The Impact of Sustainability Information on Consumers' Purchase Behaviour and Brand Perceptions

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Abstract

The average atmospheric temperature of the earth, prior to the industrial revolution, was approximately 14ºC. Currently it has increased 1.5ºC, and is expected to continue to escalate. It is urgent to solve this climate crisis, and the future generation of leaders, it is our obligation to stop this vicious cycle, and ensure a future for the next generations.

Although society is aware of this crisis, fashion consumption continues to increase, which contributes to the destruction of our planet. Brands contribute to this factor by continuing to manufacture and sell their products massively and with impunity. A possible solution to mitigate such effects is to increase consumers' awareness about the negative impact that their choices have on the environment by stating this information clearly on products. Specifically, this research examines the extent to which providing consumers with information about the sustainability level of products impacts their choices. Consequently, whether it allows them to make more conscious consumption decisions. Findings from an experimental study show that providing consumers with high (vs. low) sustainability information levels positively influence brand perceptions of sustainable brands. This effect holds even when sustainable products are more expensive. Consumers are positively influenced by the amount of sustainability information that is available at their disposal to compare between product alternatives. Theoretical and managerial implications are provided, namely for the development of a software that provides sustainability-related information about products so that consumers can make choice comparisons among various product alternatives.

Resumo

A temperatura media da superfície da Terra, antes da revolução industrial era aproximadamente 14ºC. Atualmente aumentou cerca de 1.5ºC, e a tendência é de continuar a aumentar. É urgente solucionar esta crise climática, e como futuros líderes, é a nossa obrigação parar este ciclo vicioso, e garantir um future para as próximas gerações.

Apesar de a sociedade estar consciente desta crise, o consumo de produtos da indústria da moda continua a aumentar, contribuindo para a destruição do Planeta. As marcas contribuem para este factor continuando a produzir e vender de forma massiva os seus produtos e com impunidade. Uma possível solução para mitigar estes efeitos é de informar os consumidores sobre o impacto negativo que as suas escolhas têm no ambiente, ao providenciar esta informação de forma clara. Especificamente, esta dissertação estuda quanto é que, ao providenciar esta informação aos consumidores, esta irá influenciar as suas escolhas. Consequentemente, se irá permitir que estas escolhas sejam realizadas de forma consciente. Os resultados sugerem que ao ter mais (vs. menos) informação sobre o nível de sustentabilidade dos produtos influencia positivamente a perceção da qualidade dos mesmos. Este efeito mantém-se quando os produtos sustentáveis são mais caros. Os consumidores são influenciados de forma positiva quando têm esta informação disponível, para comparar com as restantes alternativas. Implicações teóricas e de gestão são apresentadas, nomeadamente para o desenvolvimento de um software que providencia informação sobre a sustentabilidade de produtos, para assim os consumidores ao realizarem uma escolha, conseguirem comparar entre diferentes alternativas.

Keywords: Sustainability, Consumers Decision Making Process, Purchase Behaviors, Brand Perceptions, Sustainability Information Impact, Consumer Perceived Ethicality, Purchase Intentions, Willingness to Pay, Quality Perception.

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1. Introduction

1.1 Problem Definition and Relevance

With the rise of temperatures, the wasteful use of resources, and pollution of the environment, sustainability has never been more important on the business agenda. Companies are more aware and conscious of the impact they have on the topic (Stafford & Graul, 2020). Likewise, consumers are becoming more concerned about the social and environmental impact of their consumption, demanding more responsible and sustainable products (Abdulrazak & Quoquab, 2018; Stafford & Graul, 2020).

Although this rising concern for sustainability has been intensified more recently by media coverage and creation and implementation of global environmental laws and regulations (Abdulrazak & Quoquab, 2018), the concept of sustainable consumption has been discussed for many years. It was first highlighted in 1992, at the Rio Earth Summit, and later at the 1994 Oslo Symposium which defined *sustainable consumption*, as "the use of services and related products which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of future generations" (Kostadinova, 2016, p. 225).

Sustainable consumption decisions can be more focused on the environmental impact of consumption and the importance of green products, or on the social impact, more related with ethical issues, such as child labor and poor working conditions in developing countries (Black and Cherrier, 2010; Jackson, 2005). A more recent definition on the topic is the one used by the United Nations Environment Programme (2015, p.10), which defines sustainable consumption and also production as "a holistic approach to minimizing the negative environmental impacts from consumption and production systems while promoting quality of life for all". This approach is the one considered in this research, being the theme of environmental sustainability the issue under study in more detail.

From an economical perspective, companies that can adapt to the increasing demand for sustainability, will not only be more likely to succeed and earn greater profits in the long term, but also have a strategic advantage (Stafford & Graul, 2020). That is, companies will be able to identify new products and technologies, to better motivate and retain employers and to

enhance brand reputation (White, Habib & Hardisty, 2019). Furthermore, many companies also have become more efficient, with fewer waste elimination and long-term cost savings, and sometimes these sustainable practices even reduced risks and liabilities (Wang, Krishna & McFerran, 2017).

White and colleagues (2019) also suggest in their research that the demand for sustainable products is increasing. Results from their worldwide research show that 66 percent of consumers, from which 73 percent are millennials, are willing to pay extra for sustainable offers. Further analysing millennials behaviours, results can be quite controversial. Although these individuals are more concerned and aware of the environmental crisis, a recent research, which surveyed college students in the United States, concluded that millennials only become more sustainable when the benefits outweigh the costs. This finding suggests sustainable consumption decisions can be more individualistic than altruistic (Naderi & Steenburg, 2018).

Nevertheless, consumers also play an important role when deciding to adopt more sustainable behaviours, with Unilever estimating that almost 70 percent of its greenhouse gas footprint depends on how consumers choose, use, and dispose of their products (Unilever, 2019). With this in mind, businesses should not only change their business models and become more responsible but also influence and incentivize consumers to become more conscious of their actions. Yet, in spite that 30 to 70 percent of consumers are concerned about sustainability and want to make more conscious and greener purchases, only 1 to 5 percent actually do so (O'Rourke and Ringer, 2016; Stafford & Graul, 2020). This discrepancy between consumers' attitudes towards sustainable products and actual behaviour is a concept also known as the attitude-behaviour gap (Jacobs, Peterson, Horisch & Battenfeld, 2018; Auger & Devinney 2007).

Some of the appointed reasons for this gap are the perceived ethicality about a company or brand, which reflects the fact that many consumers don't find the ethical information about a product's performance credible and reliable (O'Rourke and Ringer, 2016). Moreover, sustainable products are often associated with lower quality and less performance (Luchs. et al., 2010). These factors lead some consumers' tendency to avoid sustainable products, since they are not willing to trade-off performance and quality with sustainability (O'Rourke & Ringer, 2016). Price has also been a determinant factor behind purchasing intentions and choice.

With that said, the main question that is trying to be answered in this study is: *Do consumers change their purchase behaviours when possessing more sustainability-related information about a product?*

Further, sustainable consumption is closely related to consumer's values and beliefs (Abdulrazak & Quoquab, 2018), which are continuously evolving accordingly to society's moral standards and emerging ethical considerations (Brunks & Boer, 2018). This suggests purchase decisions and behaviours are mostly influenced by other factors, and not only the characteristics of the product to which they are exposed, and therefore will also be considered in this research.

1.2 Objectives and Research Questions

The main objective of this research is to understand the impact that the level of information portrayed by a product, namely sustainability-related information and price, has on consumer's purchase intention, willingness to pay, likelihood of choice. Also, on consumers' brand perceptions, namely ethicality and quality perceptions. Examining the distinction between low and high levels of sustainability-related information will allow the author to examine if simpler and short information has a greater impact on influencing consumer's decision-making process, rather than more extensive and complete information. More formally, the following research questions will be addressed:

RQ1: What is the impact of sustainability-related information on consumer's purchase behaviour and brand perception?

This question will be answered by directly observing if consumer's brand perceptions between two different brands, one being more sustainable than the other, will differ. If so, how sustainability-related information impacts perceived ethicality and quality perceptions of brands and associated products.

This research question is relevant since it will allow to better understand if consumers don't behave in a more sustainable manner due to lack of information, or simply when acquiring products this factor is not considered.

Secondly, it is important to assess how price discrepancy impacts consumption decisions between products. As aforementioned, price is a determinant factor in the decision-making

process involving sustainable purchases, namely, on purchasing behaviours - likelihood of choice, purchase intentions, willingness to pay. Therefore, the following research question is addressed:

RQ2: Does price discrepancy have an impact on purchasing behaviours?

Lastly, measuring the impact that price discrepancy has among products that are more versus less sustainable will allow to understand how both sustainability-related information and price induce more versus less sustainable consumption decisions. Validating this effect will provide companies with an incentive to continue changing their manufacturing processes and expand their products to offer greener and more sustainable options. The third research question is the following:

RQ3: What is the influence of sustainability-related information and price discrepancy on purchasing behaviours and brand perceptions?

1.3 Thesis Structure

This thesis is structured by firstly addressing the research problem and its relevance, followed by the objectives and corresponding research questions. The second chapter is the literature review, in which the main subjects and conceptions of the foundation of this dissertation are presented. Then, in the third chapter, the conceptual model and hypotheses are presented.

