future<br/><i>Ng et al. (2018)</i></p>  | <p>* Given the chance, I intend to buy similar sustainable clothing</p> <p>* Given the chance, I predict that I will buy similar sustainable clothing in the future</p>   |
| <i>Attitudes</i>                               | At1<br>At2<br>At3 | <p>How would you describe your attitude towards the brand XXX?<br/>Unfavorable—— Favorable</p> <p>Bad—— Good</p> <p>Dislike—— Like<br/><i>Hwang and Griffiths (2017)</i></p>   | <p>How would you describe your attitude towards the eco-friendly (sustainable) clothing that you have chosen?<br/>Unfavorable—— Favorable</p> <p>Bad—— Good</p> <p>Dislike—— Like</p>   |
| <i>Control variables</i><br>money availability | CV1               | * I feel I can afford to make any sustainable clothing purchases if I want ( <i>Chang et al., 2018</i> )   | * I feel I can afford to make any sustainable clothing purchases if I want  |

|  |     |  |  |
|--|-----|--|--|
| store<br>accessibility<br>past<br>experience | CV2 | * I feel that locations of the apparel stores, carrying sustainable apparel products, are close to me (Chang et al. 2018)                    | * I feel that stores (including online), carrying sustainable clothing, are easily available   |
|  | CV3 | * During the past year I tried to lose weight (from not at all to very many times at six-point scale)<br><i>Bagozzi &amp; Warshaw (1990)</i> | * During the last year I have bought sustainable clothing (from not at all to very many times) |

## 6. Analyzes and Results

### 6.1 Factor analyzes

The data collected during the survey were analyzed using the statistical analytics software IBM SPSS 27 (Statistical Package for the Social Sciences), trial version with full functionality (available on the website [www.ibm.com/products/spss-statistics](http://www.ibm.com/products/spss-statistics)). First, I performed factor analyzes to evaluate the fit of the scale model. In the next step, I tested the research hypotheses by analyzing the structural relationships between the constructs.

Factor analysis is a technique to define structure that underlies the variables in the analysis, i.e. their interconnection (Hair et al., 2009). It's important to conduct factor analysis in the first place and if needed, modify the model, as possible latent-variable structural models may influence the results of the test (Ho, 2006).

To confirm that items accurately represent the investigated concept, scale validity was explored through convergent and discriminant validity (Hair et al., 2009). Convergent validity assesses the degree of correlation between two items of the same construct (Hair et al., 2009). This test should ensure high correlations of the summated scale, as that mean they measure its intended construct. Discriminant validity assesses the distinction of the two conceptually similar constructs and to ensure discriminant validity the summated scale should show low correlation between constructs (Hair et al., 2009).

#### 6.1.1 First factor analysis

First I conducted factor analysis with 18 items that measure independent variables of aesthetic, functional, symbolic design, green aesthetics, green functionality and green symbolism. I chose maximum-likelihood of common factor and oblique rotation for analysis model, as the goal of my research was to discover theoretically meaningful factors and I expected correlation between factors (Ho 2006; Hair et al., 2009).

To choose factors that are worth consideration in the model, first I compared loading of each factor with the threshold of 0.5 (Hair et al., 2009). Hair et al. (2009) recommend a threshold of 0.5 for a sample of 120 responses, which is the closest number to my sample of 114 responses. Factor loadings for the first factor analysis are presented in Table 3. Then, I



specified the threshold for communalities at .50 level, so that at least one-half of the variance of the variable is taken into account (Hair et al., 2009).

The Pattern matrix showed, that four items loaded below the 0.5 threshold: one item for the aesthetic design factor and all three items for the green aesthetics construct (AD1, GA1, GA2 and GA3). In Table 3 the descriptions of the factors below the threshold are shown in italics. Although I can't provide univocal explanation, for the green aesthetics construct low convergent validity could be probably due to the method bias. i.e. these items did not catch the meaning of the factor and were not understood by the respondents. The items for the green aesthetics construct have undergone the strongest adaptation of the previously validated items (chapter 5.3). Because the green aesthetics construct had low validity I decided to exclude it from further analysis.

The first item of the aesthetic design construct (AD1) had a convergent validity issue with loading .397 and a discriminant validity issue because it loaded on the fifth factor almost as much (.352) as it loaded on the first factor (.397). However, in spite of the low convergent and discriminant validity, I decided to keep it for the next factor analysis as it was based on a well-established item from Homburg et al. (2015).

**Table 3. Pattern matrix of the first factor analysis**

| <b>Item</b> | <b>Description</b>   | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
|-------------|--|----------|----------|----------|----------|----------|
| <i>AD1</i>  | <i>* This piece of clothing was visually striking</i>  | .397     | .002     | .012     | -.025    | .352     |
| <i>AD2</i>  | <i>* This piece of clothing was good looking</i>   | .953     | .054     | .125     | -.032    | -.076    |
| <i>AD3</i>  | <i>* This piece of clothing looked appealing</i>   | .563     | -.069    | .358     | .140     | .105     |
| <i>FD1</i>  | <i>* This piece of clothing was likely to perform well</i>   | .182     | -.016    | .644     | .116     | .186     |
| <i>FD2</i>  | <i>* This piece of clothing seemed capable of doing its job</i>  | -.027    | -.051    | .987     | .014     | .004     |
| <i>FD3</i>  | <i>* This piece of clothing seemed to be functional</i>  | .264     | .092     | .615     | -.011    | -.128    |
| <i>SD1</i>  | <i>* This piece of clothing would help me in establishing a distinctive image</i>                                      | .015     | -.031    | .144     | -.036    | .761     |
| <i>SD2</i>  | <i>* This piece of clothing would be helpful to distinguish myself from the mass</i>                                   | .001     | .012     | -.094    | .055     | .881     |
| <i>SD3</i>  | <i>* This piece of clothing would accurately symbolize my achievements</i>   | -.049    | .146     | -.059    | .024     | .690     |
| <i>GA1</i>  | <i>*The piece of clothing had visual eco-friendly features (e.g green color, recycle symbols, organic certificate)</i> | -.171    | .419     | .094     | .112     | -.002    |

|     |  |       |       |       |       |       |
|-----|--|-------|-------|-------|-------|-------|
| GA2 | * The piece of clothing looked natural to me   | -.004 | .062  | .005  | .448  | .076  |
| GA3 | * The piece of clothing was made from appealing traditional fabrics (e.g. hemp, linen, cotton, wool) | -.011 | .049  | .174  | .311  | -.064 |
| GF1 | * The piece of clothing provided good environmental value to me                                      | .034  | .075  | .143  | .713  | .094  |
| GF2 | * The piece of clothing was environmentally friendly   | -.020 | -.134 | -.026 | .977  | .009  |
| GF3 | * The piece of clothing had environmental benefits   | .018  | .056  | -.140 | .811  | -.075 |
| GS1 | * With this clothing, I could express my environmental concern                                       | .136  | .797  | -.148 | .151  | -.024 |
| GS2 | * With this clothing, I could demonstrate to my friends that I care about environmental conservation | -.049 | .851  | .118  | -.016 | .107  |
| GS3 | * With this clothing, my friends would perceive me to be concerned about the environment             | .094  | .986  | -.076 | -.115 | .045  |

### 6.1.2 Second factor analysis

For the second factor analysis, I removed the green aesthetics construct due to the lack of convergent and discriminant validity. As discussed above, I retained the first item of the aesthetic design construct AD1 even though it had low convergent and discriminant validity, as it had been previously validated by Homburg et al. (2015).

