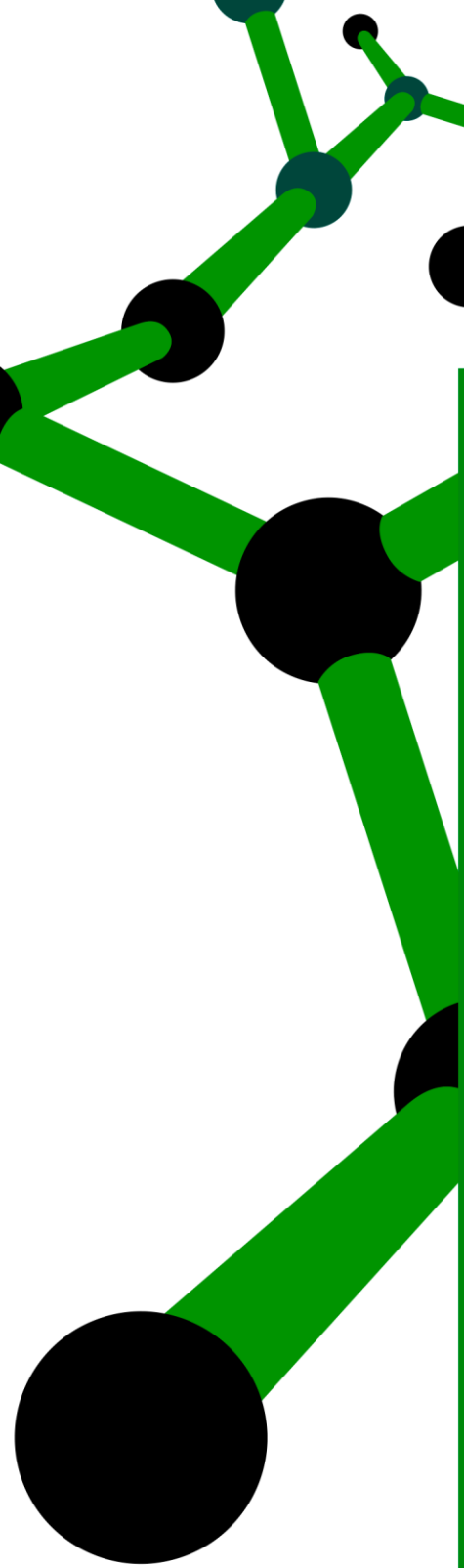

MASTER THESIS

Master thesis

The influence of certified eco-labels on clothing on consumer behaviour

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Abstract

Aim: The aim of this study is to acquire a broader understanding of how the use of certified eco-labels on clothing affects consumer behaviour. Consumer behaviour was measured based on the following variables: attitude towards the company, purchase intention and willingness to pay a premium. Additionally, consumer knowledge of the fashion industry's environmental and social effects and knowledge of certified eco-labels were analysed.

Method: With an online survey tool, a survey was created and conducted to collect data. This survey measured the variables used in this study – 'attitude towards the company', 'purchase intention' and 'willingness to pay a premium' – as well as consumer knowledge of certified eco-labels and the impact of the (fast) fashion industry. Data on 242 respondents was collected and analysed in SPSS.

Results: Certified eco-labels generally positively affect attitude towards companies; that is, respondents generally felt more positive towards companies that used certified eco-labels than those that did not use these kind of eco-labels. This was also the case for respondents' purchase intention: respondents had a higher purchase intention for clothing with a certified eco-label than for clothing without such a label. However, consumers do not want to pay extra for these items. Respondents were aware of the impact of the fashion industry on the (social) environment, which had a positive effect on all three variables. However, respondents were not very familiar with the presented eco-labels or their meanings.

Conclusion and discussion: Results show that consumers in the Dutch market are affected by the use of certified eco-labels on clothing. When consumers are aware of and informed about environmental and social issues, certified eco-labels affect their purchase behaviour. However, this study shows that respondents were not familiar with certified eco-labels. This indicates that consumers are willing to purchase clothing with a certified eco-label, especially when they are aware of the environmental and social issues within the fashion industry, but they do not know what such labels mean. If consumers learn more about certified eco-labels, they can make sustainable purchases.

Keywords: Fast Fashion | Certified Eco-labels | Consumer behaviour | Willingness to pay premium | Attitude toward the company | Purchase intention | Sustainability | Consumer awareness | consumer knowledge

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1. Introduction

Nowadays, fashionable clothes are available almost everywhere for a low price. Therefore, fashion trends change frequently, and stores replace their collections every few weeks (Zamani, Sandin, & Peters, 2017). This phenomenon is called 'fast fashion', and it has several negative effects. Because of rapidly changing fashion trends, clothes are worn for a very short time (Zamani, Sandin, & Peters, 2017). When clothes are no longer worn or wanted, they are often thrown away, not recycled or donated (Gwozdz, Nielsen., & Müller, 2017). Significant amounts of energy, water and chemicals are used for clothing production, and wastewater and chemicals are often discharged into local ecosystems. This affects the health of plants, animals and residents (Gwozdz, Nielsen, & Müller, 2017: Bick, Halsey, & Ekenga, 2018). Fast fashion in mostly produced in low- and middle-income countries, such as Bangladesh (Bick, Halsey & Ekenga, 2018). In these countries, working conditions are poor and safety standards are low, meaning that employees face serious health issues (Bick, Halsey & Ekenga, 2018). The apparel industry is one of the industry's most harmful to society and the environment (Pereira, Carvalho, Dias, Costa and António, 2021). Therefore, there is much potential to reduce the impact of this industry.

As is said across the world, 'If you want to change the world, start with yourself'. Consumers can change the (fast) fashion industry by choosing environmentally and socially sustainable alternatives. According to Jung and Jin (2016), consumers have begun to pay more attention to sustainability, and the term 'slow life' is slowly becoming more common among consumers. Calderon-Mong, Pastor-Sanz and Garcia (2020) also stated that consumers are familiar with their own effect on the environment but they are often not informed about the effects of producing the products they buy. Todeschini, Cortimiglia, Callegaro-de-Menezes and Ghezzi (2017) also mentioned that consumers have become more aware of sustainable alternatives and that there has been increasing interest in sustainable fashion. In short, consumers have become more interested in green products and are somewhat aware of how the products they buy affect the environment, but improvements remain necessary.

1.1 Research question

Though consumers are becoming more aware of sustainability, fast fashion remains popular, and this industry has a great impact on the planet. Several brands and companies have implemented sustainable solutions such as using organic materials, using less harmful substances and reducing air and water pollution. Brands, fashion companies and producers can put sustainability information on clothing labels to inform consumers; this is called an eco-label. There is a difference between certified and non-certified eco-labels. Certified eco-labels are third-party labels. These parties control and assess brands and companies to verify whether their clothes are better for society and the environment than comparable products from competitors (Hyllagard et al., 2012; Testa et al., 2013). These certified eco-

labels are often more reliable and credible than non-certified eco-labels (Hyllagard et al., 2012; Testa et al., 2013).

This study examines consumers living in the Netherlands. Several studies have shown a relationship between (certified) eco-labels and consumer behaviour, but limited research has been conducted on consumers living in the Netherlands.

In short, this study examines the effect of certified eco-labels on clothing on consumer behaviour in the Dutch market. The research question is as follows:

'To what extent do certified eco-labels on clothing influence consumer behaviour in the Dutch market?'

1.2 Problem statement and research goals

Much research has been conducted on the social and environmental impact of (fast) fashion. There are also many studies on the relationship between consumer behaviour and eco-labels on clothes. Most of these studies have focused on eco-labels in general, while some have made a distinction between different types of eco-labels. This study focuses on certified eco-labels, which are eco-labels that are controlled and granted by a third party after assessment; these are therefore more credible and reliable than eco-labels produced by the fashion industry itself (Hyllagard et al., 2012; Testa et al., 2013).

Results of this research contribute to the understanding of consumer behaviour as related to certified eco-labels. Managers in the fashion industry could benefit from the results by integrating the findings into their business strategy. If the correlation between consumer behaviour and certified eco-labels is positive, fashion companies could benefit from this insight and choose to produce, distribute and sell more sustainable alternatives. Eco-labelling is a good method for providing information about products' sustainability and social impact, and it is an increasingly common promotion and marketing method (Choudhury, 2015). Therefore, the rise of certified eco-labels could be useful for environmentally conscious consumers, making it easier for them to make more sustainable purchases (Gam et al., 2012).

There are two moderating effects in this study: consumer knowledge of certified eco-labels and consumer awareness of the impact of the (fast) fashion industry. Existing studies have described both of these as crucial moderating effects. Without knowledge of (certified) eco-labels and/or environmental awareness, consumer behaviour is not influenced by such labels; in other words, consumers do not change their purchasing behaviour based on such labels (Kim et al., Calderon-Monge et al., 2020, Lee et al., 2012). Therefore, this study contributes to identifying whether these moderating factors have an effect on consumer behaviour, as is described in the literature. Results of this research are important for managers, who could improve and develop marketing strategies for consumers with and without knowledge of certified eco-labels and environmental awareness.

In a study of Polish consumers, Koszewska (2016) found that, customers who recognized ecological and social labels were more willing to pay a premium for a sustainable product than those who did not. This aligns with research by Ellis (2012), who found that consumers are willing to pay more for organic cotton. If consumers are willing to pay more for sustainable alternatives, it would be beneficial for the fashion industry to find sustainable alternatives for its current processes and products. According to Wongpitch, Minakan, Powpaka and Laohavichien (2016), a firm's Corporate Social Responsibility (CSR) motives affect consumer attitudes towards the company and their purchase intentions. Therefore, it is expected is that certified eco-labelling also affects these two factors.

Furthermore, limited research on this specific topic has been conducted among consumers living in the Netherlands, which can be identified as a gap in the literature. This research could be beneficial and provide new information for researchers, producers, retailers, and policymakers within fashion industry in the Netherlands. Therefore, the results of this research are interesting and beneficial for these stakeholders and their business strategies. Especially, when certified eco-labels influence consumer behaviour in a positive way. Sustainable brands and companies can use certified eco-labels to inform consumers about their products and the impact these have on their environment. This strategy can lead to more sales and a positive consumers attitude towards the company.

In general, consumers have become more aware of how their behaviour impacts their environment. Thereby, consumers have become more interested in sustainable products. The fast fashion industry is one of the industries that is most harmful to our (social) environment. So, the problem is that consumers are willing to change their (purchasing) behaviour but there are still enough improvements to make. One of the methods to create awareness and inform consumers about the impact of a product is a certified eco-label. Other studies do confirm that consumer behaviour is influenced by the presence of certified eco-labels.