The fourth chapter presents the methodology and data collection, followed by the analysis and results of the research. Lastly, the main conclusions and some limitations of the study are presented.

2. Literature Review

2.1 Information Processing

Although consumer purchasing behaviour may be rather complex and uncontrollable, it is not completely random. As suggested by Gourville and Norton (2019), companies frequently use frameworks to predict patterns of purchase behaviour. These frameworks consider the product, the context in which the purchase is being made and the individuals involved. One that is quite relevant for the context of this dissertation is the compensatory versus non-compensatory decision-making (Gourville & Norton, 2019). This framework categorizes the amount of

relevant information processed and the trade-offs consumers make before reaching a decision. Specifically, in the compensatory mode, consumers usually try to reach a decision by considering all the relevant attributes and making trade-offs between them. So, if a product shows a shortcoming in one of the valued attributes, it can be compensated by exceeding in another attribute. For instance, if the price of a product (e.g., iPhone) is high, it can be compensated by other valued attributes, such as design. By following this process, consumers will be satisfied with their choice, as long as the product as a whole is positively perceived, when considering all the attributes (the better and the worst ones). In the non-compensatory model, on the other hand, consumers only consider one or two attributes, so purchasing decisions are based uniquely on the performance of those attributes, regardless of the remaining characteristics of that product. For instance, if what is valued the most when purchasing a telephone is the quality of the camera, the product chosen will be the one with the best performance in this feature, regardless other attributes (such as price, design, brand, etc.).

The relevance of this model is how consumers consider the full or partial information and attributes of a product, before reaching a decision. This implies focusing only on few or all attributes, reaching a satisfying decision by engaging in trade-offs between attributes.

Another commonly used and highly recognized model is the Elaboration Likelihood Model, developed by Petty and Cacioppo (1986). The authors developed the persuasion framework, that enables researchers to identify variables that can affect the cognitive process, and consequently influence attitudinal change and choice. This framework is applicable to various sources, messages and contexts, and is based on the likelihood of cognitive effort consumers are willing to give to process a message (Schumann, Petty & Clemons, 1990). When the elaboration likelihood is high, it results in an extensive and more careful analyses of the message presented to the consumer. Thus, leading to a more permanent and predictive change in behaviour (Kitchen et al., 2014). When it is low, consumers won't be as interested, so it won't lead to a permanent change in behaviour.

Petty and Cacioppo's framework (1986) is useful to understand what influences consumer's' attention towards a message being communicated to them. It suggests that the more involved consumers are with the subject being communicated, the more likely they will be to process that information, which then, leads to a behaviour more consistent with their attitudes (Leippe and Elkin, 1987).

2.2 Sustainable Consumption and the Attitude-Behaviour Gap

The aforementioned consumer behavioural models are important since they provide a means to understand about the importance that product attributes and information have on purchasing intention and on influencing consumer's decisions.

Within the sustainability context, consumer often show an attitude-behaviour gap towards products. Specifically, consumers seem to have a very strong and positive intention towards ethicality and sustainable products, but their intentions do not translate into actual sustainable consumption behaviour (Phipps et al., 2013; Prothero et al., 2011). A variety of potential reasons can explain this wide gap, including the fact sustainable products are usually more expensive, being viewed as price premium products, and also the fact that these products tend to be less available, especially in retail shops (Luchs et al., 2010; Petersen et al., 2018).

This gap has been the object of various researchers since it is a phenomenon that goes against what would be expected, especially when considering the theory of *well-reasoned action.* This theory suggests that behaviours depend on the attitude towards that behaviour (Ajzen & Fishbein, 1974). Following this logic, consumers that have a positive attitude towards sustainability would be also expected to show greater sustainable behaviours.

One explanation for this controversial behaviour is the fact that sustainability can be associated with worst performance or quality of the product. For instance, Luchs et al. (2010) observed how sustainability isn't always a valued attribute and suggests that sustainability is expected to have a greater fit with simpler or gentler attributes (e.g., baby shampoo). Conversely, while in stronger and tougher categories it can be a disadvantage (e.g., car tires). These findings suggest that sustainability can be both an asset or a liability, depending on the product category. Nevertheless, within the fashion industry this type of characteristics are usually not of main concern, when compared with, for example, design, quality and price.

2.3 Addressing the Attitude-Behaviour Gap

Among the vast research that addresses the attitude behaviour gap in sustainable consumption decision, the topic of sustainability-related information and price discrepancy as signalling decision-making cues, is still lacking.

One theory refers to the fact that product attribute information influences consumer's judgments about the product and influences its purchase decision process (Cowan & Guzman,

2018). Furthermore, sustainability consumption is also said to have a stronger symbolic value than economic, since it is a reflection of a consumer's personality, values, beliefs, and worldviews (Abdulrazak & Quoquab, 2018). Therefore, research suggests that consumers are encouraged to engage in sustainable consumption due to its psychological benefits, reasoning being that it makes them feel good about themselves and improves their sense of self-enhancement and social interaction (Etzioni, 2004; Abdulrazak & Quoquab, 2018).

This implies that by providing sustainability-related information about product attributes (e.g., level of sustainability and environmental impact of the product), consumers should be expected to engage in more sustainable decisions, which then lead to the positive psychological effects they derive from products. Conversely, without providing clear and precise information, consumers might not be as aware and conscious of the impact that their choice has. Moreover, if consumers have to make an extra effort to find this information, it can be an incentive to wilfully ignore sustainability in a product (Ehrich & Irwin, 2005). Among the appointed reasons are the fact that, when decisions are to be made, consumers often favour price and quality over sustainability.

Following this line of thought, one may ask whether this effect will be observed when consumers are exposed to more versus less sustainability-related information about a product. Luchs and Kumar (2015) report an experience where respondents were faced with a trade-off between products positioned on sustainability versus utilitarian values (e.g., with functional performance); or between products with sustainability versus hedonic values (e.g., aesthetics of a product). Findings suggest that consumers are more likely to choose a product with greater utilitarian value, rather than the one that is more sustainable. Interestingly, for hedonic products, this purchase intention depend on consumers' attitudes towards sustainability. Consumers that have a more positive attitude towards sustainability are more likely to choose the sustainable product, instead of the more hedonic one.

Luchs, Phipps and Hill (2015) further suggest that it would be more efficient to start focusing more on consumer sense of responsibility, this being a stronger predictor of consumer behaviour. The argument is based on the fact that, if consumers feel that their individual actions and decisions don't have a big impact, then they don't feel responsible for the state of the environment. This can be achieved by explicitly provide information about the impact that different products have on the environment, so consumers can see how their choices matter.

2.4 The Influence of Product Information on Consumers' Perceptions and Purchasing Behaviours

The decision-making process consumers are subjected when purchasing, is divided by pre-purchase, purchase and post-purchase. The first phase is characterized by consumers identifying a need, searching for products to satisfy that need, and gather information about the alternatives of said product (Gourville & Norton, 2019). Afterwards, during the purchase phase, consumers decide which product they will purchase, from what brand, and other specific characteristics of products and of the purchase act itself. Tybout and Hauser (1981) also suggest that a consumer's choice is based on how consumers perceive products, aggregate perceptions, preferences and account possible constraints of each alternative, before reaching a final decision.

As mentioned before, product attribute information influences consumer's judgments about the product, and influences its purchase decision-making process (Cowan & Guzman, 2018). Furthermore, when considering pro-environmental behaviour, two factors can be considered, individual or context/situational factors (Kostadinova, 2016). Individuals factors comprise attitudes, values and demographic characteristics, while context/situational factors are external situations that influence consumption. This suggests that product information and situational cues play an important role on influencing consumer behaviour. Moreover, Goucher-Lambert and Cagan (2015) suggest that when consumers are exposed to environmental information about a product, reassuring that product's functional attributes are accounted for becomes necessary, while price attributes will have a lower influence on consumer's decisions.

Further analysing the impact of information specifically for greener products, it is important to consider the influence that environmental consciousness has on purchase decisions. This concept can be defined as "a function of knowledge of environmental problems, knowledge of environmental solutions, and knowledge of environmental benefits from specific green products" (Boztepe, 2012). When consumers are more environmentally conscious, it is expected that their purchase decisions will be more environmentally responsible, further considering the impact that their decision has on the environment (Roberts, 1996; O'Rourke & Ringer, 2016). For not as conscious consumers, when exposed to sustainability, making product's attributes more salient, can make them more aware about that subject and eventually influence consumer's thoughts, evaluations and eventually induce product choices (She & MacDonald, 2018).

Finally, negative episodes such as greenwashing is also an important concept to consider when analysing the impact of sustainable information on consumer's decision making (Kenton, 2020). By providing misleading information consumers tend to be more suspicious and not trust the information portrayed by an eco-label (She & MacDonald, 2018). To avoid this mistrust on eco-labels, it has been more favourable to provide sustainability-related information regarding all products provided, instead of simply adding an eco-friendly stamp to products. By providing a sustainability level for all products, consumers are able to view and compare all the products in terms of sustainability and environmental impact. This strategy allows to passively triggers consumers into being more aware and curious to know more about the sustainable characteristics of the products to which they are exposed (She & MacDonald, 2018).