I then proceeded to test the model with 5 factors: aesthetic, functional and symbolic design, green functionality and green symbolism. I conducted second factor analysis with 15 items and I used eigenvalue above 1, but it received four variables in result. The aesthetic and functional design constructs loaded at the same factor 2. There was still a problem with AD 1 with both convergent and discriminant validity (Table 4).

**Table 4. Pattern matrix of the second factor analysis**

| Item | Description   | 1     | 2    | 3     | 4    |
|------|---|-------|------|-------|------|
| AD1  | * This piece of clothing was visually striking      | .028  | .337 | .125  | .385 |
| AD2  | * This piece of clothing was good looking           | .081  | .794 | .213  | .038 |
| AD3  | * This piece of clothing looked appealing           | -.043 | .787 | -.042 | .131 |
| FD1  | * This piece of clothing was likely to perform well | -.027 | .778 | -.166 | .125 |

|            |  |       |       |       |       |
|------------|--|-------|-------|-------|-------|
| <i>FD2</i> | * This piece of clothing seemed capable of doing its job   | -.098 | .832  | -.182 | -.092 |
| <i>FD3</i> | * This piece of clothing seemed to be functional   | .077  | .775  | -.030 | -.171 |
| <i>SD1</i> | * This piece of clothing would help me in establishing a distinctive image                           | -.038 | .117  | .005  | .744  |
| <i>SD2</i> | * This piece of clothing would be helpful to distinguish myself from the mass                        | .008  | -.125 | -.066 | .919  |
| <i>SD3</i> | * This piece of clothing would accurately symbolize my achievements                                  | .141  | -.097 | -.043 | .680  |
| <i>GF1</i> | * The piece of clothing provided good environmental value to me                                      | .120  | .202  | -.697 | .090  |
| <i>GF2</i> | * The piece of clothing was environmentally friendly   | -.062 | .023  | -.937 | .039  |
| <i>GF3</i> | * The piece of clothing had environmental benefits   | .115  | -.059 | -.761 | -.046 |
| <i>GS1</i> | * With this clothing, I could express my environmental concern                                       | .802  | -.027 | -.128 | -.014 |
| <i>GS2</i> | * With this clothing, I could demonstrate to my friends that I care about environmental conservation | .824  | .055  | -.070 | .051  |
| <i>GS3</i> | * With this clothing, my friends would perceive me to be concerned about the environment             | 1.000 | -.015 | .101  | .012  |

### 6.1.3 Third factor analysis

For the next round of analysis, I specified five factors in the output. I changed the criteria from eigenvalue higher than 1 to five factors, as this is what I expected from the theoretical framework.

In this analysis, AD 1 had low convergent validity (.421) and loaded as well on fifth factor (.342). Finally, I decided to remove it from analysis. Beside the problem with AD 1, the other items seemed to work well (Table 5).

**Table 5. Pattern matrix of the third factor analysis.**

| Item       | Description                                    | 1     | 2     | 3     | 4     | 5     |
|------------|--|-------|-------|-------|-------|-------|
| <i>AD1</i> | * This piece of clothing was visually striking | -.016 | -.421 | .001  | -.039 | .342  |
| <i>AD2</i> | * This piece of clothing was good looking      | .078  | -.969 | .043  | -.053 | -.095 |
| <i>AD3</i> | * This piece of clothing looked appealing      | .330  | -.579 | -.067 | .123  | .088  |

|            |  |       |       |       |       |       |
|------------|--|-------|-------|-------|-------|-------|
| <i>FD1</i> | * This piece of clothing was likely to perform well  | .636  | -.175 | -.008 | .119  | .170  |
| <i>FD2</i> | * This piece of clothing seemed capable of doing its job   | 1.024 | .076  | -.033 | .017  | -.012 |
| <i>FD3</i> | * This piece of clothing seemed to be functional   | .609  | -.245 | .095  | .000  | -.146 |
| <i>SD1</i> | * This piece of clothing would help me in establishing a distinctive image                           | .140  | -.021 | -.029 | -.047 | .761  |
| <i>SD2</i> | * This piece of clothing would be helpful to distinguish myself from the mass                        | -.097 | -.015 | .014  | .054  | .873  |
| <i>SD3</i> | * This piece of clothing would accurately symbolize my achievements                                  | -.056 | .048  | .141  | .020  | .692  |
| <i>GF1</i> | * The piece of clothing provided good environmental value to me                                      | .192  | -.004 | .105  | .676  | .096  |
| <i>GF2</i> | * The piece of clothing was environmentally friendly   | .015  | .028  | -.104 | .963  | .014  |
| <i>GF3</i> | * The piece of clothing had environmental benefits   | -.093 | .000  | .081  | .791  | -.069 |
| <i>GS1</i> | * With this clothing, I could express my environmental concern                                       | -.109 | -.086 | .791  | .161  | -.033 |
| <i>GS2</i> | * With this clothing, I could demonstrate to my friends that I care about environmental conservation | .165  | .115  | .849  | .010  | .092  |
| <i>GS3</i> | * With this clothing, my friends would perceive me to be concerned about the environment             | -.039 | -.033 | .981  | -.087 | .026  |

#### 6.1.4 Forth factor analysis

Because of the low convergent and discriminant validity I removed AD 1 and conducted the forth factor analysis. I kept five factors in the model instead of following eigenvalue. In this analysis, there were no more challenges for the scale validity. All items loaded above 0.5 only on factors they were supposed to represent (Hair et al., 2009). Pattern Matrix for the validated scale is presented in Table 6.

**Table 6. Pattern Matrix of the forth factor analysis.**

| Item       | Description                               | 1     | 2     | 3     | 4     | 5     |
|------------|---|-------|-------|-------|-------|-------|
| <i>AD2</i> | * This piece of clothing was good looking | 1.015 | -.026 | .030  | -.070 | -.006 |
| <i>AD3</i> | * This piece of clothing looked appealing | .604  | .271  | -.074 | .109  | .136  |

|            |  |       |       |       |       |       |
|------------|--|-------|-------|-------|-------|-------|
| <i>FD1</i> | * This piece of clothing was likely to perform well  | .192  | .616  | -.009 | .112  | .175  |
| <i>FD2</i> | * This piece of clothing seemed capable of doing its job   | -.047 | 1.006 | -.029 | .026  | -.034 |
| <i>FD3</i> | * This piece of clothing seemed to be functional   | .265  | .582  | .098  | -.002 | -.134 |
| <i>SD1</i> | * This piece of clothing would help me in establishing a distinctive image                           | .041  | .123  | -.038 | -.057 | .752  |
| <i>SD2</i> | * This piece of clothing would be helpful to distinguish myself from the mass                        | .028  | -.114 | -.011 | .042  | .901  |
| <i>SD3</i> | * This piece of clothing would accurately symbolize my achievements                                  | -.040 | -.059 | .131  | .011  | .686  |
| <i>GF1</i> | * The piece of clothing provided good environmental value to me                                      | .012  | .188  | .107  | .676  | .084  |
| <i>GF2</i> | * The piece of clothing was environmentally friendly   | -.030 | .017  | -.106 | .962  | .019  |
| <i>GF3</i> | * The piece of clothing had environmental benefits   | -.002 | -.093 | .083  | .794  | -.075 |
| <i>GS1</i> | * With this clothing, I could express my environmental concern                                       | .084  | -.115 | .790  | .161  | -.024 |
| <i>GS2</i> | * With this clothing, I could demonstrate to my friends that I care about environmental conservation | -.115 | .174  | .848  | .014  | .082  |
| <i>GS3</i> | * With this clothing, my friends would perceive me to be concerned about the environment             | .032  | -.041 | .978  | -.087 | .033  |

In the Table 7 are presented eigenvalues for the forth factor analysis. Eigenvalue indicates the relative importance of each factor and the amount of variance accounted for by a factor (Hair et al., 2009). In this forth factor analysis, only 4 factors had eigenvalue higher than 1.0. However, I retained five factors for further analysis following the theoretical framework.