The goal of this study is to broaden the understanding of the influences certified eco-labels have on consumer behaviour within the Dutch market. This is important because more and more companies are using (certified) eco-labels on their products. At the same time, consumers are paying more attention to sustainable alternatives. Therefore, certified eco-labels could be a good marketing strategy for a company to inform consumers about the company's footprint. This study takes two moderating effects into account: awareness of the impact of the fashion industry and consumer knowledge. This study contributes to identifying whether these two moderating effects influence consumer behaviour. These moderating effects are important to include within the study, as the literature described, consumers without awareness of the impact of the fashion industry and without knowledge of certified eco-labels, do not change their purchasing behaviour if a certified eco-labels is used.

2. Literature review

Fashion is everywhere, and all consumers buy clothes. The average Dutch consumers buys 46 items per year and has 173 items in their wardrobe, of which 123 items are in active use. This average consumer disposes of 40 items per year (Maldini et al., 2017). Dutch consumers' purchase, use and disposal of clothing is responsible for 5% of total global warming (Geurtsen, Crox, Venhoeven & Jansen, 2020). According to Ahsmann, Janssen, van der Vaart, Bos and Bakker (2020), the 10-R circularity strategies, shown in table 1, could be helpful for decreasing the environmental effect of the fashion industry. They divided the 10 Rs into three main strategies: reduce the number of clothes, CO2 emissions, and so on within the fashion supply chain; extend the lifespan of clothes; and use the supply chain in a more sustainable and valuable way (Ashmann et al., 2020).

Table 1 – 10 Rs of sustainability (Ashmann et al., 2020).

Reduce environmental impact	Refuse	Buy less to prevent the usage of raw materials.
	Reduce	Reduce environmental impact by buying fewer clothes and/or buying clothing made of high quality mono-materials and/or organic materials. • Mono-materials are single materials products
	Redesign	Reduce environmental impact by buying clothes made from recycled material.
Extend clothing lifespan	Re-use	Buy or sell clothes in second-hand or vintage shops, or swap clothes with friends.
	Repair and take care	Repair and take care of clothes by washing them at the right temperature and washing them less often to extend their lifespan.
	Refurbish	Alter existing clothes to align with your current style.
Use fashion supply chain in a valuable way	Remanufacture	Use clothes to produce new clothes.
	Re-purpose	Use clothes to produce new products.
	Recycle	Recycle clothes so that fibres can be reused to manufacture new clothes.
	Recover	Incinerate clothes and recover energy (least favourable option).

To decrease the environmental and social impact of the (fast) fashion industry, it is necessary to create awareness among consumers, and consumers must change their behaviour. As Ahsmann et al. (2020) described in their 10-R strategy, it is important to reduce the negative environmental effects, volume of CO2 emissions and kilograms of clothing produced by refusing, reducing and redesigning the fashion supply chain. The first R is simply buying fewer clothes, which directly leads to a decrease

in environmental impact, and the other options involve buying more sustainable alternatives (Ahsmann et al., 2020). If brands or companies decide to produce more sustainable alternatives, this must be communicated to consumers. This can be done via (eco-)labels, hangtags, commercials (in store or on tv) or social media (Ahsmann et al., 2020).

Though consumers are becoming more aware of the effects of their consumption behaviour, they are not changing their behaviour. Sustainability is a megatrend, and consumers, governments, non-profit organisations and the media are more aware of the (environmental) impact of the fashion industry and are putting pressure on the fashion industry (Henninger, 2015). Though slow and sustainable fashion makes up only a small percentage of the overall fashion market, sustainable fashion sales are slowly increasing (Henninger, 2015). This indicates a contradiction: consumers are more aware and interested in the effects of fast fashion, but they are not buying fewer clothes, and they are still buying fast fashion items instead of sustainable alternatives.

Consumers must be informed about sustainable alternatives; eco-labels on clothing can be used to accomplish this. Eco-labels can be used to communicate a product's social, environmental and economic impact (Testa, Iraldo, Vaccari and Ferrari., 2013). For consumers, eco-labelling is an easy way to identity the sustainability level of different clothes (Henninger, 2014). According to Testa et al. (2013), eco-labels stimulate eco-friendly behaviour and increase awareness among consumers. Additionally, Gam, Ma and Banning (2014) agreed with this statement; according to their research, eco-labels contribute to consumer awareness. Creating awareness among consumers is important, but consumers must also change their consumption behaviour in order to make a difference.

Research on the effect of eco-labelling has mainly focused on eco-labels in general, and most articles have not distinguished between certified eco-labels and non-certified eco-labels. According to Henninger (2015), over 100 eco-labels are used within the fashion industry. In the Dutch fashion industry, approximately 30 certified eco-labels are used (Keurmerkenwijzer, n.d.). Focussing on consumer perception of eco-labels, Henninger (2015) assessed 15 certified eco-labels in the UK fashion industry. Henninger (2015) concluded that consumers are willing to purchase more sustainable clothing and that eco-labels help them to identify these pieces of clothing, but that consumers do not really understand the labels. This study likewise assesses the influence of certified eco-labels on consumer behaviour, but it focusses on consumers living in the Netherlands.

The influence of socially responsible (SR) labels and eco-labels on consumer behaviour has been investigated in different studies. Gam et al. (2014) researched the influence of SR labels on different US consumer segments (fashionable, regular and uninvolved shoppers). Per segment, they analysed socially responsible apparel consumption and purchase intention as related to familiarity with SR labels and label-reading behaviour (Gam et al., 2014). Their research demonstrated that familiarity with and knowledge of SR labels is an important factor that influences purchase intention (Gam et al.

2014). In this study, environmental awareness was not considered, though environmental awareness affects consumer behaviour (Kim, Lee, and Hur, 2012). Both Kim et al. (2012) and Lee, Choi, Youn and Lee (2012) took green consciousness or environmental concern into account, and both stated that consumers' awareness of sustainability greatly affects their purchasing behaviour. Additionally, Kumar, Polonsky, Dwivedi and Kar (2021) stated that consumers with greater knowledge are both more likely to purchase green products and more likely to have already engaged with green products.

Most studies on the topic of eco-labelling (or SR-labelling) examine purchase intention and/or willingness to pay premiums. Both factors represent consumer behaviour towards products. Kim et al. (2012) stated that eco-labels have a positive influence on purchase intention but that this relationship is moderated by environmental concern. Similarly, Lee et al. (2015) found that eco-labelling has a positive influence on consumer behaviour (green purchase intention / willingness to pay more), but the strength of this effect depends on the credibility of the eco-label, consumer knowledge of eco-labels and consumer attitude towards the environment. Additionally, Ellis (2012) stated that consumers are willing to pay 25% more for organic cotton when the quality is similar. Consumers are influenced by their attitude toward the brand and their beliefs about organic cotton (Ellis, 2012). Gosselt, van Rompay and Haske (2016) also researched consumer attitudes towards companies in relation to (internal and external) corporate social responsibility (CSR) eco-labelling.

This study addresses the gap in the literature by combing different factors affecting consumer behaviour (i.e., attitude toward the company, willingness to pay a premium and purchase intention) and only focusing on certified eco-labels. Third-party or certified labels are more reliable and credible than other labels because a fashion brand must be assessed by an independent company before using them (Hyllagard, Yan, Ogle and Lee, 2012; Testa et al., 2013). Gosselt et al. (2016) stated that third-party labels positively affect consumers' attitude toward the company and their purchase intention.

This study takes consumer knowledge of certified eco-labels and consumer awareness of the effect of (fast) fashion into account when researching the influence of certified eco-labels on consumer behaviour. According to existing research, both factors have a positive influence on consumer behaviour; consumers with more knowledge of eco-labels and those who are more aware of the environmental impact of fashion are more willing to buy sustainable clothing (and pay a premium) based on a product's eco-label (Kim et al., 2012: Lee at al., 2012: Calderon-Monge et al., 2020: Jung and Jin, 2016).

2.1 Conceptual framework

The fast fashion industry has a significant negative impact on society and the environment. Therefore, improvements can and must be made. Consumers play a big role in potential improvements (Pereira et al., 2021). Though consumers often want to behave in a more sustainable manner, their actions often do not align with their intentions (Ceylan, 2019). Ceylan (2019) focussed on the difference between

consumer attitude and consumer behaviour. Both attitude towards sustainable approaches and knowledge of the impact of the apparel industry have a positive relationship with sustainable consumer behaviour. Consumer behaviour in this study is measured based on three variables: willingness to pay a premium, attitude towards the company and purchase intention.

As mentioned above, many consumers want to behave in a sustainable manner. To encourage consumers to do so, companies can use (certified) eco-labels to inform consumers about the sustainability level of their products (Testa et al., 2013). Testa et al. (2013) and Henninger (2015) both mentioned that (certified) eco-labels can be used to increase consumer awareness of sustainability in the (fast) fashion industry. Certified or third-party eco-labels are seen as more credible and reliable than eco-label of a brand itself because these labels are assigned by an independent institution (Hyllagard et al., 2012; Testa et al., 2013).

In this study, moderating effects are considered, namely consumer awareness of the impact of fast fashion and consumer knowledge about certified eco-labels. The studies of Kim et al. (2012), Lee et al. (2012), Calderon-Monge et al. (2020) and Jung and Jin (2016) have demonstrated the positive influence of consumer awareness and knowledge on consumer behaviour.

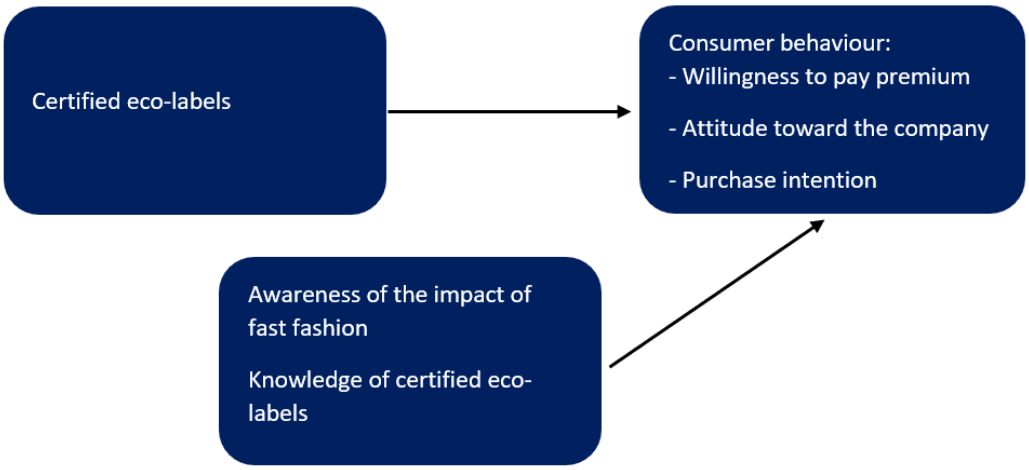

Figure 1 Conceptual model

2.2 Attitude toward the company

In this study, the relationship between consumer attitude towards a company and that company's use of certified eco-labels was evaluated. Consumer attitude towards a company is a combination of behaviour, beliefs, knowledge and emotions (Zhang, Zhang, & Zhou, 2021). According to Zhang et al. (2021) consumers assess a certain object, such as a company, and determine their level of appreciation for it. Consumers with a positive attitude towards a particular company are more willing to buy

products from that company than those who do not (Vahdati, Mousavi, & Tajik, 2015). Zhang et al. (2021) divided attitude into three components:

"Affective component: this involves a person's feelings or emotions about the object. For example: "I don't like fast fashion products". Behavioural component: the way the attitude influences on how we act or behave on an object. For example: "I will not buy any fast fashion products". Cognitive component: this involves a person's belief or knowledge about an object. For example: "I believe fast fashion products are not sustainable"." (Zhang et al., 2021, P.8).