2.5 Impact of Price Discrepancy on Purchase Behaviours

Previous research has suggested that when exposed to two products, consumers are more likely to choose the one from an environmental friendly company when the cost is the same (BBMG 2007). This suggests that, when faced with two alternatives with the same price, consumers are more willing to choose a more sustainable product, since it does not represent a trade-off. Nonetheless, this scenario is quite misleading and unreal, since sustainable and ethically sourced products usually have higher costs associated to its manufacturing process, which consequently increases the prices of these products.

Consumers are also aware of this price discrepancy, with recent studies suggesting that consumers are willing to pay premium prices for ethically produced products (Trudel and Cotte, 2009). Nevertheless, price is still considered an indication of product quality and perceived as the sacrifice of acquiring a product or service (Teas and Agarwal, 2000), and so still a highly valued characteristic by consumers. The fact that sustainable products are usually more expensive, consumers choice and attitudinal evaluations of different products can be negatively affected by the discrepancy of prices (small vs. large) between sustainable and non-sustainable products (Lu & Gursoy, 2017).

Considering the *Theory of Planned Behaviour*, which suggests that the likelihood of a consumer to engage in a certain behaviour depends on the attitudes towards that same behaviour, price can be considered as an external factor that decreases consumers' control over performing a behaviour (Ajzen, 2002). Consequently, when exposed to a premium price,

consumers' purchase intentions may be negatively influenced, even though consumers might have a positive attitude and perception towards sustainable products (Lu & Gursoy, 2017). Therefore, it is important to acknowledge the importance that price has on purchase behaviours, especially in the fashion industry, since price discrepancy between sustainable and non-sustainable products can be considered one of the main features that contribute to the attitude-behaviour gap. Hence, restricting and hampering the switch from harmful and polluting products to sustainable and environmentally friendly products (Luchs et.al. 2010; Lu & Gursoy, 2017).

2.6 Consumer Perceived Ethicality

Perceived ethicality is also an important concept to consider when analysing the impact of sustainable information on consumer's decision making. By providing sustainability-related information, the company is trying to communicate that is ethical and is likely to benefit from this information by increasing its reputation. Consumer Perceived Ethicality as defined by Brunks and Bluemelhuber (2010) is the consumer's accumulated perception of the company's, brand, product or service ethical conduct. A product's ethical attributes reflect moral principles, and can be related to social issues (e.g., labour conditions) and environmental issues (e.g., resources used, pollution in manufacturing and transportation, waste, recycling) (Luchs et al., 2010).

As suggested by prior research, ethical attributes can be especially valued for communicating pro-environmental efforts of a brand efforts, which ultimately impact consumers' perceptions. When this information is perceived as misleading (e.g., greenwashing) consumers may become distrustful and penalize brands by unwilling to purchase from them. Considering that negative information has a bigger impact on CPE than positive information, and that consumers are more demanding from companies that claim to be socially responsible (Brunks & Bluemelhuber, 2010; Luchs et. Al., 2010), the impact of sustainable information on CPE will be an additional factor to be examined further in this research.

2.7 Brand Perception and Willingness to Pay

With increasing global concern about the climate crisis, companies have been investing and improving their Corporate Social Responsibilities (CSR) and sustainability practices. Not only because it is expected from stakeholders directly and indirectly related to the organization, but also to enhance their reputation (Cowan & Guzman, 2018). This increased investment and

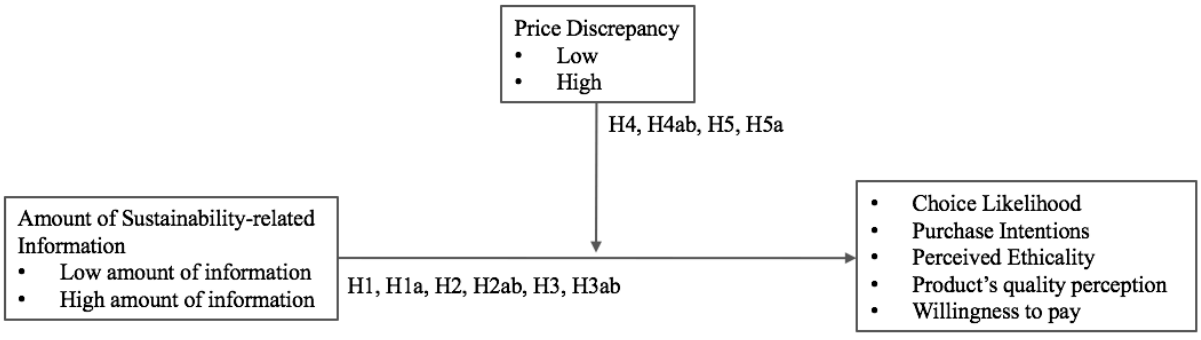
adjustment of practices are also due to the fact that a positive reputation is crucial for a company to continue to be competitive, but also it is also a source of brand equity (Baalbaki & Guzmán, 2016; Heinberg, Ozkaya, & Taube, 2018). Favourable consumer perceptions about brands become therefore indispensable, and sustainability engagements is a means by which brands engage in to facilitate this process (Abratt & Klein, 2012).

A recent study about the positive relationship between CSR and brand perception stated that approximately 70% of consumers are willing to pay more for a brand that invests in CSR and/or sustainability practices (Landrum, 2017). This suggests that consumers have a higher willingness to pay for sustainable products, from responsible brands. Moreover, CSR and sustainability not only increase perceptions of corporate reputation, but also increase consumers' purchase intentions and are more willing to pay a premium for these brands, while increasing brand equity (Cowan & Guzman, 2018).

3. Conceptual Model and Hypothesis

The present study aims to examine the impact that the amount of sustainability-related information about a product has on purchasing behaviours - likelihood of choice, purchase intentions, willingness to pay, and on consumers' perceptions - perceived ethicality and quality, the dependent variables. The independent variables are hereby defined as the level of sustainability-related information (low vs. high), and price discrepancy (low vs. high) as the moderator. Consumers' environmental consciousness will be tested as a covariate.

Figure 1 - Conceptual Model



3.1 Hypotheses

Based on the Literature Review, the author wishes to analyse empirically how participants that are exposed to two products, from two different brands, and with different sustainability levels impact their paying behaviours and perceptions towards brands. Therefore, comparing

purchase behaviours and brand perceptions between two brands presented is relevant to analyse, since it will allow to analyse how sustainability-related information and sustainability level of a brand influences these variables. Also, whether it can be considered a competitive advantage. With this in mind, the first hypothesis is:

H1: Sustainability level of the brands will influence purchase behaviours and brand perception, between the two brands.

H1a: Purchase intentions, willingness to pay, perceived ethicality and quality perception will be higher for the most sustainable brand B, when compared with the less sustainable brand A.

Further, prior research suggests that information has a foundational role in consumer decision-making. Consumers need first to know that their decisions have an impact, and secondly to be able to access relevant and consequential information. This will allow them to distinguish between different products (O'Rourke & Ringer, 2015). On the basis of this prior literature the second set of hypotheses is:

H2: Purchasing behaviours will be influenced by the amount of sustainability-related information of products, such that:

H2a: Consumers will have a higher (vs. lower) purchasing behaviours such as purchase intentions, willingness to pay, and choice likelihood, depending on the amount of sustainability-related information provided.

H2b: When provided with more (vs. less) sustainability-related information, consumers will show higher (vs. lower) purchase intentions, willingness to pay, and choice likelihood for products.

As mentioned before, brands that are more sustainable and socially responsible tend to have a more positive reputation from the consumer's perspective. This assumption leads to the third set of hypotheses:

H3: Brand perceptions will be influenced by the amount of sustainability-related information of products, such that:

H3a: Consumers will have a higher (vs. lower) perceived ethicality and quality perception of products, depending on the amount of sustainability-related information provided.

H3b: When provided with more (vs. less) sustainability-related information participants will show a higher perceived ethicality and quality perception for the brand B.

Additionally, the price discrepancy between two products is also likely to influence purchase intentions, considering that consumers usually perceive sustainable products as premium. Therefore, they are likely to be more willing to pay a premium price for sustainable products (Trudell & Cotte, 2009). By providing sustainability-related information to products, a lower price discrepancy between products is likely to have a lower impact on purchase intentions, which leads to the fourth set of hypotheses:

H4: Price discrepancy will influence purchasing behaviours, such that:

H4a: When price discrepancy is high (vs. low), participants will have lower (vs. higher) purchase intention, but willingness to pay will increase (vs. decrease) for a sustainable product.

H4b: Choice likelihood of sustainable products is strongly influenced by price discrepancy

The fifth and last hypothesis aims to analyse the interaction that the amount of sustainability-related information and price discrepancy have on purchasing behaviours and brand perceptions. More formally:

H5: The amount of sustainability-related information and price discrepancy will influence purchasing behaviours and brand perceptions, such that:

H5a: Price discrepancy will negatively influence purchase behaviours and quality perceptions, but this effect will be lower when more sustainability-related information is provided.