**Table 7. Eigenvalues.**

|   | Initial Eigenvalues |               |              | Extraction Sums of Squared Loadings |               |              | Rotation Sums of Squared Loadings |
|---|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|
|   | Total               | % of Variance | Cumulative % | Total                               | % of Variance | Cumulative % | Total                             |
| 1 | 4.594               | 32.811        | 32.811       | 2.698                               | 19.270        | 19.270       | 2.793                             |
| 2 | 3.013               | 21.520        | 54.331       | 2.600                               | 18.571        | 37.841       | 3.189                             |
| 3 | 2.104               | 15.027        | 69.357       | 2.701                               | 19.293        | 57.134       | 3.041                             |
| 4 | 1.287               | 9.193         | 78.550       | 1.167                               | 8.337         | 65.471       | 2.740                             |
| 5 | .600                | 4.289         | 82.839       | 1.364                               | 9.743         | 75.214       | 2.493                             |

### 6.1.5 Fifth factor analysis

At last, I conducted the fifth factor analysis with Purchase Intention and Attitude. It showed no challenges for the scale validity (Table 8).

**Table 8. Factor analysis of Purchase Intention and Attitude**

| Item | Description  | 1     | 2     |
|------|--|-------|-------|
| PI1  | What do you think about the future purchase of eco-friendly (sustainable) clothing like the one you have chosen?<br>- Given the chance, I intend to buy similar sustainable clothing                         | .046  | .842  |
| PI2  | What do you think about the future purchase of eco-friendly (sustainable) clothing like the one you have chosen?<br>- Given the chance, I predict that I will buy similar sustainable clothing in the future | -.029 | .986  |
| At1  | How would you describe your attitude towards the eco-friendly (sustainable) clothing that you have chosen?<br>– Unfavorable : Favorable  | .769  | .129  |
| At2  | How would you describe your attitude towards the eco-friendly (sustainable) clothing that you have chosen?<br>– Bad : Good   | 1.049 | -.134 |
| AT3  | How would you describe your attitude towards the eco-friendly (sustainable) clothing that you have chosen?<br>- Dislike:Like   | .899  | .051  |

## 6.2 Descriptives.

Table 9 provides descriptive statistics for the data. For a normal distribution of data in the range from 1 to 7, the mean will be 4, but it's not uncommon to have some asymmetry in the data and this could be measured by skewness and kurtosis. Functional design (5.96; -1.332) and aesthetic design (5.76; -0.813) constructs have the highest mean and the highest skewness among the independent variables. Green symbolism (3.11; 0.616) has the lowest mean and symbolic design (3.68; 0.177) has the lowest skewness. The data for symbolic design is closest to the normal distribution. For Attitude (5.99) and PI (5.66) the means are relatively high.

The lowest kurtosis has green functionality (0.182) and the highest kurtosis has functional design (2.981). All values of skewness are below 2 and for kurtosis are below 3, that is acceptable in order to prove normal univariate distribution (George & Mallery, 2010).

**Table 9. Descriptive statistics**

| <b>Construct</b>    | <b>Mean</b> | <b>Std. Deviation</b> | <b>Skewness</b> | <b>Kurtosis</b> |
|---------------------|-------------|-----------------------|-----------------|-----------------|
| Aesthetic design    | 5.76        | 1.17                  | -0.813          | 0.264           |
| Functional design   | 5.96        | 1.07                  | -1.332          | 2.981           |
| Symbolic design     | 3.68        | 1.49                  | 0.177           | -0.716          |
| Green functionality | 5.10        | 1.34                  | -0.531          | 0.182           |
| Green symbolism     | 3.11        | 1.62                  | 0.616           | -0.463          |
| Attitude            | 5.99        | 1.23                  | -1.462          | 2.260           |
| PI                  | 5.66        | 1.29                  | -1.010          | 1.526           |

### 6.3 Correlation

I analyzed correlations between the constructs to ensure discriminant validity. Pearson's correlation coefficients are presented in Table 10. The relationship for all the independent variables and the purchase intention is below the 0.8 threshold (Berry et al., 1985). Therefore, there is no challenge for the discriminant validity. The table shows the highest correlation between the aesthetic design and functional design (0.702), which is not surprising since they belong to the same overarching design construct. Interestingly, there is a relatively high correlation between the green functionality and the functional design constructs (.301), between the green symbolism and the symbolic design (.357), and between the green functionality and the green symbolism (.390) constructs.

**Table 10. Correlation matrix**

| <b>Pearson correlation</b> | <b>Aesthetic design</b> | <b>Functional design</b> | <b>Symbolic design</b> | <b>Green functionality</b> | <b>Green symbolism</b> | <b>PI</b> |
|----------------------------|-------------------------|--------------------------|------------------------|----------------------------|------------------------|-----------|
| Aesthetic design           | 1                       |                          |                        |                            |                        |           |
| Functional design          | .702**                  | 1                        |                        |                            |                        |           |
| Symbolic design            | .225*                   | .145                     | 1                      |                            |                        |           |
| Green functionality        | .127                    | .301**                   | .131                   | 1                          |                        |           |
| Green symbolism            | .079                    | .091                     | .357**                 | .390**                     | 1                      |           |
| PI                         | .467**                  | .501**                   | .234*                  | .454**                     | .249**                 | 1         |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

## 6.4 Reliability analysis

The ability of the scale to consistently measure the dependent variable by the independent variable is described by the reliability (Ho, 2006). Thus, reliability is an important prerequisite for the test validity. One of the diagnostic measures to assess internal consistency is the reliability coefficient Cronbach's alpha, that is an estimate of the average of all the correlation coefficients of the items. Cronbach's alpha measurement for the independent variables are presented in the Table 10. Cronbach's alpha for all the antecedents in the model is above required .70, thus I suggest that the test is internally consistent and all the items are reliable (Ho, 2006).

**Table 10. Cronbach's alpha**

| <b>Construct</b>    | <b>Cronbach's alpha</b> |
|---------------------|-------------------------|
| Aesthetic design    | .872                    |
| Functional design   | .864                    |
| Symbolic design     | .824                    |
| Green functionality | .859                    |
| Green symbolism     | .917                    |

## 6.5 Common method bias

I conducted a Harman's one-factor test to ensure absence of common method bias. Harman's test shows whether one factor explains most of the variance. The measures that were implemented to prevent common method bias during the survey are described in chapter 5.2. The Harman's one-factor test shows that the measures were successful. The Eigensvalue 32.811 (Table 7) of the first factor in my model means that this factor explains about 32.8% of variance and is significantly below the threshold of 50% (Ho, 2006). Thus, there is no risk of common method bias in the analysis.