In this study, we investigated the relationship between a company's use of certified eco-labels and consumers' attitude towards the company. According to Vahdati, Mousavi and Tajik (2015), there is a positive relationship between a company's use of CSR initiatives and consumers' attitude toward that company. Eco-labels can be used to communicate a company's CSR initiatives and CSR level. Additionally, Gosselt et al. (2016) stated that certified or third-party eco-labels have a positive effect on consumer attitudes towards a company because these labels are reliable and credible. Therefore, the assumption in this study is that a company's use of certified eco-labels on clothing positively affects consumer attitudes toward that company. Therefore, the first hypothesis is as follows:

H1: *A certified eco-label on clothes positively affects consumers' attitude toward the company.*

2.3 Purchase intention

Consumers are becoming more aware of the impact of the fast fashion industry, and though they are willing to change their behaviours, their behaviours do not always reflect their intentions. According to La Rosa and Jorgensen (2021), consumers are more likely to carry out a certain behaviour when their intentions are strong.

As mentioned before, certified eco-labels can be used to transparently communicate a company's sustainability practices. Bhaduri and Ha-Brookshire (2011) mentioned that consumers are interested in transparent information, such as the company's sustainability practices, about the products they purchase. According to Bhaduri and Ha-Brookshire (2011), consumer purchase intention is positively correlated with business transparency, especially when consumers have more knowledge about the global apparel manufacturing industry. Furthermore, Jee, Bae and Kim (2020) stated that eco-labels, which transparently communicate information, positively affect consumer purchase intention. Additionally, they found that eco-labels in general are positively correlated to purchase intention when consumer knowledge is high (Jee, Bae and Kim, 2020). According to Tong and Su (2018), there is no significant relationship between consumer purchase intention and eco-labels, but this study took general eco-labels into account and only studied young consumers. This study, by contrast, investigates certified eco-labels and consumers of all ages. Jee et al. (2020) also

mentioned that third-party information has a positive correlation with purchase intention. Certified eco-labels are those assigned by third-party organisations; therefore, it is assumed that certified eco-labels positively affect purchase intention. As a result of this assumption, the following hypothesis was created:

***H2**: A certified eco-label on clothes positively affects consumer purchase intention.*

2.4 Willingness to pay premium

When a consumer decides whether or not to purchase a piece of clothing, the price of the item is an important factor in the decision process: 'Fast fashion products are still economic goods. Therefore, the demand for fast fashion products follows basic economic laws—a higher price leads to lower demand and a higher income leads to higher demand' (Zhang, Zhang, and Zhou, 2021, P.4). Sustainable fashion alternatives are often more expensive than other clothing items because eco-friendly materials and production processes are more expensive. Therefore, the fact that sustainable alternatives are more expensive than fast fashion could prevent consumers from purchasing these alternatives (Zhang et al., 2021).

Consumers' willingness to pay a premium depends on several factors. According to most previous research, willingness to pay a premium is moderated by consumers' knowledge of eco-labels, consumers' awareness of the impact of fast fashion and the level of credibility of the eco-label (Lee et al., 2015). Certified eco-labels are seen as credible because these labels are granted and audited by third parties (Henninger, 2015).

Eco-labels are used to convince consumers to buy sustainable alternatives to fast fashion (Gam et al., 2014). However, as mentioned above, sustainable alternatives are more expensive than fast fashion products, and product prices could be a barrier to consumers. Previous studies have shown different results. In general, consumers are willing to pay more for sustainable clothing, but their behaviour does not align with their intentions (Ellis, 2012; Ceylan, 2021; Zhang et al., 2021). Therefore, the following hypothesis was formulated:

***H3**: A certified eco-label on clothes positively affects consumers' willingness to pay a premium.*

2.5 Consumer awareness

Consumer awareness of the impact of the fashion industry is an important factor in changing consumer behaviour. Various studies have shown that consumers are becoming more aware of their impact. Consumers who are more aware of their effect on the environment tend to purchase more sustainable clothing alternatives than consumers, who are less or not aware of their effect on the environment Pereira, 2021: Koszewska, 2016). Consumers need to know about the negative impact of the fashion industry in order to understand the importance of sustainable consumer behaviour (Pereira, 2021: La

Rose et al., 2021). An eco-label can be used to create consumer awareness, and by reading eco-labels, consumers gain more knowledge about the impact of the fashion industry (Ashmann et al., 2020).

Consumer awareness of the impact of the fashion industry has a moderating effect on the relationship between certified eco-labels and consumer behaviour. According to previous studies, consumer awareness has a positive effect on consumer behaviour. Consumers who are more aware of the environmental impact of the apparel industry tend to engage in sustainable behaviour, and they are willing to purchase and pay a premium for sustainable items (Kim et al., 2012: Lee at al., 2012: Calderon-Monge et al., 2020: Jung and Jin, 2016: La Rose et al. 2021). Consumers who are aware of the long-term impact of the fashion industry are especially willing to change their behaviour (La Rose et al., 2021).

In this study, consumer behaviour is measured through the following variables: attitude towards the company, purchase intention and willingness to pay a premium. Therefore, the following hypotheses were created:

H4 a: *Awareness of the effect of fast fashion positively moderates the effect a certified eco-label on clothes has on consumer attitude towards the company.*

H4 b*: Awareness of the effect of fast fashion positively moderates the effect a certified eco-label on clothes has on consumer purchase intention.*

H4 c*: Awareness of the effect of fast fashion positively moderates the effect a certified eco-label on clothes has on consumer willingness to pay a premium price.*

2.6 Consumer knowledge

In stores, several eco-labels can be found. According to Keurmerkenwijzer (n.d.), over 30 certified eco-labels are used within the Dutch fashion industry. In addition, brands and companies create their own eco-labels. All these eco-labels can be confusing for consumers. Consumers with low knowledge about eco-labels do not understand what they mean and therefore cannot accurately assess them (Kumar et al., 2021). By contrast, consumers with a higher knowledge level are less confused and more confident when accessing eco-labels and making purchases (Kumar et al. 2021).

Pereira et al. (2021) stated that there is a clear lack of knowledge among consumers; consumers want to purchase sustainable alternatives, but clear information and communication is lacking. Because of this lack, consumer knowledge is limited, and consumers faces difficulties when accessing sustainable alternatives (Pereira et al., 2021). Certified eco-labels can communicate the sustainability level of a piece of clothing in a simple, transparent way. As Testa et al. (2015) mentioned, eco-labels are only useful for consumers if they have the knowledge necessary to access the label.

Based on these arguments, it is assumed that knowledge of certified eco-labels moderates the effect a certified eco-label on clothing has on consumer behaviour. This study analyses consumer behaviour through three variables: attitude towards the company, purchase intention and willingness to pay a premium. Therefore, this moderation effect applies to these three factors, which led to the following hypotheses:

H5 a: *Knowledge of certified eco-labels positively moderates the effect a certified eco-label on clothes has on consumer attitude towards the company.*

H5 b: *Knowledge of certified eco-labels positively moderates the effect a certified eco-label on clothes has on consumer purchase intention.*

H5 c: *Knowledge of certified eco-labels positively moderates the effect a certified eco-label on clothes has on consumer willingness to pay a premium price.*

3. Methodology

Data was collected via a survey developed using Qualtrics, an online survey tool. Data was further analysed in SPSS in order to answer the research question. The questionnaire was designed to measure key factors in this study related to the hypotheses, which concerns the following variables: attitude toward the company, purchase intention, willingness to pay a premium, consumer knowledge of certified eco-labels and consumer awareness of the environmental impact of the fashion industry. The survey was shared via online channels such as Facebook, LinkedIn, WhatsApp and Survey Swap. In this way, a diverse set of participants was reached. The survey was available in Dutch and English, so respondents could answer the questions in the language most comfortable for them.

3.1 Questionnaire

The aim of the questionnaire was to test all the research hypotheses. The questionnaire began with and opening statement and instructions, which informed participants about the study, its risks and the fact that it was voluntary and that they could withdraw at any time. After the opening statement, the question blocks, options for feedback and closing statement were provided.

Opening statement:

Welcome, my name is Leslie Rutten, and I am a student at the University of Twente. I am happy that you are supporting me in this research study, and I want to thank you in advance for filling in this survey, it will take only around 5-7 minutes to complete.

This survey is part of my Master Thesis about the influence of certificated eco-labels on consumer behaviour. By filling in this survey, you contribute to my thesis, and I will be able the analyse this influence. This survey is completely anonymized (because I will not collect any personal and sensitive data). The data will only be used for this research, and all collected data will be used for scientific research. Your participation in this study is entirely voluntary and you can withdraw at any time. Please read each question carefully and answer honestly (there are no right or wrong answers). Should you have any questions and/or comments, please contact me at "l.rutten-2@student.utwente.nl".

Table 2 Survey questions per variable

Topic/ construct	Questions	Scale	Operationalization	Source
Attitude toward the company	 - When I see a piece of clothing with a label (such as above), I find the company: - When I see a piece of clothing with a label (such as above), my feeling towards the company is: - When I see a piece of clothing with a label (such as above), my overall feeling towards the company is:	Likert	Unappealing (1) – appealing (5) Bad (1) – Good (5) Unfavourable (1) – favourable (5)	Modified from: Rolling and Sadacher (2017)
Purchase intention	- The likelihood that I would buy a piece of clothing with such a label is: - The probability that I would consider buying a piece of clothing with such a label is: - My willingness to buy a piece of clothing with such a label is: 	Likert	Very unlikely (1) – very likely (5) Rare (1) – Almost certain (5) Very unwilling (1) – very willing (5)	Modified from: Rolling and Sadacher (2017)
Willingness to pay premium	- Buying cloths with certified eco-labels seems smart to me even if they cost more. - I would still buy cloths with certified eco-labels if other brands/companies with	Likert	Strongly disagree (1) – Strongly agree (5)	Modified from: Jung and Jin (2016)

	cloths without eco-labels reduced their prices. - I am ready to pay a higher price for cloths with certified eco-labels.			
Awareness of the impact of fast fashion	- I am aware of the impact of the (fast) fashion industry. - I believe it is important to buy sustainable clothing in order to help the environment. - The impact of fast fashion is an important social issue. - Resources, which are used during the production of cloths (water, etc.) are scares and should be consumed consciously.	Likert	Strongly disagree (1) – strongly agree	Modified from: Lee et al. (2015).
Knowledge of certified eco-labels	- How familiar do you consider yourself with certified eco-labels? - How familiar are the following eco-labels to you? (Show certified eco-labels) - I am familiar with the meaning some of the following certified eco-labels. Labels: 	Likert	Not familiar at all (1) – Very familiar (5)	Modified from: Gam et al., (2014).