4. Methodology and Data Collection

4.1 Research Method

The research was conducted based on two experimental studies: a pre-test of the main study and a main study. The data was collected through an online survey, developed on Qualtrics, a web platform that allowed to gather data in an efficient way, regarding time and costs. Furthermore, this method allows to capture a wide variety of information and is more convenient for participants, since it has no restrictions regarding when the survey is filled and where. Additionally, Qualtrics provides several tools that allows to customize the survey according to the objectives of the research, for instance the feature to randomize questions.

4.2 Sampling

The sampling method of this research was a non-probabilistic technique, allowing for an equal probability for participants to be chosen to participate. This approach has the advantage of being more convenient and having less administrative costs associated. On the other hand, the possible uncertainties or biases of the sample may influence the results of the study, considering participants will probably be from the authors network. The survey was shared though the authors social media platforms (Instagram, Facebook and WhatsApp).

4.3 Research Instruments

Pre-test

A pre-test was developed, with the main purpose of testing the functionalities of the survey and assess whether the questions were perceptible for participants. Additionally, the results obtained in this pre-test also allowed to see whether the manipulations performed accordingly to what was expected. A total of 25 questions were collected. A scale reliability test was performed, to ensure the scales had a Cronbach's Alpha superior to 0.6. This was validated for the environmental consciousness, CPE and quality perception scales, that were the scales used for this study.

Main-test

The study was launched on the 21st of November, and shared via email and social media platforms (such as Facebook, Instagram and WhatsApp). Two languages were available, English and Portuguese, and responses were collected until the 24th of November.

A total of 559 responses were obtained, from which 464 were completed and consequently analysed. The survey included a randomized manipulation, with a total of four scenarios participants could possibly be exposed. Each cell of the four possible experimental conditions have approximately 115 answers, respecting the recommended number of participants to develop an experimental research study.

4.4 Design and Procedure

The main purpose of this study is to understand the impact that sustainability information has on choice likelihood, purchase intentions, consumer perceived ethicality, quality perceptions and willingness to pay. To achieve this, and answer the research questions, primary data was collected in order to test the formulated hypotheses.

The study design followed a 2 (Amount of Sustainability-related Information: low vs high) x 2 (Price Discrepancy: low vs high) between-within subject's design.

In the main study, participants were allocated to one of four possible scenarios (*Table 1*).

Table 1 - Manipulation Scenarios

Scenarios	Amount of Sustainability-related Information		Price Discrepancy	
	Low	High	Low	High
Scenario 1	X		X	
Scenario 2	X			X
Scenario 3		X	X	
Scenario 4		X		X

Note: Brand A vs. Brand B (their order was counterbalanced on the left versus right of the screen)

Participants were first asked how informed they considered themselves regarding environmental sustainability. Afterwards, would have to state their level of agreement with

eight statements, to measure their level of environmental consciousness. These statements were adapted for this study from Sanchéz and Lafuente (2010) environmental consciousness scale.

Then, to clearly observe the impact that the level of sustainability information would have on the dependent variables previously mentioned, participants were exposed to two different levels of sustainability information (low vs. high). Considering the prices between the two products shown had to be different, price discrepancy was also tested, so participants were exposed to either a lower or higher price discrepancy. Therefore, in the main study participants were allocated to one of the four possible scenarios (*Appendix 1*). To avoid that the position in which the products were presented would influence participants, the placement of the product was counterbalanced on the left versus right.

Then, participants were asked to imagine they were shopping for a white, simple T-shirt in an online store. Two identical products were shown, from two different brands (brand A and brand B), and with distinct prices. Both products had a Green Index (Sarkar, 2011), which indicated the level of sustainability for each branded product. This index, represented by a thermometer symbol, was designed and based on an existing Index, commonly used in the fashion industry (https://www.onlineclothingstudy.com/2011/04/what-is-green-index-for-clothing.html) [1]. The Green Index was adjusted so to provide an overall score of the product on a scale from 1 (very poor sustainability level) to 10 (excellent sustainability level). In addition, for participants exposed to the high amount of sustainability-related information, a detailed description of the product's attributes that represented the main stage of the life-cycle of the product was provided (e.g., percentage of organic cotton used, CO2 emission and disposability) (see *Appendix 2*).. For those exposed to the low amount of sustainability-related information only the Green Index thermometers with the sustainability score of the product was presented.

Additionally, and also depending on the conditions, the scenarios showed a different price discrepancy combination between the two products presented to participants. For instance, the (more) sustainable product, from brand B, would have a higher price, when compared to a

[1] This index indicates the level of responsibility of an organization, company or product on earth, and its impact on the environment. The main objective of this tool is to promote sustainability, by helping consumers to better evaluate the product being purchased. For the purpose of this dissertation, which is focused on environmental sustainability, the Green Index only focused on environmental characteristics.

(lower) sustainable product from brand A. This was based on a recent study that suggested consumers would be more likely to choose a sustainable product if it would have the same price as other alternatives (BBMG 2007), suggesting that without a price trade-off, sustainable products have a higher choice likelihood to be chosen.

After evaluating both brands participants were asked about their likelihood of choosing the brand they had seen. Next, they were asked a set of questions about brand A, namely, to rate how sustainable they perceived the brand to be, the manipulation check measure. Also, their purchase intentions, the perceived ethicality and the quality perceptions of the brand, and their willingness to pay for a product from that brand, the dependent variables. The same process was performed for brand B. The presentation of the brands and the products was counterbalanced (left versus right) to avoid order and position bias on participants' responses. To finalize, demographic measures were applied, and participants were thanked for their participation (see *Appendix 3*).

4.5 Variable Descriptions

Manipulation Check

To assess the effectiveness of the stimulus presented and the attention of participants, these were asked to rate both brands A and B, accordingly to their perception of the sustainability level of the brands.

Independent Variable

Amount of sustainability-related information: participants were exposed to either a low or high amount of sustainability-related information about the products presented.

Moderator

Price Discrepancy: for each scenario, respondents were shown two products, that had different prices. Depending on the scenario, the price discrepancy between the products could be either low or high. Overall, two price discrepancies were presented in the study. The high price discrepancy showed a difference in price between A versus B of 24€. The lower price discrepancy showed a difference in price between option A versus B 14€. This discrepancy was based on real products.

To facilitate the analyses of the study, the following variables were coded as presented in *Table 2*.

Table 2 - Variables Re-coded

Variables	Coded Variable
Sustainability information	0= low level information 1= high level information
Price Discrepancy	0= low price discrepancy 1= high price discrepancy

Control Variables

Environmental Consciousness: participants were asked to indicate their level of agreement with eight statements ("I would describe myself as environmental consciousness"), on a seven-point Likert scale (1 – strongly disagree, 7 – strongly agree), adapted from Sanchéz and Lafuente (2010) (see *Appendix 3*).

*Dependent Variable*s

Choice Likelihood: respondents were asked to choose between the two products presented, of brand A and brand B. This variable was measured as a multiple choice, with two possible answers, "Product from brand A" and "Product from brand B" (see *Appendix 3*).

Purchase Intentions: this variable was assessed by asking participants their purchase intentions for brand A and brand B, separately, on a seven-point scale (1 – extremely unlikely, 7 – extremely likely), adapted from Zeithaml (1988), and Batra and Ray (1986) (see *Appendix 3*).

Consumer Perceived Ethicality: in order to assess this variable, participants were asked to indicate their level of agreement with four statements ("Brand A respects moral norms") on a seven-point Likert scale (1 – strongly disagree, 7 – strongly agree) adapted from Brunk (2012) (see *Appendix 3*).

Quality Perception: to assess this variable, participants were asked to answer their level of agreement with three statements ("The T-shirt has a high quality"), on a seven-point Likert scale (1 – strongly disagree, 7 – strongly agree) (see *Appendix 3*).

Willingness to Pay: This variable was assessed by asking participants how much they would be willing to pay (from 0 to 80) for the products of both brands (see *Appendix 3*).

5. Analysis and Results

5.1 Sample Characterization

Overall, a total sample of 464 responses was obtained. The majority of participants were male (68%), and all age ranges were present, with most respondents with ages from 45 to 54 years old (44%), followed by 18 to 24 (22%) and 35 to 44 (18%) years old. Regarding country of residence, 422 (92,7%) currently lived in Portugal, with the remaining participants scattered throughout the world, with a total of 16 countries. Considering educational level, most of participants had a Bachelor's (51%), Master's (24%) and a High School's (21%) degree, and most currently either employed (75%) or studying (17%). Lastly, the majority of respondents stated to have a monthly income superior of 2000€ (49%), followed by an income of 1001€ to 1500€ (13%) and less than 500€ (13%) (*Appendix 4)*.

5.2 Manipulation Check

The first test made was a manipulation check, to confirm whether the stimulus presented in the research, in this case the Green Index, effectively manipulated how respondents evaluated each brand in terms of sustainability. A paired samples t-test was performed, with a 95% confidence interval, and showed a statistically significance between the sustainability perception of both brands (see *Table 3*).