## 6.6 Assumptions for linear regression

There exist several assumptions that need to be met when conducting multivariate analysis, such as normality, homoscedasticity, linearity and absence of autocorrelation (Ho,



2009). The results of the tests of these assumptions are presented below.

To show normality, the regression residuals or the error terms must follow a normal distribution. The normal Predicted Probability (P-P) plot for the data (Appendix F) shows normal distribution of the residuals.

The next assumption to check is homoscedasticity. Homoscedasticity refers to whether the residuals are equally distributed, or whether they tend to bunch together at some values (Ho, 2009). It's possible to notice in the Appendix G that points on the scatterplot are not equally distributed on the X axis. However, the major challenges for the homoscedasticity this distribution doesn't present.

Since the residues are normally distributed and relatively homoscedastic, then the assumption of linearity is supposed to be met as well (Karadimitriou and Marshall, n.d.).

At last, I checked absence of autocorrelation with the Durbin-Watson test that resulted 2.09 and was within the recommended range between 1.5 and 2.5. Therefore, the data is not autocorellated (Karadimitriou and Marshall, n.d.).

## 6.7 Results

### 6.7.1 Multiple regression analysis

Final model for my analysis is built on the 14 items, all of them loaded higher than 0.5 in the fourth and fifth factor analyzes. After the scale validation, I computed the remaining five independent variables, purchase intention and attitude and conducted regression analysis.

Multiple regression is used to analyze the relationship between several independent variables and a single dependent variable (Hair et al., 2009). In this type of analysis, the objective is to use independent variables with known value to predict the value of dependent variable. Weights in a regression analysis show the relative contribution of independent variables to the overall result.

First regression analysis I made with purchase intention as dependent variable and five independent factors, namely aesthetic design, functional design, symbolic design, green functionality and green symbolism. This model explained 38% of purchase intention (Adjusted R-square .377). In other words, 38% of variance accounted for in the purchase

intention by the independent variables (Ho, 2009).

Green functionality (.329 Standardized Beta coefficients) and aesthetic design (.260) show significance in the model at 5% level, and functional design (.202) is significant at 10% level. Symbolic design (.085) and green symbolism (.051) don't show significance in the results.

Next, I added attitude as control variable to the model. New model explained 41% of intention (Adjusted R-square .411). With this model, functional design lost its significance (.151), whilst aesthetic design (.244) and green functionality (.319) maintained its importance.

Third regression was made with added control variables of perceived money availability, stores accessibility and past purchase experience. This model showed the highest explanatory value with Adjusted R-square .473. Even with all these control variables, green functionality (.348) and aesthetic design (.216) show significance and confirm that results are robust. Store accessibility is not significant in my model, whilst both money availability and past experience are important in explaining purchase intention towards sustainable clothing.

Fourth regression with control variables for gender and age showed a reduced adjusted R-squared coefficient to 0.464. Both the gender (-.020) and age (-.032) variables are insignificant as antecedents for purchase intention in my model.

**Table 11. Results of regression analysis.**

| Antecedents         | Standardized Beta coefficients |          |          |          |
|---------------------|--------------------------------|----------|----------|----------|
|                     | Model 1                        | Model 2  | Model 3  | Model 4  |
| Aesthetic design    | .260 **                        | .244 **  | .216 **  | .210 **  |
| Functional design   | .202 *                         | .151     | .133     | .133     |
| Symbolic design     | .085                           | .067     | .039     | .045     |
| Green Functionality | .329 ***                       | .319 *** | .348 *** | .351 *** |
| Green Symbolism     | .051                           | .017     | -.040    | -.036    |
| Attitude            |                                | .212*    | .240 **  | .241 **  |
| Money availability  |                                |          | .184 *   | .181 *   |
| Store accessibility |                                |          | -.058    | -.058    |
| Past experience     |                                |          | .199 *   | .197 *   |
| Gender              |                                |          |          | -.020    |
| Age                 |                                |          |          | -.032    |
| R2adj               | .377                           | .411     | .473     | .464     |

## 6.7.2 Collinearity diagnostics

There exists risk of distortion of the results by the collinearity of the independent variables, as when the independent variables are highly correlated, the contribution of each factor is hard to assess (Hair et al., 2009; Ho, 2006). Thus, I looked at the correlation among the factors to ensure the meaning of the regression analysis.

In the tested model, Tolerance values for each variable are significantly higher than .10 and the VIF values are significantly less than 10 and thus multicollinearity is not a problem for the model.

**Table 12. Collinearity statistics**

| Construct           | Model 1   |       | Model 2   |       | Model 3   |       | Model 4   |       |
|---------------------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
|                     | Tolerance | VIF   | Tolerance | VIF   | Tolerance | VIF   | Tolerance | VIF   |
| Aesthetic design    | .481      | 2.079 | .479      | 2.086 | .472      | 2.117 | .461      | 2.167 |
| Functional design   | .458      | 2.183 | .444      | 2.253 | .420      | 2.379 | .389      | 2.573 |
| Symbolic design     | .832      | 1.202 | .826      | 1.211 | .816      | 1.225 | .791      | 1.264 |
| Green functionality | .760      | 1.316 | .759      | 1.318 | .742      | 1.348 | .728      | 1.374 |
| Green symbolism     | .748      | 1.337 | .731      | 1.367 | .705      | 1.419 | .670      | 1.492 |
| Attitude            |           |       | .834      | 1.199 | .821      | 1.217 | .820      | 1.220 |
|                     |           |       |           |       |           |       | .682      | 1.466 |
| Money availability  |           |       |           |       | .702      | 1.424 |           |       |
| Store accessibility |           |       |           |       | .735      | 1.360 | .703      | 1.422 |
| Past experience     |           |       |           |       | .881      | 1.135 | .806      | 1.241 |
| Gender              |           |       |           |       |           |       | .844      | 1.185 |
| Age                 |           |       |           |       |           |       | .817      | 1.223 |

## 6.8 Summary and main conclusions.

Present research demonstrates the effect of the design and sustainability factors on the purchase intention towards sustainable clothing. In the tested model, only factors, related to attitude according to the TRA and the TPB, such as aesthetic design, functional design and green functionality, have shown significant impact on the purchase intention towards