The question block starts with some socioeconomic/demographic questions, which are shown in the table below. These questions were selected from the socioeconomic/demographic question from: Zhang et al. (2012), Koszewska (2016), and Ellis (2012).

Table 3 Socioeconomic/demographic factors included in questionnaire

Socioeconomic variables	Question	Answer options	Source
Gender	How do you currently describe your gender?	- Male - Female - Diverse/ other	Zhang et al. (2012)
Age	What is your age?	- Younger than 18 - Between 18 and 24 - Between 25 and 34 - Between 35 and 44 - Between 45 and 64 - Between 55 and 65 - 65 or older	Koszewska, (2016).
Living in the Netherlands	Do you currently live in the Netherlands? (As control question, to make sure only consumers in the Netherlands are studied)	- Yes - No	Self-designed
Education	What is the highest degree or level of school you have completed?	- High school - Intermediate vocational education - Bachelor's degree at university of applied science or university - Master's degree - PhD	Modified from: Ellis (2012)
Employment situation	What is your current profession?	- I am employed (full-time or part-time) - I am student - I am retired - I am stay at home parent or caregiver - I am unemployed - None of above	Modified from Zhang et al. (2021)

3.2 Analysis

A factor analysis was conducted to explore the underlying theoretical structure of the variables attitude towards the company, purchase intention and willingness to pay a premium. A second factor analysis was conducted to explore the underlying structure of the two moderating variables: knowledge of certified eco-labels and awareness of the impact of fast fashion. After the factor analyses, several regression analyses were conducted to determine the effects of the two moderators on the three variables. All variables included in the analysis are shown in table 4. SPSS was used to conduct all analyses.

Table 4 Variables included and their description

Variable	**Description**	**Formula**
Attitude_ALL	Attitude towards the company.	Mean (Attitude_1 + Attitude_2 + Attitude_3)
PurchInt_ALL	Consumers' purchase intention for clothing with certified eco-label.	Mean (PurchInt_1 + PurchInt_2 + PurchInt_3)
WPP_ALL	Consumers' willingness to pay premium for clothing with a certified eco-label.	Mean (WPP_1 + WPP_2 + WPP3)
Know_ALL	Consumer knowledge about certified eco-labels.	Mean (Know_1 + Know_2 + Know_3)
Aware_ALL	Consumer awareness about the impact of the fashion industry.	Mean (Aware_1 + Aware_2 + Aware_3 + Aware_4)
Gender	Gender of participants.	-
Age	Age group of participants.	-
Liv Net	Residency in the Netherlands.	-
Edu	Educational level of participants.	-
Profession	Current profession of participants.	-

4. Results

Though 285 responses were collected, 43 questionnaires were excluded from the analysis. The excluded questionnaires were not fully completed or were completed by respondents not living in the Netherlands. In total, data from 242 participants was analysed. The questionnaire was available in Dutch and English; 42 respondents filled in the English questionnaire, and 200 respondents filled in the Dutch questionnaire.

4.1 Demographics

A total of 157 participants (65%) were female. Therefore, the gender distribution was not equal. The largest age group (30.2%) was that of 18–24-year-olds. Additionally, participants between the ages of 25 and 34 were well represented, with 23.6% of all participants falling into this category. The age groups 35–44 years old, 45–54 years old and 55–64 years old each had approximately 30 participants. The groups including those younger than 18 and 65 or older were the smallest. The complete age distribution is presented in table 5.

Table 5: Results - Age groups

Age group	Frequency	Percent
Younger than 18	14	5,8
18 – 24	73	30,2
25 – 34	57	23,6
35 – 44	29	12,0
45 – 54	30	12,4
55 – 64	32	13,2
65 or older	7	2,9

Most participants (approximately 59%) worked full or part time. The second-largest group was that of students (34%). Together, two groups accounted for 93% of participants. The other 7% (17 participants) was disturbed among the other categories: ‘I am retired’, ‘I am a stay-at-home-parent or caregiver’, ‘I am unemployed’ and ‘other/none of above’. The complete distribution of participants’ professions can be found in Appendix I.

Regarding education, the largest group of participants had completed a bachelor’s degree at a university or at a university of applied sciences (‘hbo’ in Dutch); this group contained 95 participants, or 39.3% of the total. The second-largest group had completed intermediate vocational education (‘MBO’ in Dutch); this group contained 69 participants, or 28.5% of the total. None of the respondents had completed a PhD program. The complete distribution of participants’ educational level can be found in Appendix I.

4.2 Attitude towards the company

Analysis of Attitude_ALL revealed that 61.7% of the respondents had a positive attitude towards companies that use certified eco-labels. Of the respondents, 14.5% answered 'neutral' (Attitude_All is equal to three, corresponding to answer option neutral) and 23.1% had a less positive or even negative attitude towards companies that use certified eco-labels (see Appendix II). The mean Attitude_ALL was 3.41, indicating that, overall respondents had a positive attitude towards companies that use eco-labels.

In terms of attitude towards the company that use certified eco-labels, there was a small difference between men and women. In this case, women had a more positive attitude towards companies that use eco-labels than men did. With a p-value of 0.00, it can be assumed that the variance of the two groups is the same. The p-value of Levene's test was 0.690, therefore, we concluded that there was a difference in the mean Attitude_ALL for men and women who participated in this study. Additionally, the Kruskal-Wallis test revealed a statistically significant difference between men and women respondents ($p = 0.001$, which is < 0.05). It is important to note that 65% of all participants were women.

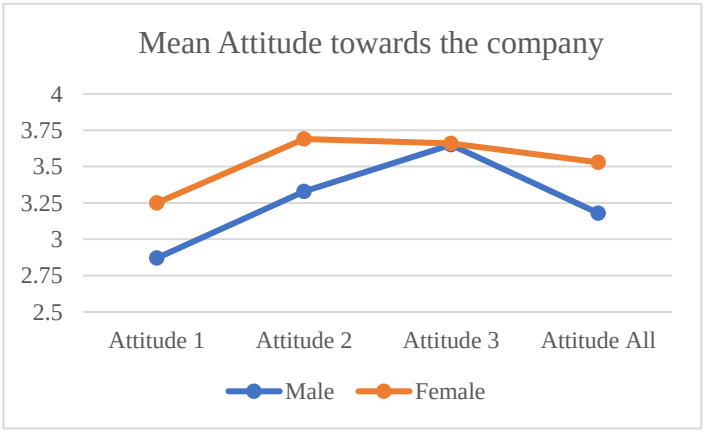

Figure 2 Mean towards the company attitude for gender

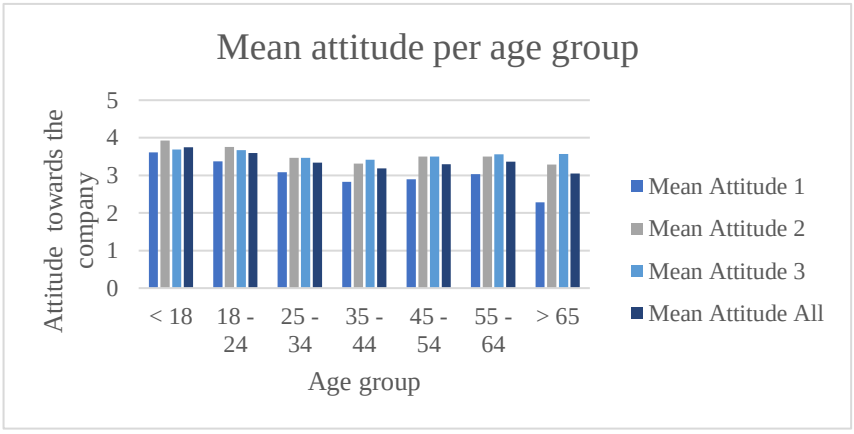

Figure 3 Mean attitude towards the company per age group

In general, respondents have a positive attitude towards companies that use certified eco-labels. For the under-18 age group, the mean attitude toward such companies was 3.74, the highest among the age groups. Though the 65-and-older age group had a mean attitude of 3.04, the lowest among the age groups, only seven respondents (2.7%) belonged to this group. To analyse whether there were significant differences among age groups, the Kruskal-Wallis test was performed. The p-value was 0.042, which is less than 0.05; therefore, we rejected the null hypothesis. We concluded that there were differences in attitudes towards companies that use certified eco-labels across the seven age groups.

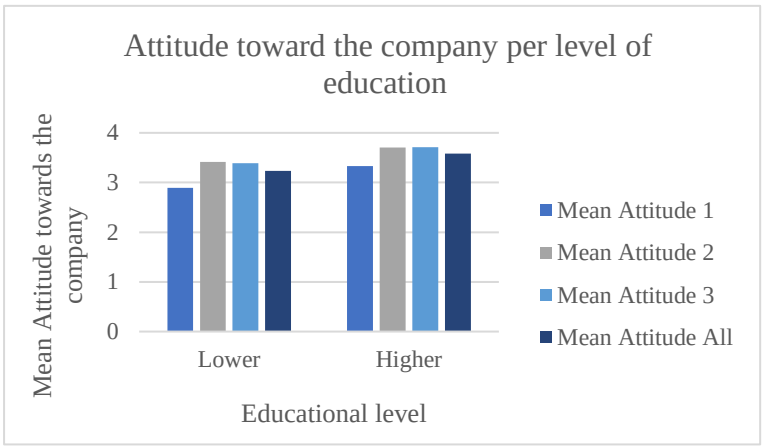

Figure 5 Mean attitude towards the company per level of education

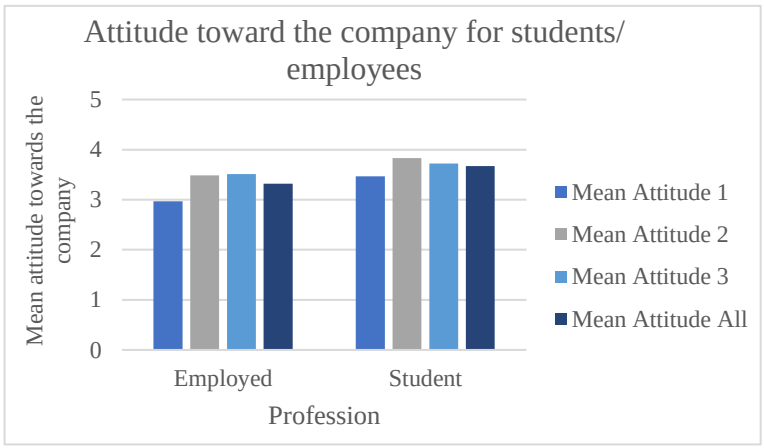

Figure 4 Attitude toward the company for students/employees

Respondents with a higher education level have a more positive attitude towards companies that use certified eco-labels than less educated respondents. Level of education was divided into lower level of education (high school and intermediate vocational education) and higher level of education (bachelor's and master's degrees at a university or a university of applied sciences). Before dividing these four categories into two, the Kruskal-Wallis test was performed to verify that there was no statistically significant difference between high school and intermediate education and between bachelor's and master's degrees. For the higher educated respondents, the mean attitude towards companies that use certified eco-labels was 3.58, and for lower educated respondents, the mean was 3.23. When conducting a Kruskal-Wallis test, the p-value was 0.000. Because the p-value was less than 0.05, we concluded that there is a statistically significant difference between higher and lower educated respondents in their attitude towards companies that use certified eco-labels.