Table 3 Paired Sample t-test - Sustainability Perception of Brands

	Paired sample t-test		
	Mean	*SD*	*t-test*
Sustainability level brand A - Sustainability level brand B	-3.05	1.79	-36.30^{***}

Note: ***p<.001, **p<.01, *p<.05, +p≤.1

Brand A, which showed a lower score in terms of sustainability level (in the Green Index) was perceived as less sustainable than brand B which was perceived as more sustainable ($M_{brand\ A}$=

2.78, SD = 1.24 vs. $M_{brand\ B}$ = 5.84, SD = .97; $t(454) = -36.30$, $p<.001$), validating the manipulation.

5.3 Data Screening for Outliers

To identify respondents that would have an uncommon combination of answers, a univariate and multivariate outlier analyses were performed. For the Univariate outlier analysis, variables are converted into z-scores, and for a 5% significance level, z-scores that are greater than 3.29 are considered outliers. For the multivariate outlier analysis, a Mahalanobis distance was calculated, in which responses with a p-value lower than 0,001 are considered outliers. A total of nine outliers were identified after performing these two analyses, which were excluded from the data base, leaving a total of 455 responses to analyse.

5.4 Scales Reliability

Although the scales used in this research (Environmental Consciousness, Consumer Perceived Ethicality and Quality Perception) were adapted from previous literature, a reliability test was still performed to guarantee the accuracy of the results. Considering all scales had three or more items, a factor analysis procedure with a principal component analysis and varimax rotation was conducted. The factor analysis indicated that for both consumer perceived ethicality and quality perception only one component was extracted. However, for the environmental consciousness variable, 2 components were extracted (*Table 4*).

Table 4 - Environmental Consciousness Factor Analysis

Environmental Consciousness Item	Component	
	1	2
1. I would describe myself as environmentally conscious.	.79	-.02
2. I am concerned about wasting the resources of the Earth.	.71	.23
3. I have purchased greener/ sustainable products.	.68	.13
4. The climate crisis is a real problem, that needs to be urgently solved.	.24	.68
5. My actions have an impact on the environment.	.40	.48
6. I always recycle.	.55	.25
7. I'm currently trying to change my habits to be more sustainable.	.59	.51

8. We should pay more for natural resources.	-.03	.82

After further analysing it, the statement "We should pay more for natural resources." had a negative value in the Rotated Component Matrix, so this item was identified has negatively affecting the consistency of the scale. To further analyse the reliability of the measures used, a Cronbach's alpha test was performed, to ensure the consistency of the scales (*Table 5*).

Table 5 – CPE, Quality Perception and Environmental Consciousness

Scale	Initial number of items	Cronbach's alpha	Cronbach's alpha if item deleted	Items deleted	Final number of items
CPE for brand A	4	.79	-	-	4
CPE for brand B	4	.82	-	-	4
Quality Perception for brand A	3	.66	-	-	3
Quality Perception for brand B	3	.76	-	-	3
Environmental Consciousness	8	.74	.77	1	7

All the variables had a Cronbach's alpha higher than 0.6, which indicates a high level of consistency for the scales analysed (DeVellis 1991). Nevertheless, when eliminating the component previously mentioned in the environmental consciousness scale, the Cronbach's Alpha increases, so this item was eliminated.

5.5 Main Results

To test the four hypotheses, a multivariate analysis of variance (MANOVA) was conducted.

5.5.1 Comparison of the Impact of Sustainability-related Information on Purchase Behaviours and Brand Perception Between Two Different Brands.

H1: Sustainability level of the brands will influence purchase behaviours and brand perception.

H1a: Purchase intentions, willingness to pay, perceived ethicality and quality perception will be higher for the most sustainable brand B, when compared with the less sustainable brand A.

To test the first hypothesis, a paired-samples t-test was conducted, to compare the differences of brand perceptions and willingness to pay between brand A and B[2] (see *Table 6*).

Table 6 - Paired-samples t-test: Brand Perception and Purchase Behaviours

	Paired sample t-test		
	Mean	*SD*	*t-test*
CPE brand A – CPE brand B	-1.56	1.43	-23.14***
Quality perception brand A – Quality perception brand B	-.66	1.02	-13.65***
Purchase intentions for brand A - Purchase intentions for brand B	.16	2.75	1.24
Willingness to pay for brand A - Willingness to pay for brand B	-7.36	8.42	-18.64***

Note: ***p<.001, **p<.01, *p<.05, +p≤.1

2 For a better clarification of the presentation of the results, Brand B is considered most sustainable than Brand A.

Results suggest that consumer perceived ethicality, quality perception and willingness to pay have a statistically significant difference between the two brands for CPE, Quality Perception and WTP. When comparing the means for these variables, the most sustainable brand B has higher means than the less sustainable brand A. This further suggests that, simply by providing the sustainability level of the two different products, it will benefit the most sustainable brand. The difference of means between the two brands is statistically significant for CPE ($M_{CPE\text{-}Brand\ A}$ = 3.56 vs. $M_{CPE\text{-}Brand\ B}$ = 5.11; t (45) = -23.14, p<.001), Quality Perception ($M_{Quality\ Percpetion\text{-}Brand\ A}$ = 4.20 vs. $M_{Quality\ Perception\text{-}Brand\ B}$ = 4.86; t (45) = -13.65, p<.001), and Willingness to Pay ($M_{WTP\text{-}Brand\ A}$ = 12.20 vs. $M_{WTP\text{-}Brand\ B}$ = 19.56; t (45) = -18.64, p<.001).

The results partially support the first hypothesis, considering that purchase intentions are not significantly affected by the sustainability level of the products. Nonetheless, for the remaining variables, providing this information is very beneficial for sustainable and environmental consciousness brands.

5.5.2 The Impact of the Amount Sustainability-related Information on Purchase Behaviours.

H2: Purchasing behaviours will be influenced by the amount of sustainability-related information of products, such that:

> *H2a: Consumers will have a higher (vs. lower) purchasing behaviours such as purchase intentions, willingness to pay, and choice likelihood, depending on the amount of sustainability-related information provided.*
>
> *H2b: When provided with more (vs. less) sustainability-related information, consumers will show higher (vs. lower) purchase intentions, willingness to pay, and choice likelihood for products.*

To test H1, a chi-square test was firstly performed, to observe the impact that the amount of sustainability-related information would have on choice likelihood. (see *Table 7*).

Table 7 - Chi-square test of choice likelihood

	Low amount of sustainability-related information		High amount of sustainability-related information		Chi-square
	Product A	Product B	Product A	Product B	
Choice likelihood	62.1%	37.9%	57.8%	42.2%	.84

Note: ***p<.001, **p<.01, *p<.05, +p≤.1

By analysing the difference between the percentage rate of choice likelihood percentages, when participants were exposed to more sustainability information, the choice likelihood for brand B increased from 37.9% to 42.2%. However, when analysing the Chi-square values, it is observed that this increase of information availability is not statistically significant (p>.05).

To test the impact of the amount of sustainability-related information would have on purchase intentions and willingness to pay, a one-way multivariate analysis of variance (MANOVA) was performed. Results show a non-significant main effect on purchase intentions for both brands A ($F(1,45)= 2.07$; $p > .1$, NS) and brand B ($F(1,45) = .04$; $p >.2$; NS) and on WTP for brand A ($F(1,45) = .02$; $p>.2$; NS) and for brand B ($F(1,45) = 1.29$; $p>.2$; NS) (see *Table 8*).

Table 8 – Amount of Sustainability-related Information Main Effect (one-way MANOVA): Purchase Behaviour

	F test
Purchase intentions for brand A	2.07
Purchase intentions for brand B	.04
Willingness to Pay A	.02
Willingness to Pay B	1.29

Note: ***p<.001, **p<.01, *p<.05, +p≤.1

These results reject the second hypothesis, considering that there was not a significant difference observed on purchase behaviours, when a higher amount of sustainability-related information was made available. Further tests were conducted, to see whether environmental consciousness would impact the results obtained. A one-way multivariate analysis of variance, with environmental consciousness as a covariate (MANCOVA) was performed. After inserting this new variable as a covariate, the effects held, rejecting H2, H2ab.

5.5.3 The Impact of the Amount Sustainability-related Information on Brand Perceptions.

H3: Brand perceptions will be influenced by the amount of sustainability-related information of products, such that:

> *H3a: Consumers will have a higher (vs. lower) perceived ethicality and quality perception of products, depending on the amount of sustainability-related information provided.*
>
> *H3b: When provided with more (vs. less) sustainability-related information participants will show a higher perceived ethicality and quality perception for the brand.*

To test the impact of the amount of sustainability-related information would have on consumer perceived ethicality and quality perception, a one-way MANOVA was again performed (see *Table 9*).

Table 9 –Amount of Sustainability-related Information Main Effect (one-way MANOVA): Brand Perceptions

	F test
Consumer perceived ethicality A	2.43^{+}
Consumer perceived ethicality B	.29
Quality perception A	3.70^{*}
Quality perception B	6.88^{*}

Note: ***p<.001, **p<.01, *p<.05, +p≤.1

The results suggest a significant main effect of the amount of sustainability-related information on the quality perception of the products of brand A ($F(1,45) = 3.70$; $p<.05$), and of brand B ($F(1,45) = 6.88$; $p<.05$), and a marginally significant main effect of CPE of brand A ($F(1,45) = 2.43$; $p\leq.1$). To complete this analysis an independent samples t-test was performed (see *Table 10*).