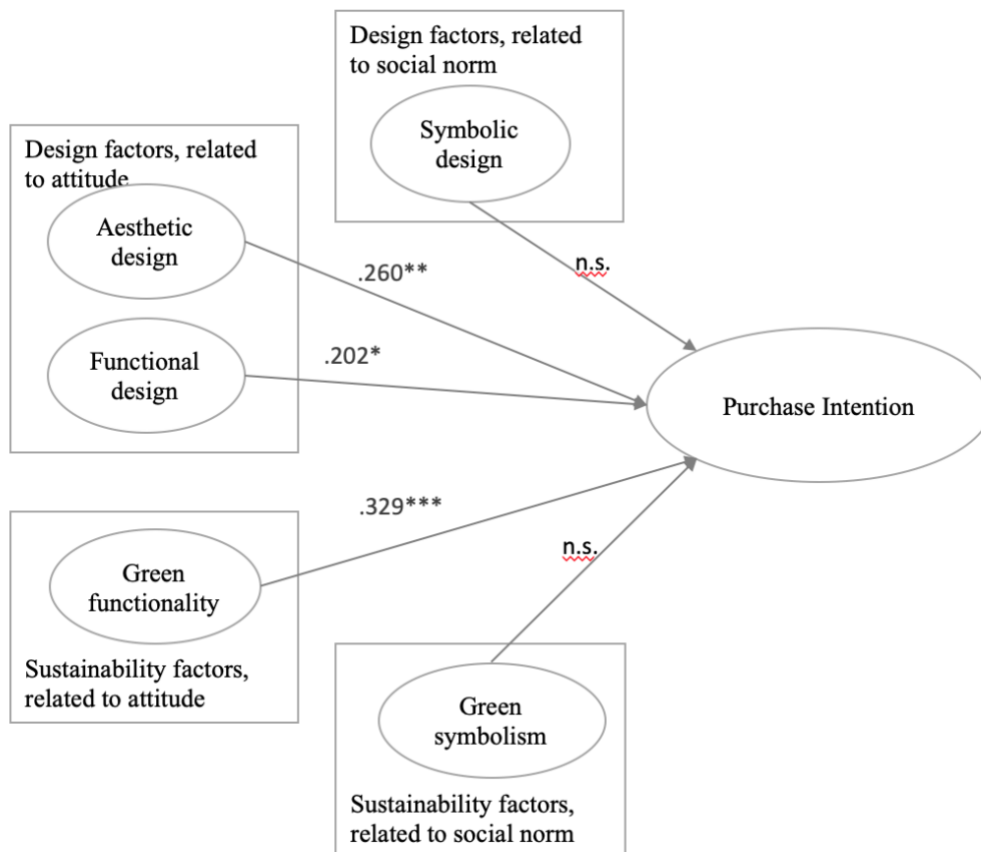
sustainable clothing. Factors, related to subjective norms, such as symbolic design and green symbolism, didn't show significant influence on the purchase intention.

Figure 3 presents the final model, where the most significant factors of influence on the purchase intention towards sustainable clothing are aesthetic design and green functionality, while functional design has relative significance. Symbolic design and green symbolism don't show significance in the model. Green aesthetics has been removed from the model due to the validity issues.

The research model shows good explanatory power for the purchase intention towards sustainable clothing. The independent variables explain 37.7% of the variation in purchase intention. 47.3% of the variation is explained by the model when controlling the perceived money availability, store availability and past shopping experience, as well as attitude.

The results show, that hypothesis H2, H4 and H5 are supported. One of the main hypothesis in the paper is that in addition to being green, piece of sustainable clothing should be also aesthetic, and that is clearly shown in the results.

**Figure 2. Model**



**Table 13. Hypothesis**

|    | <b>Hypothesis</b>   | <b>Coef</b> | <b>Support</b> |
|----|---|-------------|----------------|
| H1 | <i>Green aesthetics has a positive influence on purchase intention of sustainable clothes.</i>    | N.a.        | N.a.           |
| H2 | <i>Green functionality has a positive influence on purchase intention of sustainable clothes.</i> | .329        | Yes            |
| H3 | <i>Green symbolism has a positive influence on purchase intention of sustainable clothes.</i>     | .051        | No             |
| H4 | <i>Aesthetic design has a positive influence on purchase intention of sustainable clothes.</i>    | .260        | Yes            |
| H5 | <i>Functional design has a positive influence on purchase intention of sustainable clothes.</i>   | .202        | Yes            |
| H6 | <i>Symbolic design has a positive influence on purchase intention of sustainable clothes.</i>     | .085        | No             |

Functional design showed significance in the initial model (.202), but that influence disappeared (.133) when I introduced the control variables.

## 7. Final discussion

### 7.1 Theoretical implication

The present study investigated the influence of the design and sustainability factors on the purchase intention towards sustainable clothing. Two research questions were formulated in the beginning of the study, about the influence of design factors and the influence of sustainability factors on consumers' intention to buy sustainable clothes.

To answer the first research question, I used the model described by Homburg et al. (2015) and explored the impact of the aesthetic, functional and symbolic dimensions of design in the context of sustainable clothing. The aesthetic dimension of product design showed significance on purchase intention towards sustainable clothing. The functional dimension of product design showed relative significance and the symbolic dimension didn't prove to be important in the context of purchasing sustainable clothing in Norway. These results differ from the study conducted by Homburg et al. (2015), where all three constructs showed significance. Therefore, my study shows the importance of validating the Homburg framework in a particular product and geographic context. This result is an interesting finding that should be considered in future studies using Homburg et al. (2015) framework.

Answering the second research question I extended the Homburg's theory with the sustainability constructs. In my work, I studied the influence of green aesthetics, green functionality and green symbolism on the purchase intention of sustainable clothing. Green functionality showed the largest influence on sustainable clothing purchase intentions among all the factors in the model. Green symbolism didn't show significance, as predicted by some researchers in the context of sustainable products (Tarkiainen and Sundqvist, 2005; Paul et al., 2016; Kumar et al., 2017). Green aesthetics has been removed from the model due to the validity issues.

To the best of my knowledge, design and sustainability factors haven't been tested together in the context of sustainable clothing purchase intention. Therefore, this study contributed to the sustainable clothing consumption literature.

The key theoretical contribution of this study is the empirical evidence for the influence of aesthetic design on the sustainable clothing purchasing intentions. Although it has been widely discussed that an unaesthetic appearance can be a major barrier preventing sustainable clothing from becoming popular (Joergens, 2006; Connell, 2010; Niinimäki, 2010;

McNeill & Moore, 2015), to the best of my knowledge no study has tested the influence of aesthetics on the purchase intention in the sustainable clothing context.

The present study has shown that both the design and sustainability factors should be included in models describing the intention to purchase sustainable clothing.

## 7.2 Managerial implication

This research contributed to an understanding of what consumers really want and value from sustainable clothing. There are three antecedents of the sustainable clothing purchase decision: aesthetic design, functional design and green functionality. Promotion of these factors can stimulate the sales of sustainable apparel. This means, that a sustainable garment, in order to be commercially successful, must be at the same time good looking, appear capable to do its job and provide environmental benefits. Sacrificing one of these aspects can negatively impact the purchasing decision. This insight can help managers produce sustainable garments that can achieve commercial success.

One of the main findings of this study is the empirical confirmation that consumers of sustainable apparel are looking for overall aesthetics. As discussed by Zafarmand et al. (2003), scientific evidence can help manufacturers understand the importance of aesthetics and put more effort into creating the right aesthetics for sustainable clothing. To address the issue of stereotypical aesthetics of sustainable clothing, the general understanding is that aesthetics cannot be limited to one style or fashion. As with traditional fashion, aesthetics of sustainable clothing should be based on the tastes of the users, their diversity and even individuality.

Moreover, it can be assumed that since both symbolic design and green symbolism do not have a significant impact on the purchase intention, people do not expect sustainable clothing to visually differ from mainstream fashion, as was predicted by Niinimäki (2010). And if consumers do not expect sustainable garments to look different from the mainstream fashion, but green functionality is of paramount importance to them, other means of communication than garment design are needed to educate consumers about the green functional benefits of clothing. Promotion of the environmental benefits can be made through advertisement, social media, labels, or in-store communications.