Students have a more positive attitude towards companies that use certified eco-labels than employed respondents. When analysing differences in profession, the two largest groups were fully or partially employed (n = 143) and student (n = 82); the other groups contained fewer than ten respondents and were therefore not included in this analysis. The mean Attitude_ALL for students was 3.67; for employed respondents, it was 3.32. According to the Krusal-Wallis test, there was a statistically significant difference between the two groups (p = 0.000, so less than 0.05).

4.3 Purchase intention

The use of a certified eco-label has a positive effect on purchase intention. The computed variable PurchInt_ALL had a mean of 3.5, which indicates that most respondents were willing to buy a piece of clothing with a certified eco-label. Of the respondents, 64.1% considered themselves likely to buy a piece of clothing with a certified eco-label, 23.1% were neutral and 12.8% considered themselves less willing or not willing to buy a piece of clothing with a certified eco-label.

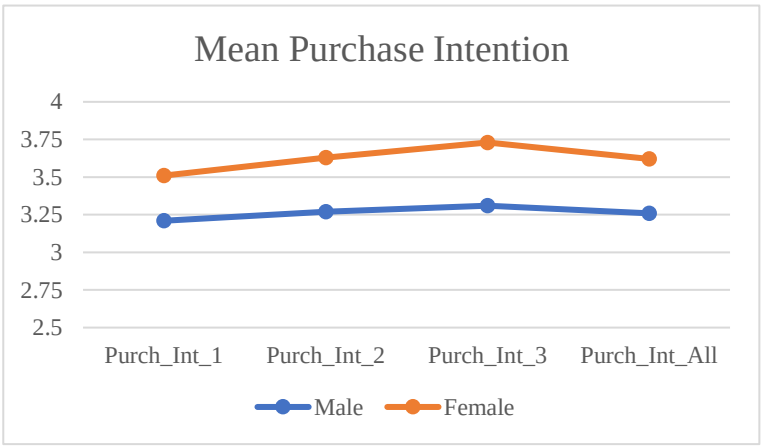

Figure 6 Mean purchase intention for gender

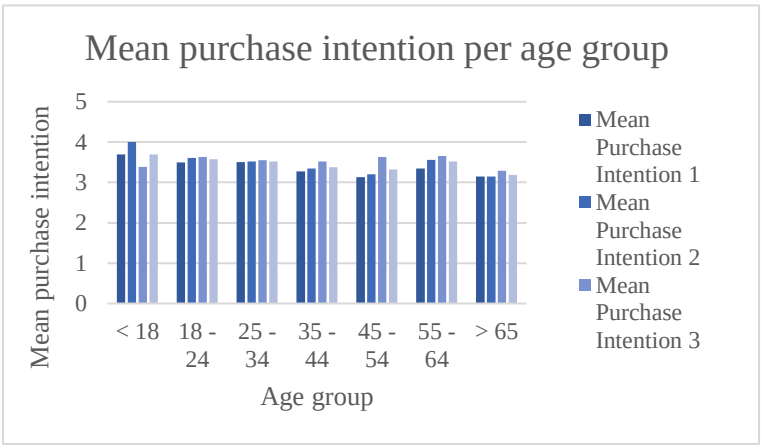

Figure 7 Mean purchase intention per age group

Participating women have a higher purchase intention for clothing with a certified eco-label than participating men. For the variable PurchInt_ALL, the outcome of the Levene's test was 0.676, with a p-value of 0.00. Therefore, it can be assumed that the variance of the two groups is equal. Therefore, we concluded that there is a difference between the mean PurchInt_ALL between men and women participating in this study. The women had a higher purchase intention for clothing with a certified eco-label than the men. The outcome of the Kruskal-Wallis test likewise showed a difference between men and women. The p-value was 0.001, which is less than 0.05; therefore, the null hypothesis was rejected, and we concluded that there was a significant difference in purchase intention between the men and women who participated in the study.

Additionally, the group of respondents under 18 years old has the highest purchase intention, with a mean PurchInt_ALL of 3.69. The group of respondents 65 years and older has the lowest purchase intention, with a mean PurchInt_ALL of 3.19. This age group was more neutral and less willing to pay for a piece of clothing with a certified eco-label than the other age groups. The p-value of the Kruskal-Wallis test was 0.690, which is greater than 0.05; therefore, we were not able to reject the null hypothesis, and we concluded that there is not a statistically significant difference in purchase intention across the seven different age groups.

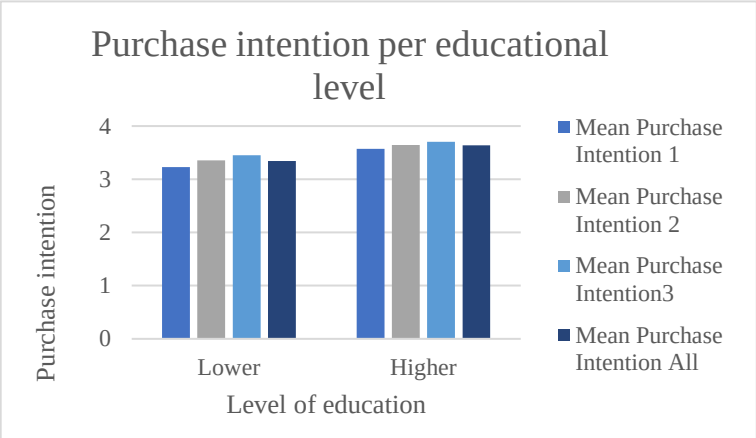

Figure 9 Purchase intention per educational level

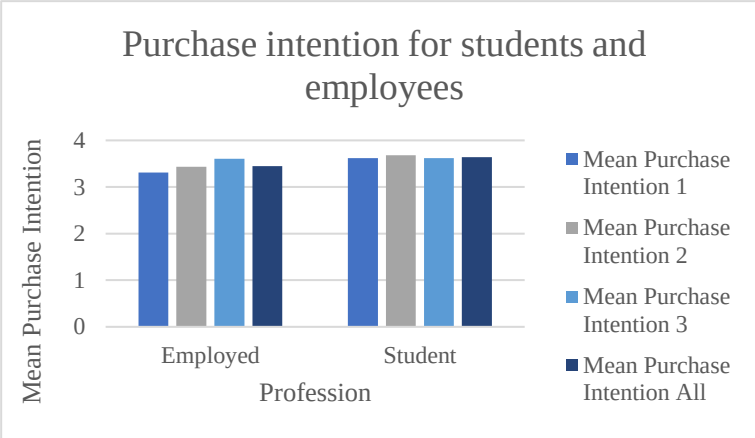

Figure 8 Purchase intention for employees/ students

Higher educated respondents have a higher purchase intention for clothing with a certified eco-label than lower educated respondents. The mean PurchInt_ALL was 3.69 for higher educated respondents and 3.34 for lower educated respondents. The p-value of the Kruskal-Wallis test was 0.002, which is less than 0.05. Therefore, there was a statically significant difference between higher and lower educated respondents. Another Kruskal-Wallis test was performed to confirm that there was no difference between the high school and intermediate categories, which were combined into the lower educated category. Likewise, a Kruskal-Wallis test assessing bachelor's degree and master's degree holders indicated that there was no significant difference between the two groups; thus, these were combined into the higher educated category.

The mean PurchInt_ALL for students (3.62) was higher than that for employed respondents (3.45). The p-value of the Kruskal-Wallis test was 0.083, which is more than 0.05. Therefore, it can be concluded that there was not a statically significant difference between students and employed respondents in terms of mean purchase intention.

4.4 Willingness to pay premium

Regarding the effect of certified eco-labels on willingness to pay a premium, participants are slightly willing to pay a premium for clothing with a certified eco-label. The computed variable WPP_ALL had a mean of 3.05. Of the respondents, 45% were willing to pay a premium for a piece of clothing with a certified eco-label, 19% were neutral, and 36% were not willing to pay more for clothing with a certified eco-label.

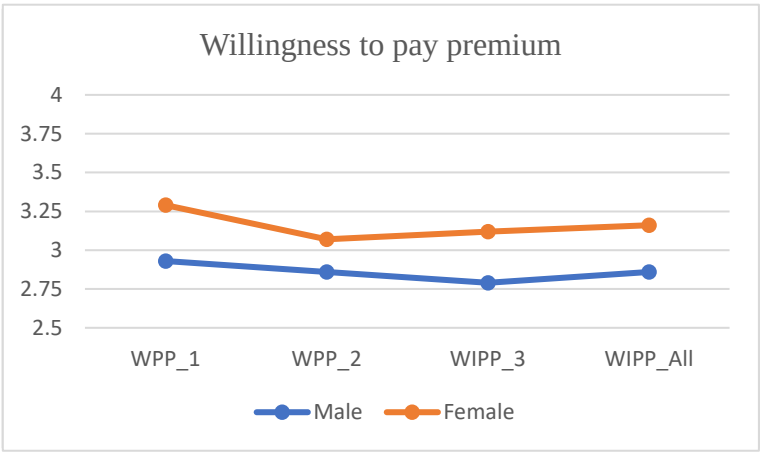

Figure 10 Willingness to pay premium for gender

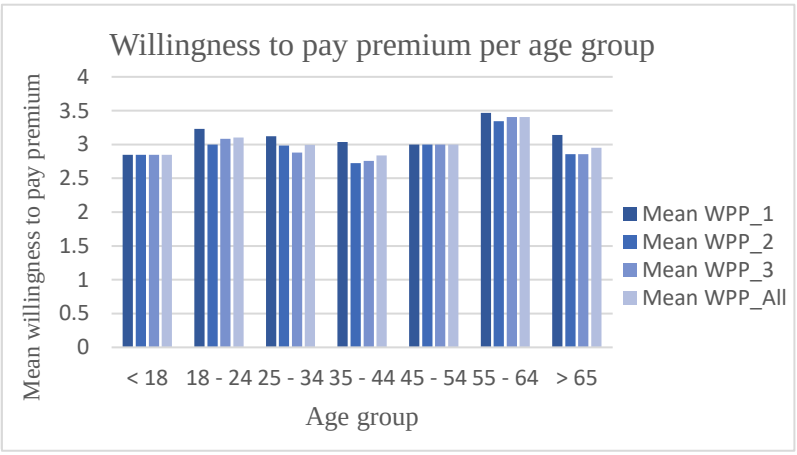

Figure 11 Willingness to pay premium per age group

Furthermore, the computed variable WPP_ALL revealed a difference between men and women respondents. In this study, women are more willing to pay a premium for clothing with a certified eco-label than men. For the variable WPP_ALL, the p-value of the Levene's test was 0.269; therefore, equal variance for the two groups was assumed. The p-value was 0.010, which is less than 0.05. We therefore concluded that there was a difference between the men and women who participated in the study. The p-value of the Kruskal-Wallis test was 0.019, which is less than 0.05, meaning that there is a statistically significant difference between men and women respondents.