Table 10 – Independent-samples t-test: Amount of Sustainability-related information

	Low amount sustainability-related information		High amount sustainability-related information		
	Mean	*SD*	*Mean*	*SD*	*t-test*
Quality Perception brand A	4.28	.83	4.12	.94	1.99*
Quality Perception brand B	4.75	.93	4.97	.91	-2.58*

Note: ***p<.001, **p<.01, *p<.05, +p≤.1

Results show a significant mean difference in the scores of the dependent variables, accordingly to the amount of sustainability-related information. For *quality perception of the product from brand A* ($M_{\text{low amount sustainability-related information}} = 4.28$ vs. $M_{\text{high amount sustainability-related information}} = 4.12$; $t(453) = 1.99$, $p<.05$), when participants were exposed to a higher amount of sustainability-related information, the quality perception decreases. This finding suggests that the amount of information negatively impacts quality perception for branded products with a lower sustainability level. Regarding *quality perception for brand B* ($M_{\text{low amount sustainability-related information}} = 4.75$ vs. $M_{\text{high amount sustainability-related information}} = 4.97$; $t(453) = -2.58$, $p<.05$), a higher amount of sustainability-related information has a positive impact on quality perception for more sustainable branded products, partially validating H3b.

Overall, these results partially support the third hypothesis, suggesting that quality perceptions are influenced by the amount of sustainability-related information of products. Instead, findings suggest that the impact of sustainability-related information depends whether the product is sustainable (positive impact), or not (negative impact). Further tests were conducted, to see whether environmental consciousness would impact the results obtained. A one-way multivariate analysis of variance, with environmental consciousness as a covariate (MANCOVA) was once more performed, but no significantly changes were observed.

5.5.4 Impact of Price Discrepancy on Purchasing Behaviour.

H4: Price discrepancy will influence purchasing behaviours, such that:

H4a: When price discrepancy is high (vs. low), participants will have lower (vs. higher) purchase intention, but willingness to pay will increase (vs. decrease) for a sustainable product.

H4b: Choice likelihood of sustainable products is strongly influenced by price discrepancy

To test the fourth hypothesis, a one-way univariate MANOVA was once more performed, with the main purpose to observe the effect that price discrepancy had on willingness to pay for the product from brand B (see *Table 11*).

Table 11 – Price Discrepancy on Willingness to Pay and Purchase Intention Main Effect

	F test
Purchase Intention for Brand B	3.39^{+}
Willingness to pay for brand B	12.35^{***}
Note: ***p<.001, **p<.01, *p<.05, +p ≤.1	

Analysing the MANOVA results, a significant main effect of price discrepancy on willingness to pay for brand B is verified ($M_{low\text{-}price\ discrepancy}$ = 18.39 vs. $M_{high\text{-}price\ discrepancy}$ = 20.65; F(1,47) = 12.35; p <.01). A marginally significant main effect of price discrepancy on purchase intentions for brand B is also identified ($M_{low\text{-}price\ discrepancy}$ = 4.80 vs. $M_{high\text{-}price\ discrepancy}$ = 4.52; F(1,47) = 3.39; p ≤.01)This results fully support the fourth hypothesis. The willingness to pay increases when the price discrepancy is higher, while purchase intentions are negatively impacted by this increasing of price discrepancy.

Lastly, to test H4b, a chi-square test was conducted, with *choice likelihood* and the *price discrepancy* variable, to see the main effect of this variable (see *Table 12*).

Table 12 - Chi-square test: Choice Likelihood

	Low price discrepancy	High price discrepancy	
	Product B	Product B	Chi-square
Choice likelihood	45.2%	35.2%	4.77*
Note: ***p<.001, **p<.01, *p<.05, +p≤.1			

Results show a significant main effect of price discrepancy on choice likelihood of sustainable products. When the price between two products has a higher discrepancy, consumers are less willing to choose the most sustainable products. This suggests that the choice likelihood will significantly dependent on the price of the sustainable products, especially when there are other cheaper alternatives.

The results fully support the fourth hypothesis. It further suggests that, although consumers are willing to spend more for a sustainable product when price discrepancy is higher, choice likelihood and purchase intentions are lower. This suggests that price discrepancy has an anchoring effect on willingness to pay, such that when this discrepancy is higher, consumers will be willing to pay more for a sustainable product. Nonetheless, when provided with the choice between two products with different sustainability levels, a higher price discrepancy will negatively influence the choice for the most expensive and sustainable product.

5.5.5 Impact of Sustainable Information and Price Discrepancy on Purchasing Behaviours and Brand Perceptions.

H5: The amount of sustainability-related information and price discrepancy will influence purchasing behaviours and brand perceptions, such that:

> *H5a: Price discrepancy will negatively influence purchase behaviours and quality perceptions, but this effect will be lower when more sustainability-related information is provided.*

To test the last hypotheses, a 2 (Amount sustainability-related information) x 2 (Price Discrepancy) multivariate analysis of variance (MANOVA) was performed on the dependent variable related to purchasing behaviours and brand perception. The interaction between the two variables was analysed (see *Table 13*).

Table 13 - Interaction Effect: Amount of Sustainability and Price Discrepancy

	Low Sustainability-related Information		High Sustainability-related Information		Sustainability-related Information main effect	Price Discrepancy main effect	Sustainability-related Information x Price Discrepancy
	Low Price Discrepancy	High Price Discrepancy	Low Price Discrepancy	High Price Discrepancy	*F test*	*F test*	*F test*
	(n= 112)	(n= 120)	(n= 107)	(n= 116)			
Purchase intention brand A	4.78 (1.8)	5.07 (1.5)	4.61 (1.7)	4.79 (1.6)	2.07	2.39	.12
Purchase intention brand B	4.70 (1.7)	4.60 (1.6)	4.92 (1.5)	4.44 (1.8)	.04	3.39^{+}	1.49
WTP brand A	12.36 (7.7)	11.97 (4.8)	12.39 (9.8)	12.10 (5.0)	.02	.26	.01
WTP brand B	18.82 (6.5)	19.49 (6.4)	17.94 (6.5)	21.84 (8.2)	1.29	12.35^{***}	6.17^{*}
CPE A	3.60 (1.0)	3.64 (1.0)	3.45 (0.9)	3.52 (1.0)	2.43^{+}	.49	.01
CPE B	5.21 (1.0)	5.06 (0.8)	5.16 (0.8)	5.02 (1.0)	.29	2.79^{+}	.01
Quality perception brand A	4.24 (0.8)	4.32 (0.8)	4.24 (1.0)	4.00 (0.8)	3.70^{*}	1.07	3.65^{+}
Quality perception brand B	4.68 (1.0)	4.80 (0.8)	5.03 (0.9)	4.91 (0.9)	6.88^{*}	.00	1.89^{+}

Note: ***p<.001, **p<.01, *p<.05, +p≤.1

Results show, regarding the interaction effect between the two independent variables, a statistically significant effect was obtained for willingness to pay for brand B ($F(1,45) = 6.17$; $p < .05$), a marginally significant effect for quality perception of brand A ($F(1,45) = 3.65$; $p \leq .1$) and quality perception of brand B ($F(1,45) = 1.89$; $p \leq .1$).

Further analyses were performed, to test the difference between groups. Firstly, a new variable was coded, as shown in the table bellow (*Table 14*):

Table 14 – Comparison between groups

Variable	Values
Comparison between groups	1= Low information, low price discrepancy; 2= Low information, high price discrepancy; 3= High information, low price discrepancy; 4= High information, high price discrepancy;

Secondly, two independent *t-tests* were conducted, between group 1 (low information, low price discrepancy) and 3 (high information, low price discrepancy) (see *Table 15*), followed by a test between group 2 (low information, high price discrepancy) and 4 (high information, high price discrepancy) (see *Table 16*).

Table 15 - Independent-samples t-test General Condition groups 1 and 3

	Low information, low price discrepancy		High information, low price discrepancy		
	Mean	SD	Mean	SD	t-test
Willingness to pay B	18.82	6.51	17.94	6.48	.99
Quality perception brand A	4.24	.83	4.24	1.03	.01
Quality perception brand B	4.69	1.01	5.03	.88	-2.71**

Note: ***p<.001, **p<.01, *p<.05, +p≤.1

This first *t-test* suggests that, when price discrepancy is low and participants are exposed to the

higher amount of sustainability-related information, there is a non-significant difference between the willingness to pay for brand B and quality perception of brand A, but a statistically significant difference of quality perception for brand B ($M_{low\text{-}information,\ low\text{-}price}$ = 4.69 vs. $M_{high\text{-}information,\ low\text{-}price}$ = 5.03; *t* (217) = -2.71, p <.01). The results obtained suggest that when price discrepancy between products is lower, having a higher amount of sustainability-related information benefits how the quality of sustainable products are perceived.