According to my survey, design functionality is important to the consumers. As was predicted earlier in the literature (Hwang and Griffiths, 2017; Lin et al. 2017b), consumers are not willing to make functional sacrifices when purchasing of sustainable clothing. However,

green apparel consumers are looking for the additional environmental benefits, and it is important for manufacturers to separate design functionality from green functionality. Since consumers may perceive a trade-off between the environmental benefits and product functionality in sustainable garments (Luchs and Swan, 2011), both types of benefits must be taken into account and clearly communicated to consumers.

### 7.3 Future research

This study examined the purchase intention for sustainable clothing among students in Norway. The design of the study and the sample of respondents impose restrictions on the interpretation of the results. Although this study hasn't shown influence of gender and age on the purchase intention, cultural context and relative homogeneity of the sample in terms of age and occupation may influence behaviour in this group. Further research may validate the results in other countries or other age groups.

The survey design assumed that all the respondents had bought clothing with sustainable features before participating. Therefore, the results reflect the vision of a group that, to one degree or another, has already adopted sustainable clothing. Market research shows, that sustainable clothing remains a niche market today and constitutes less than 0.1% of the total clothing market (The business research company, 2020). To understand the influence of the design and sustainability factors on the purchase intention in the general population, future research may include those who are not yet buying sustainable clothing.

The present study failed to measure the green aesthetics construct as it intended. To measure it, I combined items from Homburg et al. (2015) and Quoquab et al. (2020), but the obtained data had the validity issues. Therefore, better measures should be developed to measure this construct.

And finally, presented in the research model explains 37.7% variation in purchase intention and 47.3% variation when controlling perceived money availability, store availability and past shopping experience, as well as attitude. Thus, more than half of the variation remained unexplained. Further research may focus on the remaining explanatory factors. Taking new factors into account, a model can be developed to explain more variance.



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## Appendix

### **Appendix A. An email invitation to participate in the survey.**

Dear fellow student,

As a part of my master thesis I invite NHH-students to participate in a short survey to help me learn more about your experiences when purchasing eco-friendly clothing. The survey takes about 5-6 minutes to finish and is anonymous. Your response is very valuable to me!

Take the survey

Or copy and paste the URL below into your internet browser:

[https://nhh.eu.qualtrics.com/jfe/form/SV\\_9Stx5DO5htMDThA](https://nhh.eu.qualtrics.com/jfe/form/SV_9Stx5DO5htMDThA)

### **Appendix B. First reminder to participate in the survey.**

(If you have already completed the survey, you can ignore this message. Thank you! If you started the survey but did not finish it, you can end it now by following the link!)

Dear fellow student,

This is a friendly reminder to participate in a short survey that will help me learn more about intention to buy eco-friendly clothing. Your answer is very valuable to me, as it will form the basis of my master's thesis. The survey takes only about **5 minutes** to complete and is anonymous.

Take the survey by clicking this link:

Take the survey

### **Appendix C. Second reminder to participate in the survey.**

(If you have already completed the survey, please, ignore this message!)

Dear fellow student,

If you haven't participated in master thesis survey about eco-friendly clothing, you still can help me, please! I miss 15 responses to complete the survey and every response is extremely valuable for the research. The survey takes only about **5 minutes** to complete and is anonymous.

You can click this link:

Take the survey

#### **Appendix D. Cover page of questionnaire.**

Hi!

This survey is conducted as part of a master's thesis at the Norwegian School of Economics (NHH) and takes 5 to 6 minutes. I really appreciate your participation! In this survey, you will answer questions about your experience with sustainable clothing. Some of the questions may seem very similar. This should be so for methodological reasons. There is no 'correct' answer to any of the questions, only your experience is valuable here!

It is important that you read the questions carefully and answer them as honestly as possible.

All responses are anonymous and any information you provide will be treated confidentially. Participation in the survey is voluntary and you can withdraw from the survey at any time without giving any reasons. For questions and comments, feel free to send an email to alexandra.surova@student.nhh.no.

Q1 I consent to take part in this survey and accept that data from it will be used for research

Yes (1)

No (2)

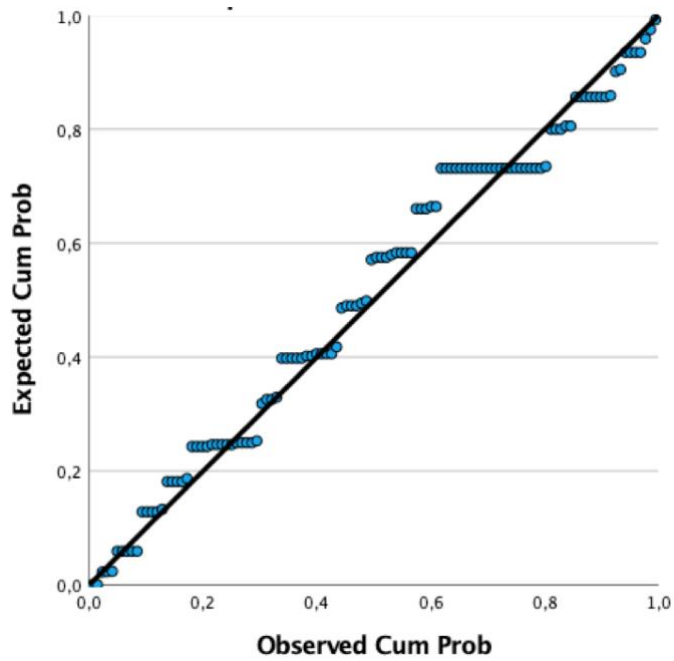
Q2 When answering this survey, I want you to think about an experience you have had with purchasing a specific clothing item with eco-friendly (sustainable) features. You can choose