There were significant differences among age groups in terms of their willingness to pay a premium for products with a certified eco-label. The 35–44 age group was least willing to pay a premium for clothing with a certified eco-label. The age group most willing to pay a premium for clothing with a certified eco-label was the 55–64 age group. The Kruskal-Wallis test showed that there was no statistically significant difference among the age groups. The p-value was 0.206, which is more than 0.05; therefore, we rejected the null hypotheses.

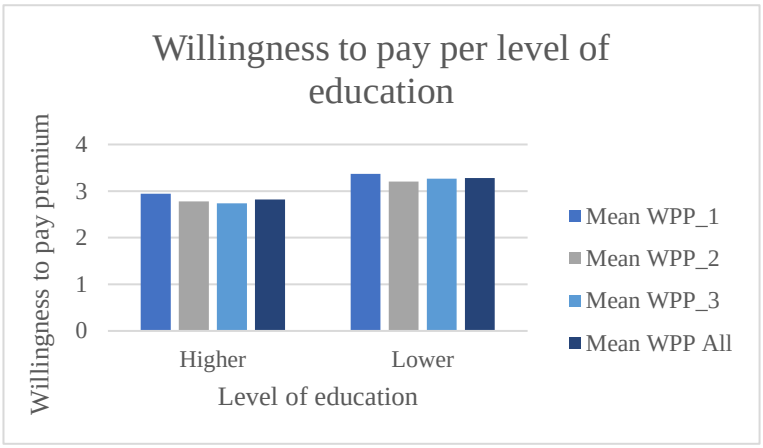

Figure 12 Willingness to pay premium per level of education

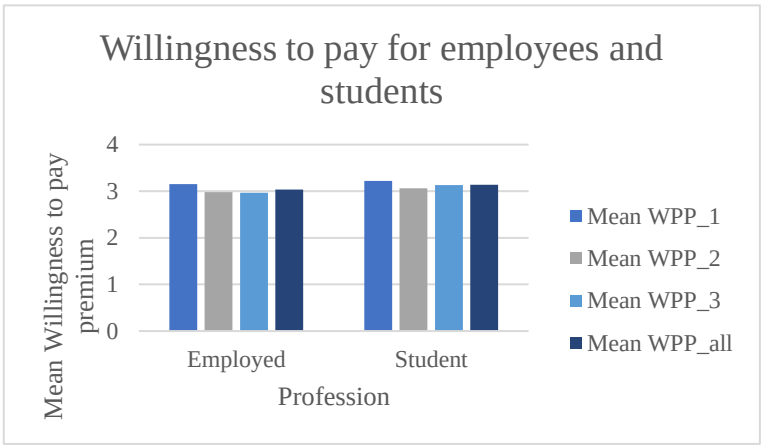

Figure 13 Willingness to pay premium for employees and students

Higher educated respondents are more willing to pay a premium for clothing with a certified eco-label than lower educated respondents. The mean WPP_ALL was 3.28 for higher educated respondents and 2.82 for lower educated respondents. The p-value of the Kruskal-Wallis test was 0.000, which is less than 0.05; therefore, there was a statically significant difference between higher and lower educated respondents. As when assessing the other two variables, level of education was divided into two categories for this analysis: higher and lower. Before merging high school and intermediate education into the lower educated category and bachelor's degree and master's degree into the higher educated category, another Kruskal-Wallis test was conducted to confirm that there were no differences between the groups to be combined.

Additionally, there was no statically significant difference between students and employed respondents in terms of their willingness to pay a premium for a product with a certified eco-label. Both groups were quite neutral, with a mean WPP_ALL of 3.03 for employed respondents and a mean of 3.14 for students. The p-value of the Kruskal-Wallis test was 0.396, indicating that the null hypothesis could not be rejected. Therefore, we concluded that there was no difference between the two groups in terms of their willingness to pay a premium for a product with a certified eco-label.

4.5 Hypothesis testing

The three dependent variables, attitude towards the company, purchase intention and willingness to pay a premium, were analysed. These three variables were influenced by consumer awareness of the impact of fast fashion and consumer knowledge about certified eco-labels. Before conducting a linear regression analysis, an exploratory factor analysis was conducted. Additionally, the assumptions for regression analysis were checked before the analysis was conducted.

Before an exploratory factor analysis was conducted, the Kaiser-Meyer-Olkin and Bartlett's tests were performed. The factors are analysed one by one. For the first factor; Attitude_ALL, the Kaiser-Meyer-Olkin measure of sampling adequacy was 0.713, and the Bartlett's test of sphericity had a chi-square (3) equal to 363.219 and a p-value of 0.00. This indicates that this variable was suitable for factor analyses and a principal component analysis was conducted. The loadings for the factor Attitude_All varied from 0.842 to 0.905, therefore this variable was included in the analysis.

Table 6 Principal component analysis - Attiude_ALL

Item	**Component 1**
Attitude towards the company: When I see a piece of clothing with a label (such as above), I find the company:	0.842
Attitude towards the company: When I see a piece of clothing with a label (such as above), my overall feeling is towards the company:	0.912
Attitude towards the company: When I see a piece of clothing with a label (such as above), my feeling towards the company is.	0.905

The next factor; PurchInt_ALL, had a Kaiser-Meyer-Olkin measure of sampling adequacy of 0.689, and the Bartlett's test of sphericity had a chi-square (3) equal to 361.928 and a p-value of 0.00. This indicated that this variable was suitable for factor analysis and a principal component analysis was conducted. The loadings for PurchInt_ALL varied between 0.826 and 0.924. So, PurchInt_ALL can be included in the analysis.

Table 7 Principal component analysis - PurchInt_ALL

Item	**Component 1**
Purchase Intention: The probability that I would consider buying a piece of clothing with such a label is:	0.924
Purchase Intention: The likelihood that I would buy a piece of clothing with such a label is	0.894
Purchase Intention: My willingness to buy a piece of clothing with such a label is:	0.826

The third factor is WPP_ALL, with a Kaiser-Meyer-Olkin measure of sampling adequacy of 0.686, and the Bartlett's test of sphericity had a chi-square (3) equal to 394.552 and a p-value of 0.00. This indicated that this variable was suitable for factor analysis and a principal component analysis was conducted. The loadings for WPP_ALL varied from 0.847 and 0.935. WPP_ALL will be included in the analysis.

Table 8 Principal component analysis - WPP_ALL

Item	**Component 1**
Willingness to pay premium: I am ready to pay a higher price for cloths with certified eco-labels.	0.935
Willingness to pay premium: I would still buy cloths with certified eco-labels if other brands/companies with cloths without eco-labels reduced their prices.	0.891
Willingness to pay premium: Buying certified eco-labels seems smart to me even if they cost more.	0.847

Also the two moderating factors were analysed during an exploratory factor analysis. The value of the Kaiser-Meyer-Olkin for Aware_ALL was 0.766, and the Bartlett's test of sphericity had a chi-square (6) of 304.148 and a p-value of 0.00. Which indicates that Aware_ALL is suitable for a factor analysis, therefore a principal component analysis was conducted. The loadings for Aware_ALL varied from: 0.657 to 0.856, therefore Aware_ALL was included in the regression analysis.

Table 9 Principal component analysis - Aware_ALL

Item	**Component 1**
Awareness: I am aware of the impact of the (fast) fashion industry	0.817
Awareness: I believe it is important to buy sustainable clothing in order to help the environment.	0.809
Awareness: The impact of fast fashion is an important social issue.	0.856
Awareness: Resources, which are used during the production of cloths (water, etc.) are scares and should be consumed consciously.	0.657

The last exploratory factor analysis that was conducted, was the analysis of Know_ALL. For Know_ALL, the value of the Kaiser-Meyer-Olkin for Aware_ALL was 0.694, and the Bartlett's test of sphericity had a chi-square (3) of 255.350 and a p-value of 0.00. This indicates that Know_ALL is suitable for an exploratory factor analysis and a principal component analysis was conducted. The loading for this factor varied from 0.802 to 0.876. So Know_All was included in the regression analysis.

Table 10 Principal component analysis - Know_ALL

Item	**Component 1**
Knowledge: How familiar do you consider yourself with certified eco-labels?	0.879
Knowledge: How familiar are the following eco-labels to you?	0.876
Knowledge: I am familiar with the meaning some of the following certified eco-labels.	0.802

Awareness of the impact of fast fashion

The mean awareness of the effect of fast fashion among study respondents was 3.55, which indicates that respondents were aware of the effect of fast fashion. For this variable, there was a difference between men and women. The mean for participating men was 3.43; for women, it was 3.61. The p-value of the Kruskal-Wallis test was 0.055 (more than 0.05); therefore, we concluded that the difference between men and women participants was not significant. In this study, there was a difference between higher and lower educated respondents. For higher educated respondents, the mean was 3.66; for lower educated respondents, it was 3.43. The p-value of the Kruskal-Wallis test was 0.016 (less than 0.05). Therefore, it was concluded that there was a significant difference in awareness between lower and higher educated respondents.

Knowledge of certified eco-labels

In this study, participants' mean knowledge of certified eco-labels was 2.25 (on a 1–5 scale), meaning that respondents were not very familiar with certified eco-labels. Additionally, the mean value for women was higher (2.34) than for men (2.09). The Kruskal-Wallis test resulted in a p-value of 0.038, which is less than 0.05. Therefore, there was a significant difference in knowledge about certified eco-labels between participating men and women. However, there was no difference between higher and lower educated respondents. Higher educated respondents had a higher mean (2.30) than lower educated respondents (2.17), but the p-value of the Kruskal-Wallis test was 0.07.