Table 16- Independent-samples t-test General Condition groups 2 and 4

	Low information, high price discrepancy		High information, high price discrepancy		
	Mean	SD	Mean	SD	t-test
Willingness to pay B	19.49	6.36	21.84	8.18	-2.47*
Quality perception brand A	4.32	.82	4.00	.84	2.93**
Quality perception brand B	4.80	.86	4.91	.95	-.92

Note: ***p<.001, **p<.01, *p<.05, +p≤.1

When there is a high price discrepancy, t-test findings show a significant mean difference for willingness to pay for the product of brand B ($M_{low\text{-}information,\ high\text{-}price}$ = 19.49 vs. $M_{high\text{-}information,\ high\text{-}price}$ = 21.84; *t* (234) = -2.47, p <.05). Specifically, results show that participants favour more sustainable products (brand B) when high sustainability-related information is provided while price discrepancy is high.

Regarding quality perception of brand A ($M_{low\text{-}information,\ high\text{-}price}$ = 4.32 vs. $M_{high\text{-}information,\ high\text{-}price}$ = 4.00; *t* (234) = 2.93, p <.01), the opposite is verified. That is, providing low-sustainability-related information but a high price discrepancy is more favourable for low sustainable branded products as quality perceptions are higher.

Lastly, for quality perception of the sustainable brand, in this case brand B, there is not a statistically significant difference when a higher amount of sustainability-related information is provided.

6. Conclusions and Limitations

The main purpose of this dissertation was to understand the impact that sustainability information about a product's characteristics would have on consumers purchase behaviour and brand perceptions. Moreover, the research also aimed to observe the influence that the amount of sustainability-related information about a product.

Starting with the first research question (RQ1), the results obtained suggest that the amount of sustainability-related information does not have a significant main effect on purchase behaviours. However, brand perceptions are significantly affected by this main effect. When provided with a higher amount of sustainability-related information, participants had a higher quality perception of the branded product with a higher level of sustainability. While for the less-sustainable product the inverse effect was observed. Further analyses also showed that participants always showed a greater quality perception, perceived ethicality and willingness to pay for the most sustainable product. This is an indication that, for brand perceptions, the availability of sustainability-related information has a positive impact and can be used as a competitive advantage.

Moreover, as mentioned in the literature review, consumers who have a higher environmental consciousness are also more willing to purchase greener products, even if those products are more expensive (Luchs et. al., 2012). This effect was tested for both purchase behaviours and brand perceptions, by adding environmental consciousness as a covariate, although the effects held.

Regarding the second research questions (RQ2), it focused on the effect of price discrepancy on purchasing behaviours. The results suggest that price discrepancy has a significant main effect on purchase intentions, willingness to pay for sustainable branded products, and choice likelihood. When price discrepancy was higher, participants were more willing to pay for the sustainable product. Yet, purchase intentions and choice likelihood were negatively affected by price discrepancy, so that, when this discrepancy was higher, the choice likelihood for the most sustainable product was lower. This is in line with the attitude-behaviour gap mentioned earlier on the literature review that suggests that there is willingness to pay for sustainable products but when choices have to be made, consumers trade-off between products on the basis of low versus high price discrepancy.

The last research question (RQ3) aimed to examine the interaction effect between the amount of sustainability-related information and price discrepancy. Results showed a significant interaction effect on willingness to pay for the more sustainable brand B and quality perception for both brand A and B. Further analyses suggested that the amount of sustainability-related information had a significant effect when price discrepancy between products was higher on WTP. The WTP for the sustainable product increased, while the quality perception for the less-sustainable product decreased. These effects show that, considering sustainable products are usually more expensive, by providing more sustainability-related information participants are willing to pay more for sustainable products. Regarding quality perception, for low price discrepancy, a higher amount of sustainability-related information will benefit how sustainable products are perceived, while for a higher price discrepancy, when more information is made available, the less sustainable brand will be negatively impacted. This allows to conclude that sustainable brands always benefit in terms of quality perception there is a higher amount of sustainability-related information.

6.1 Theoretical Implications

This study contributes to the literature regarding the impact that sustainability information has on consumer decision making. Firstly, it supports the importance that the amount of sustainability-related information has on brand perceptions (Cowan & Guzman, 2018; Luchs et al., 2010; Landrum, 2017). Moreover, it also suggests that purchase intentions are not as influenced by this information, contrary to what it would be expected. However, price discrepancy appeared to have a high influence on choice likelihood, which further supports the fact that the attitude-behaviour gap is significantly affected by the higher prices sustainable products usually have (O'Rourke & Ringer, 2016; Roberts, 1996; She & MacDonald, 2018).

The study is also in line and further contributing regarding the trade-off to which participants were exposed, between sustainability level and price of the product (Luchs, Brower, & Chitturi, 2012; Luchs & Kumar, 2015). This was rather relevant, considering the trade-off on this study was regarding price and not performance of the products, as it is more commonly studied. Therefore, by adding this new trade-off, allowed to observe the impact that price discrepancy between sustainable and non-sustainable products has (Lu & Gursoy, 2017).

Lastly, the conclusions obtained further contributed to literature focused on changing consumers decisions making, purchase behaviour and brand perceptions (Stafford & Graul,

2020; Jacobs, Petersen, Horish & Battenfeld, 2018; White et al., 2019). The impact that sustainability-related information has is further studied and analysed, and provides valuable insights for sustainable companies to develop a competitive strategy.

6.2 Managerial Implications

The insights gathered from both the theoretical and experimental research, contributes to environmental friendly companies' strategies, or shows the possible competitive advantages that sustainable and conscious companies can gain. First and foremost, is important to deliver the product-level sustainability information, in a clear and simple way. In doing so, consumers can analyse and make more informed and conscious decisions. Companies can further benefit when explaining their sustainability claims, instead of just stating they are sustainable, and that the products they offer are eco-friendly. By stating the reasons for which they claim to be sustainable, increases choice likelihood and quality perceptions, and also avoids being accused of greenwashing.

Providing sustainability information can be even more beneficial when considering companies operating in e-commerce industries. Since consumers are exposed to so much information, and so many empty claims of supposedly sustainable products, it can be overwhelming to decide which alternative is the best. By providing a more in-depth information about the sustainability characteristics about the product, in a clear, simple and visually appealing way, it will help consumers to better navigate e-commerce platforms, and further benefit companies that are environmental consciousness. This can be done by showing specific measure to consumers, such as developed on this research.

Lastly, one big competitive advantage identified in this study was the increase of willingness to pay. As mentioned throughout this study, price is one of the biggest components on purchase decision making. Considering sustainable brands incur in bigger costs, as a consequence of a lower manufacturing impact on the environment, which leads to an increase of prices, when compared to other non-sustainable products. This is emphasized in the fashion industry, where companies that pursue a slow-fashion strategy have much more expensive products when compared to fast fashion, but when materials, CO2 emissions and disposability are analysed, the difference is usually highly significant. With this in mind, and after the results obtained in the experimental survey, the evidence suggests that to overcome the damage that higher prices have on sustainable brands can be overcome by providing a higher amount of sustainability-

related information. This was specially emphasized in the study, when the price discrepancy between the products was higher. Moreover, the quality perception of the product from brand B would be enhanced when a higher amount of information was made available, when price discrepancy was lower. However, for a higher price discrepancy, the quality perception of the less sustainable brand was negatively impacted when a higher amount of information was made available. These observations suggest that, for both lower and higher price discrepancy, a higher amount of sustainability-related information benefits the most sustainable brand, in terms of quality perception and willingness to pay.

7. Limitations and Future Research

Numerous limitations of this study need to be identified. Firstly, the sample of the experimental research study, had mostly participants residing in Portugal (93%), which could influence the results obtained, since it lacks a cultural diversity. Consequently, the sample gathered does not represent the population, so for future research this should be avoided. Moreover, the platform chosen to conduct the experimental research, an online survey, has a low level of control over the participants. It can negatively impact results, since participants might not be fully dedicated, focused or interested in answering the survey in an honestly and seriously.

Secondly, a big limitation of research might be the social desirability bias. This happens when participants try to present themselves positively, by not being fully honest when answering the questionnaire, and misleads the results obtained.

The product chosen for the survey, a fashion item, might also have influenced the results obtained. For future researches might be interesting to tests different products from different industries with distinctive levels of involvement. Moreover, when analysing the results, the low significant difference between the two scenarios regarding the level of sustainability information insinuates that the stimulus presented might be too similar. Perhaps, if the two stimuluses would have been substantially different the impact of a higher level of information would have been bigger.