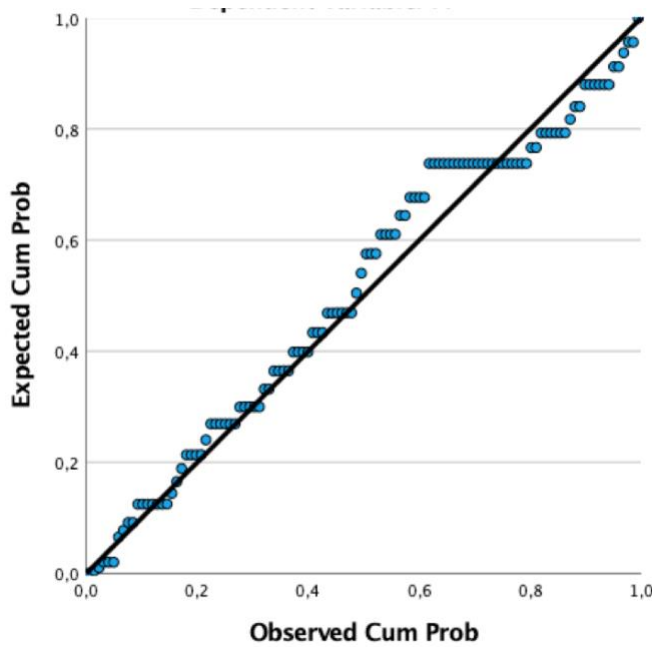


## Appendix F. Normal P-P plot.

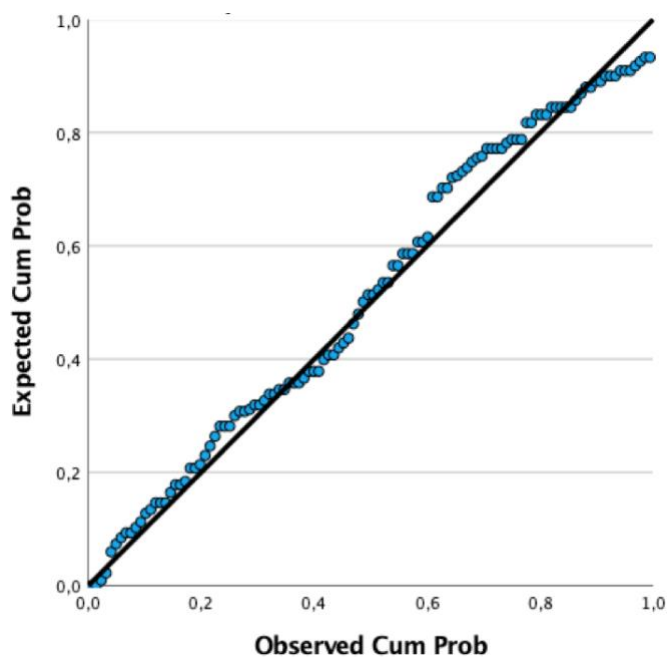
Normal P-P Plot of Regression standardized residual. Aesthetic design



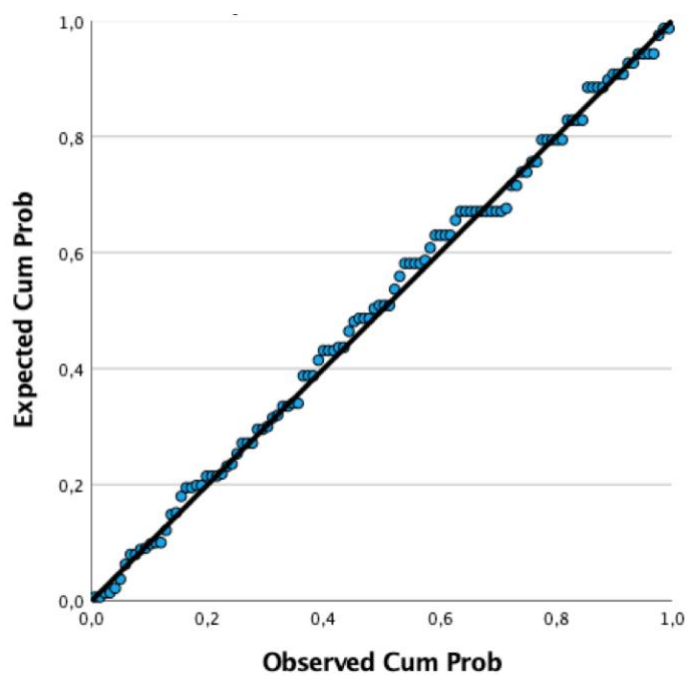
Normal P-P Plot of Regression standardized residual. Functional design



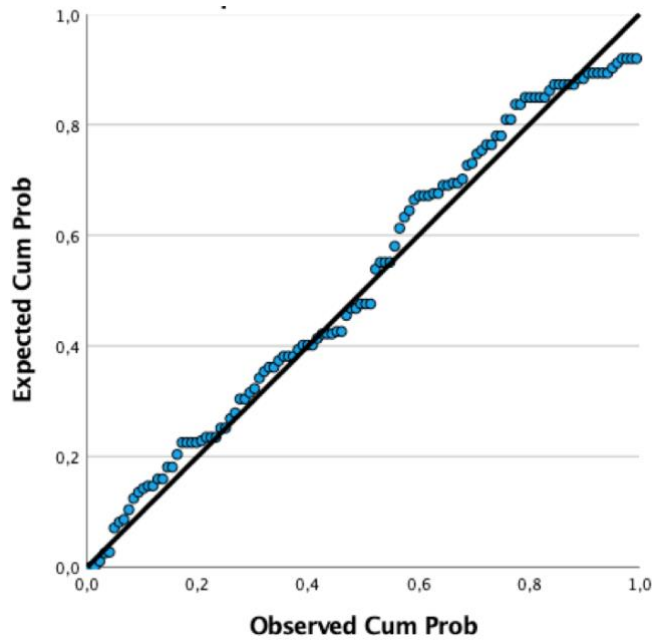
Normal P-P Plot of Regression standardized residual. Symbolic design