Regression analysis

In this study, two moderating effects: Aware_ALL and Know_ALL were considered. To analyse these moderating effects six hypotheses were formulated (which are shown in table 13, H4abc and H5abc). A two-way MANOVA is conducted to analyses these hypotheses. First of all, the p-value for Wilks' Lambda test is analysed. For the effect of Know_ALL * Aware_ALL, the p-value of the Wilks' Lambda test is 0.247, which is greater than 0.05. Therefore there is a no statistically significant effect of the interaction of Know_ALL and Aware_ALL on Customer Behaviour (Attitude_ALL, PurchInt_ALL & WPP_ALL). A two-way MANOVA was conducted to determine whether there is an interaction effect between Know_ALL and Aware_ALL on Attitude_ALL, PurchInt_ALL and WPP_ALL. Firstly, there is a non-significant effect of an interaction effect between Know_ALL and Aware_ALL on Attitude ALL, F (60, 155) = 1.204, p = 0.183. Secondly, the p-value of PurchInt_ALL is 0.051. So, the interaction between Know_ALL and Aware_ALL does not have a statistically significant effect on PurchInt_ALL. And finally, the p-value for WPP_ALL is 0.453. Therefore, the interaction effect between Know_ALL and Aware_ALL on WPP_ALL is not statistically significant. In short, the interaction effect is not statistically significant for Attitude_ALL, PurchInt_ALL and WPP_ALL.

Table 11 Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Aware_ALL	Wilks' Lambda	,451	3,338	42,000	454,637	,000	,233
Know_ALL	Wilks' Lambda	,708	1,560	36,000	452,783	,023	,109
Aware_ALL * Know_ALL	Wilks' Lambda	,346	1,086	180,000	459,661	,247	,298

As all the interaction effects of Know_ALL and Aware_ALL on customer behaviour are not statistically significant. These two independent variables are analysed separately. The p-value for Wilks' Lambda for Know_ALL is 0.023. Therefore, it can be conducted that there is a statistically significant effect between Know_ALL and Customer Behaviour (Attitude_ALL, PurchInt_ALL & WPP_ALL). And the same, applies to Aware_ALL. The p-value for Wilks' Lambda for Aware_ALL is 0.000. Therefore, it can be concluded that effect of Aware_ALL on Customer Behaviour (Attitude_ALL, PurchInt_ALL & WPP_ALL) is statistically significant. The effect of Know_ALL on the dependent variables; Attitude_ALL and PurchInt_ALL are statistically significant. But the effect of Know_ALL on WPP_ALL, has a p-value of 0.672. Therefore it can be concluded that the effect of Know_ALL on WPP_ALL is not statistically significant. The effect on Aware_ALL has a statistically significant effect on all three dependent variables (Attitude_ALL, PurchInt_ALL and WPP_ALL).

The adjusted R squared for Attitude_ALL is 0.463. This means that 46.3% of the variance in Attitude_ALL is attributable to Know_ALL and Aware_ALL. The partial Eta Squared for Aware_ALL has a value of 0.366 for Attitude_ALL and the partial Eta Squared has a value of 0.174 for Attitude_ALL. The relative impact of Aware_ALL is more than twice as strong as Know_ALL.

The adjusted R squared for PurchInt_ALL is 0.451, which means that 45.1% of the variance in PurchInt_ALL is explained by Know_ALL and Aware_ALL. The partial Eta Squared for Aware_ALL was a value of 0.342 and a value of 0.138 for Aware_ALL. Also, for PurchInt_ALL the relative impact of Aware_ALL is more than twice as strong as Know_ALL.

Finally, the adjusted R squared for WPP_ALL has a value of 0.345, which is the lowest value for adjusted R squared of the three variables. The variance in WPP_ALL is 34.5 % explained by Aware_ALL and Know_ALL. The partial Eta squared is the lowest for Know_ALL, with a value of 0.057. The partial Eta Squared of Aware_ALL is more than five times greater, with a value of 0.303.

Table 12 Tests of Between-Subject effects

Source	**Dependent Variable**	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Corrected Model	Attitude_ALL	84,848[a]	86	,987	3,412	,000	,654
	PurchInt_ALL	90,129[b]	86	1,048	3,298	,000	,647
	WPP_ALL	106,537[c]	86	1,239	2,474	,000	,579
Intercept	Attitude_ALL	857,167	1	857,167	2964,115	,000	,950
	PurchInt_ALL	866,688	1	866,688	2727,320	,000	,946
	WPP_ALL	661,036	1	661,036	1320,079	,000	,895
Aware_ALL	Attitude_ALL	25,912	14	1,851	6,400	,000	,366
	PurchInt_ALL	25,591	14	1,828	5,752	,000	,342
	WPP_ALL	33,703	14	2,407	4,807	,000	,303
Know_ALL	Attitude_ALL	9,442	12	,787	2,721	,002	,174
	PurchInt_ALL	7,902	12	,659	2,072	,022	,138
	WPP_ALL	4,679	12	,390	,779	,672	,057
Aware_ALL * Know_ALL	Attitude_ALL	20,885	60	,348	1,204	,183	,318
	PurchInt_ALL	26,752	60	,446	1,403	,051	,352
	WPP_ALL	30,607	60	,510	1,019	,453	,283
a. R Squared = ,654 (Adjusted R Squared = ,463)							
b. R Squared = ,647 (Adjusted R Squared = ,451)							
c. R Squared = ,579 (Adjusted R Squared = ,345)							

Table 13 Hypothesis

Hypothesis	Effect
H1: A certified eco-label on clothes positively affects consumer attitude toward the company.	Positive
H2: A certified eco-label on clothes positively affects consumer purchase intention.	Positive
H3: A certified eco-label on clothes positively affects consumer willingness to pay a premium.	Slightly positive
H4a: Awareness of the effect of fast fashion positively moderates the effect a certified eco-label on clothes has on consumer attitude toward the company.	Significant
H4b: Awareness of the effect of fast fashion positively moderates the effect a certified eco-label on clothes has on consumer purchase intention.	Significant
H4c: Awareness of the effect of fast fashion positively moderates the effect a certified eco-label on clothes has on consumer willingness to pay a premium price.	Significant
H5a: Knowledge of certified eco-labels positively moderates the effect a certified eco-label on clothes has on consumer attitude towards the company.	Significant
H5b: Knowledge of certified eco-labels positively moderates the effect a certified eco-label on clothes has on consumer purchase intention.	Significant
H5c: Knowledge of certified eco-labels positively moderates the effect a certified eco-label on clothes has on consumer willingness to pay a premium price.	Not significant

5. Discussion

In general, more younger respondents participated in this study than older respondents. Of the participants, 144 (almost 60%) were younger than 35. The survey was distributed through online channels, such as Facebook, LinkedIn, WhatsApp and Survey Swap, and the use of these channels probably attracted younger participants. Not all age groups were well represented within this study, and this probably influenced the study results. Significant differences among age groups were found only for the PurchInt_ALL variable.

Additionally, the distribution between participating men and women was not very equal; 65% of respondents were female. This could be explained by the fact that, in general, women are more interested in topics related to fashion than men are. Results of this study show significant differences between men and women for several variables, so it is important to keep this in mind.

Most respondents had completed their studies at a university of applied sciences, and the second-largest group of respondents had an intermediate educational level. When participants were divided into two groups based on their educational level (high vs. low), the higher educated group contained 124 respondents, and the lower educated group contained 118 respondents. Therefore, the distribution between these groups was quite equal and therefore suitable for analysis. Differences between those groups were analysed and are discussed below.

During the analysis, respondents' current profession was analysed. The two groups 'employed full/part time' and 'student' represented 93% of the total sample. Therefore, only these two professions were included in the study. Respondents' monthly income was not included in this study, which is a limitation.

Prior studies have shown that consumer behaviour is influenced by certified (or third-party) eco-labels. Testa et al. (2013) stated that a third-party label is the most effective tool a brand can use to gain competitiveness and that it is important that the eco-label provides reliable information (Testa et al., 2013). In this study, information on certified eco-labels is considered reliable because certified eco-labels are assessed by a third party. Additionally, Hyllegard et al. (2012) demonstrated a positive relationship between eco-labels and consumer behaviour. They asserted that companies can benefit from targeting consumers through the use of eco-labels. Both studies showed that women are more positively influenced by eco-labels than men (Hyllegard et al., 2012; Siminelli, 2017). In this study, consumer behaviour was positively influenced by the usage of certified eco-labels, and women respondents had a more positive attitude towards companies that use certified eco-labels than men respondents. Women respondents were also more willing to purchase clothing with a certified eco-label and were more willing to pay a premium for this clothing than men respondents. This aligns with prior researchers' suggestion that fashion companies may benefit from using eco-labels on clothing, particularly when targeting women (Hyllegard et al., 2012).

According to Ellis (2012), consumers are willing to pay a premium for organic cotton products, and in the current study, respondents were willing to pay a premium for clothing with a certified eco-label. However, relative to the other two variables, purchase intention and attitude towards the company, certified eco-labels affect willingness to pay less. Other studies have also shown that consumers are willing to pay a premium for sustainable alternatives but that this variable is less influenced by certified or SR labels than the other variables examined (Hyllegard et al., 2012; Ceylan, 2021; Zhang et al., 2021). In short, consumers are generally willing to purchase sustainable clothing with a certified eco-label but unwilling to pay a premium for sustainable clothing with a certified eco-label.

Siminelli (2017) stated that consumer knowledge of eco-labels positively affects their purchasing behaviour. Henninger (2015) mentioned that consumers are not aware of eco-labels and do not understand what they mean. Byrd and Su (2021) agreed with this assessment and stated that consumers lack knowledge and awareness of the meaning and validity of eco-labels. Due to a lack of consumer knowledge, eco-labels are not useful (Henninger, 2015). Respondents in the current study had limited knowledge about the certified eco-labels presented in the questionnaire; therefore, their behaviour toward certified eco-labels was only slightly positively influenced by their knowledge. For companies that want to use eco-labels on their clothing, it is important that consumers are familiar with the (certified) eco-labels used and aware of what they mean. Gam et al. (2014) also stated that consumers can learn about what clothing labels mean but that it takes time to educate consumers and change their behaviour.

Testa et al. (2013) stated that Italian consumers who are aware of the environmental impact of the (fast) fashion industry, are positively influenced by certified eco-labels. They also stated that eco-labels themselves can increase consumer awareness of the environmental impact of the (fast) fashion industry, thereby creating a virtuous cycle (Testa et al., 2013). Gökirmakli, Bayram and Tigan (2017) agreed with this assessment; they stated that eco-labels increase awareness but that they only influence consumer behaviour when there is a clear connection between the product and its environmental impact. Siminelli (2017) also stated that consumers who are more careful and aware of environmental issues are more willing to purchase environmentally friendly goods (such as clothing). In the current study, consumers claimed to be aware of the environmental impact of the fashion industry, and their behaviour was positively influenced by this awareness.