Normal P-P Plot of Regression standardized residual. Green functionality

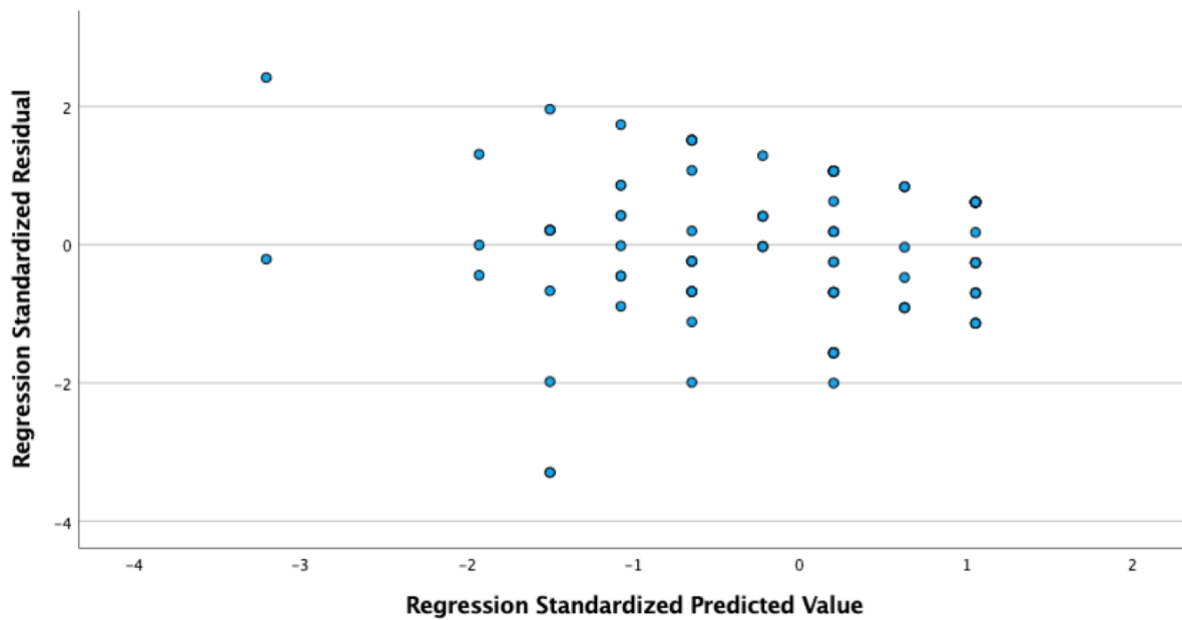


Normal P-P Plot of Regression standardized residual. Green symbolism

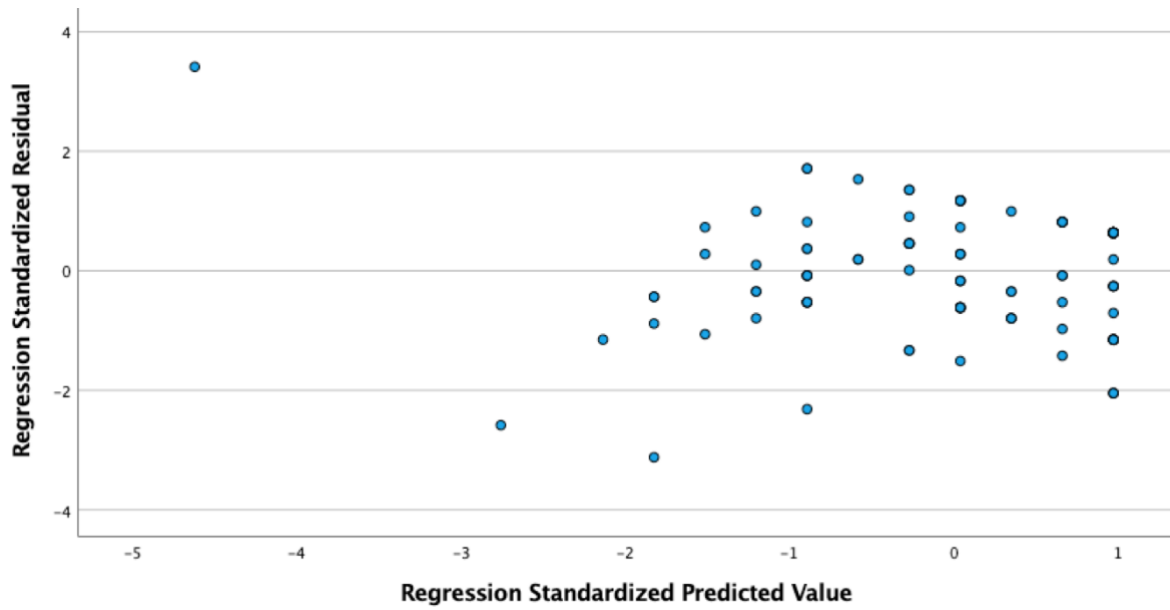


### Appendix G. Homoscedasticity.

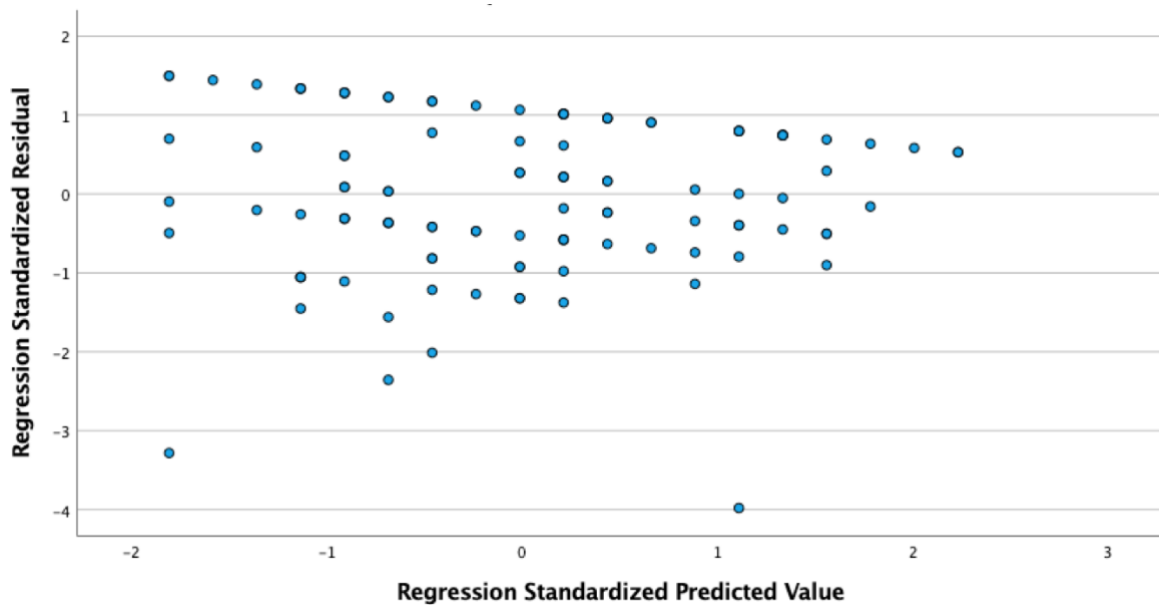
Scatterplot of Regression standardized residual. Aesthetic design



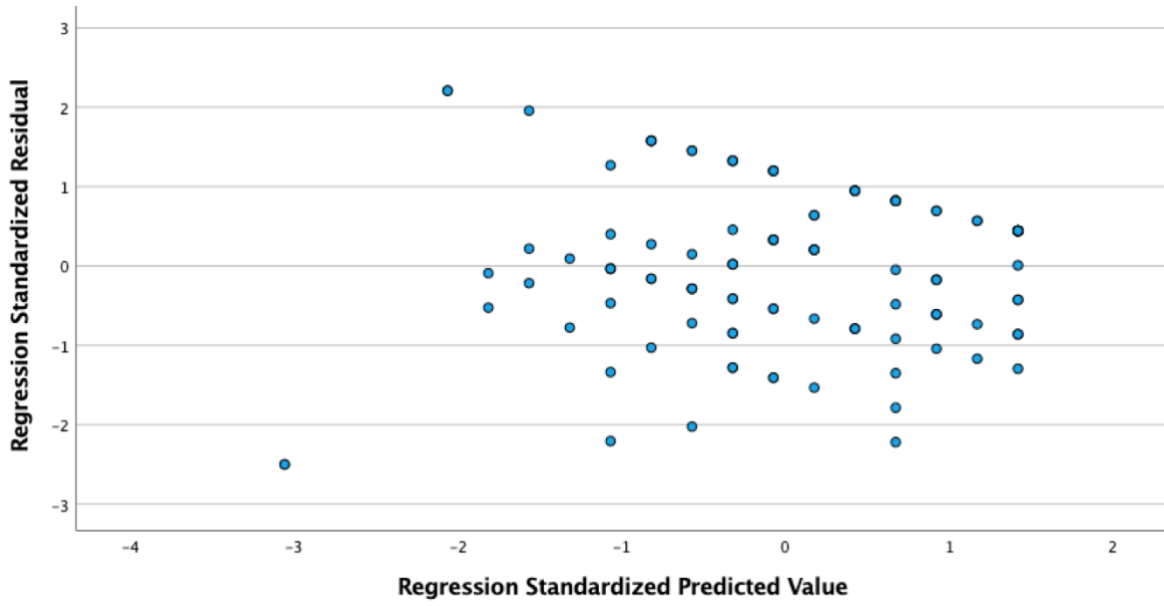
Scatterplot of Regression standardized residual. Functional design



Scatterplot of Regression standardized residual. Symbolic design



Scatterplot of Regression standardized residual. Green functionality



Scatterplot of Regression standardized residual. Green symbolism