Considerable research has been conducted on European and US consumers, and most studies have concluded that consumer behaviour is positively affected by the use of eco-labels. Gam et al. (2014), Hyllagard et al. (2012) and Byrd and Su (2021) all researched consumers from the United States. Gam et al. (2014) concluded that fashionable consumers are more likely to read eco-labels, be more familiar with them and have a greater purchase intention for products with such labels than other

consumers. Hyllegard et al. (2012) also stated that attitude toward a brand improves and purchase intention increases when explicit messages and logos are used on labels. By contrast, Byrd and Su (2021) mentioned that the use of an eco-label increases complexity for consumers, meaning that consumers will find it more difficult to make a choice when shopping (Byrd and Su, 2021). Siminelli (2017) studied a sample of Swedish and Italian consumers, Testa et al. (2013) researched Italian consumers and Gökirmakli et al. (2017) studied Romanian consumers. All concluded that eco-labels have a positive influence on consumers behaviour, and all mentioned that consumers' environmental awareness affects their sustainable purchasing behaviour.

In short, results of this study indicate that consumers in the Dutch market are affected by the use of certified eco-labels on clothing. When consumers are aware of and informed about environmental and social issues, certified eco-labels affect their purchase behaviour even more. However, this study shows that respondents are not familiar with certified eco-labels. This is important for companies to keep in mind; consumers must be taught about certified eco-labels if they are to make sustainable purchases.

A limitation of this study is that the questionnaire did not include a control group. A recommendation for further research is to create two different questionnaires, one like the questionnaire used in this research, and a second in which non-certified eco-labels are used. This approach would enable analysis of differences between non-certified and certified eco-labels.

Another limitation of this study is the fact that that respondents had to assess their own environmental awareness and knowledge of certified eco-labels. Future studies could include several control questions to assess respondents' awareness and knowledge, instead of asking respondents to judge their awareness and knowledge themselves. For example, respondents could answer questions about the meanings of some certified eco-labels or be asked to explain the difference between two certified eco-labels. It could be interesting to analyse whether there is a difference between respondents' own judgements and the outcomes of the control questions.

Within the study and survey, the residence of respondents was not included. Therefore, it could be possible that most of the respondents came out of the researcher own personal environment. For further research about this topic (within the Dutch market), it could be interesting to include province or place of residence of respondents as a question in the survey. In this way, it is possible to analyse if respondents are somewhat equally distributed over the country and if the respondents mainly live in the neighbourhood. Next to that, including residence of respondents makes it also possible to analyse differences between provinces or between the countryside and cities.

The income of respondents was not included in this study, while this variable could be interesting to analyse. As previous studies have shown, there are difference between low and high income respondents. As Ellis (2012) states consumers with a higher income are in general more

willing to pay premium for sustainable products. Including income within future research could also be interesting for companies, so that they could focus on a certain type of consumer.

This study focussed on certified eco-labels, these labels are seen as more reliable and credible than non-certified eco-labels, because these labels must be assessed by an independent company before a brand is allowed to used it (Hyllagard, Yan, Ogle and Lee, 2012; Testa et al., 2013). It could be interesting to analyse the difference between non-certified and certified eco-labels. The outcome of this study was that consumers (in the Dutch market) have limited knowledge about certified eco-labels. Therefore, it could be beneficial to analyse if these consumer behaviour is influenced differently when a non-certified eco-label is used than when a certified eco-label is used. In addition to this, this study did not focus on one certified eco-label. But consumer behaviour could be effected in another way by different certified eco-labels. As well as, the variable; knowledge of certified eco-labels, some certified eco-label could be more familiar among consumers (in the Dutch market) than other certified eco-labels.

6. Conclusion

Sustainability is becoming increasingly popular among consumers, and consumers are becoming more aware of how they affect the environment. The fashion industry has a significant social and environmental impact. At the same time, fashion is everywhere, and everybody buys clothes. The impact of clothing can be communicated to consumers through certified eco-labels to create awareness and perhaps change their consumption behaviour. The goal of this study was to analyse the effect of certified eco-labels on consumer behaviour. Overall, it was concluded that consumer behaviour is influenced by certified eco-labels.

6.1 Attitude towards the company

This study revealed that the overall Dutch attitude towards companies that use certified eco-labels is positive. The women in this study had a significantly more positive attitude towards these companies than the men. Higher educated respondents also had a more positive attitude towards these companies than lower educated respondents. For this variable, there was a difference between employed respondents and students; students had a more positive attitude towards companies that use certified eco-labels than employed respondents.

Regarding Attitude_ALL, there were significant differences among the seven age groups. In this study, the under-18 age group had the most positive attitude towards companies that use certified eco-labels on their clothing, while the 65-and-older age group had the least positive attitude toward such companies.

6.2 Purchase Intention

Consumers living in the Netherlands are generally willing to purchase clothing with certified eco-labels. Again, participating women had a higher purchase intention for clothing with a certified eco-label than participating men, and higher educated respondents were more willing to purchase clothing with a certified eco-label than lower educated respondents.

There were not significant differences among the seven age groups in terms of mean purchase intention. The mean for the seven age groups differed slightly, but according to the Kruskal-Wallis test, these differences were not significant. Likewise, mean purchase intention differed slightly between employed respondents and students, but this difference was not statically significant.

6.3 Willingness to pay premium

In terms of willingness to pay a premium for clothing with a certified eco-label, respondents were quite neutral, with a mean of 3.05. This makes sense because consumers are generally willing to purchase more sustainable and environmentally friendly products, but not when they must pay extra. There was a significant difference in terms of willingness to pay a premium between higher and lower

educated respondents: higher educated respondents were more willing to pay a premium for apparel with a certified eco-label than lower educated respondents were.

No statistically significant differences were found for the other demographic variables. Analysis revealed that mean responses for participating men and women, employed respondents and students, and participants of different age groups differed, but these differences were not statistically significant according to the Kruskal-Wallis test.

6.4 Awareness of the impact of the fashion industry

Results show that participants were quite aware of the effect of fast fashion, and their awareness positively influenced their consumer behaviour. All three variables were positively affected by respondents' awareness of the impact of fast fashion. The effect of Aware_ALL had a statistically significant effect on all three dependent variables; Attitude_ALL, PurchInt_ALL and WPP_ALL. The partial Eta for Aware_ALL for Attitude_ALL was 0.366 and the value for PurchInt_ALL was 0.342. The partial Eta for Aware_ALL was the lowest value for WPP_ALL, with a value of 0.303.

In this study, higher educated respondents were more aware of the impact of fast fashion than lower educated respondents. Higher educated respondents had a mean awareness of 3.66, while lower educated respondents had a mean awareness of 3.43. For the other demographic variables (gender, age, profession) no statistically significant differences were found.

6.5 Consumer knowledge of certified eco-labels

In this study, questionnaire responses revealed that participants had limited knowledge about certified eco-labels. They were not very familiar with certified eco-labels of the meaning of such labels. Some of the participants even mentioned that they had never seen some of the certified eco-labels presented in the questionnaire, despite the fact that these eco-labels are used on clothing labels in Dutch stores. On average, women were slightly more familiar with certified eco-labels than men (2.34 for women versus 2.09 for men). For the other demographic variables, no statistically significant differences were found.

All three variables related to consumer behaviour were somewhat positively influenced by respondents' knowledge of certified eco-labels. The effect of Know_ALL was statistically significant for Attitude_ALL and PurchInt_ALL. With a partial Eta Squared of 0.174 for Attitude_ALL and a value of 0.138 for PurchInt_ALL. The effect of Know_ALL was not statistically significant for WPP_ALL and also the partial Eta Squared had a low value of 0.057.

6.6 Research question

The aim of this study was to analyse the effect of certified eco-labels on clothing on consumer behaviour in the Dutch market. The research question is as follows: *'To what extent do certified eco-labels on clothing influence consumer behaviour in the Dutch market?'* Consumer behaviour is influenced by the presence of certified eco-labels. The overall attitude of Dutch consumers towards the companies that use certified eco-labels is positive. These consumers are generally willing to purchase clothing with certified eco-labels but they are not willing to pay extra for sustainable alternatives. Consumer behaviour was positively influenced by consumer awareness of effect of the fast fashion industry and was somewhat positively influenced by consumer knowledge of certified eco-labels.

6.7 Future research

In this study focussed on the effect of certified eco-labels on clothing on consumer behaviour in the Dutch market. As mentioned before, consumers are becoming more aware of their environmental impact and are more interested in purchasing sustainable alternatives. Including other product types in future research could contribute to a broader understanding of the effect of certified eco-labels on consumer behaviour. This research could already be beneficial to companies, who sell other fashion items, such as shoes, bags and/or accessories (sunglasses, scarfs and jewellery). For future research, it could be beneficial to focus on other products: furniture, electrical devices or food and beverages. All these products have different impact in our environment. It can be assumed that consumer behaviour is also influenced by the presence of certified eco-labels on other product types.

An improvement for future research could be to include the following socio-demographic variables: income and residence of respondents. Including these variables could lead to a broader understanding of differences between respondents. For future research, which focusses on fashion products, it could be interesting to differentiate between different types of consumers; consumers which value specific brands or consumers, who follow the latest (fashion) trends. Such behaviour influenced their purchasing behaviour, for example they buy clothing more often or they are willing to pay premium for a certain brand. Or future researchers could include other variables, such as brand loyalty and brand reputation. Especially, in the fashion industry, consumers can be very loyal to one specific brand. It could be beneficial to analyse the moderating effect of brand loyalty on the relationship between consumer behaviour and certified eco-labels. The same applies for brand reputation, for example if a certified eco-label shows a negative image, while the brand has a great reputation within the market, how does this influence consumer behaviour?

For future research, the difference between several certified eco-label could be further researched. Several third-party organisations have created certified eco-labels. For companies, it could be beneficial to analyse, how consumers respond to different certified eco-labels. Such a study could provide useful information about consumer trust in relation to certain certified eco-labels and/or their purchasing behaviour based on different certified eco-labels.

Appendix

Appendix I - Demographics

Table 14 Highest degree of respondents

What is the highest degree or level of school you have completed?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High school	49	20,2	20,2	20,2
	Intermediate vocational education	69	28,5	28,5	48,8
	Bachelors' degree at university (of applied sciences)	95	39,3	39,3	88,0
	Masters' degree	29	12,0	12,0	100,0
	Total	242	100,0	100,0	

Table 15 Profession of respondents

What is your current profession?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I am employed (full-time or part-time)	143	59,1	59,1	59,1
	I am a student	82	33,9	33,9	93,0
	I am retired	5	2,1	2,1	95,0
	I am stay-at-home-parent or caregiver	1	,4	,4	95,5
	I am unemployed	2	,8	,8	96,3
	None of above	9	3,7	3,7	100,0
	Total	242	100,0	100,0	

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