8. Appendices

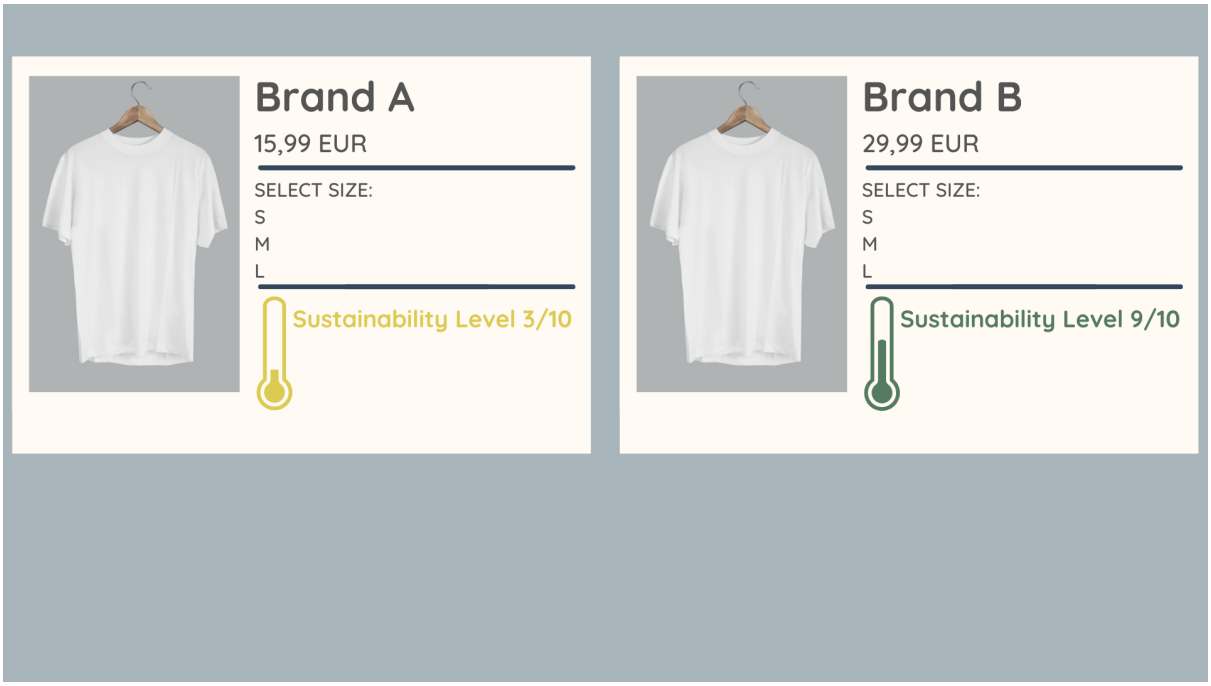
Appendix 1: Scenarios

Condition Assigned	Scenario
Low amount of sustainability-related information and low price discrepancy	**Scenario 1:** Consumers are asked to imagine they are browsing through an online store, searching for a simple white T-shirt. Two options are then presented, one brand with a **sustainability level of 3/10**, and the other option from a brand with a **sustainability level of 9/10**. The prices were **15.99€** and **29.99€,** respectively.
Low amount of sustainability-related information and high price discrepancy	**Scenario 2:** Consumers are asked to imagine they are browsing through an online store, searching for a simple white T-shirt. Two options are then presented, one brand with a **sustainability level of 3/10**, and the other option from a brand with a **sustainability level of 9/10**. The prices were **15.99€** and **39.99€,** respectively.
High amount of sustainability-related information and low price discrepancy	**Scenario 3:** Consumers are asked to imagine they are browsing through an online store, searching for a simple white T-shirt. Two options are then presented, one brand with a **sustainability level of 3/10**, and with additional information regarding this sustainability level (Organic Cotton 3/10, CO2 Emissions 4/10, Recyclable 3/10). The other option was from a brand with a **sustainability level of 9/10** and with additional information regarding this sustainability level (Organic Cotton 10/10, CO2 Emissions 8/10, Recyclable 10/10). The prices were **15.99€** and **29.99€,** respectively.
High amount of sustainability-related information and high price discrepancy	**Scenario 2:** Consumers are asked to imagine they are browsing through an online store, searching for a simple white T-shirt. Two options are then presented, one brand with a **sustainability level of 3/10**, and with additional information regarding this sustainability level (Organic Cotton 3/10, CO2 Emissions 4/10, Recyclable 3/10).

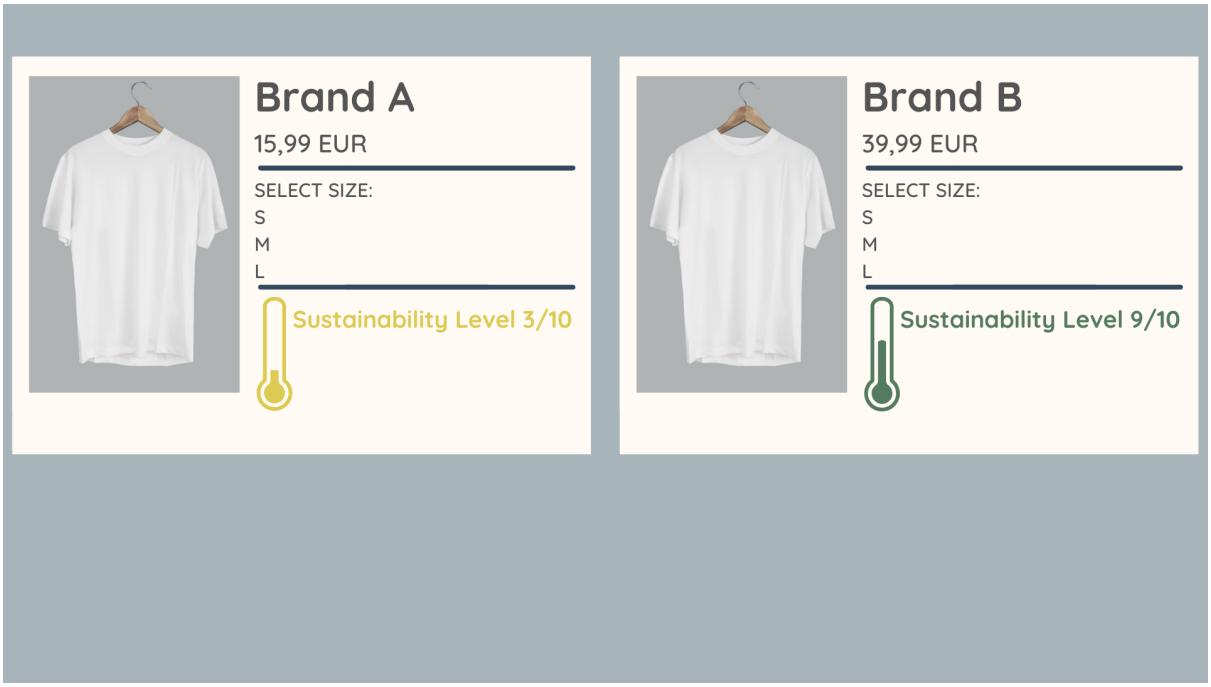
	The other option was from a brand with a **sustainability level of 9/10** and with additional information regarding this sustainability level (Organic Cotton 10/10, CO2 Emissions 8/10, Recyclable 10/10). The prices were **15.99€** and **39.99€,** respectively.

Appendix 2: Manipulations

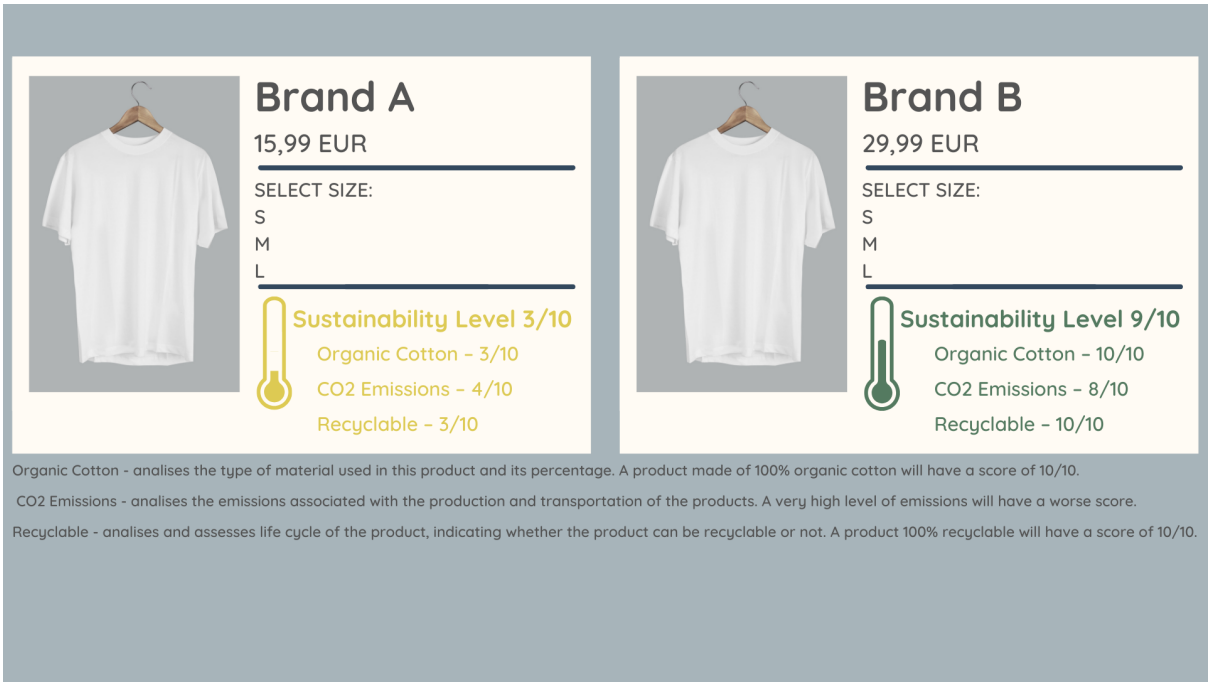
Scenario 1



Scenario 2



Scenario 3

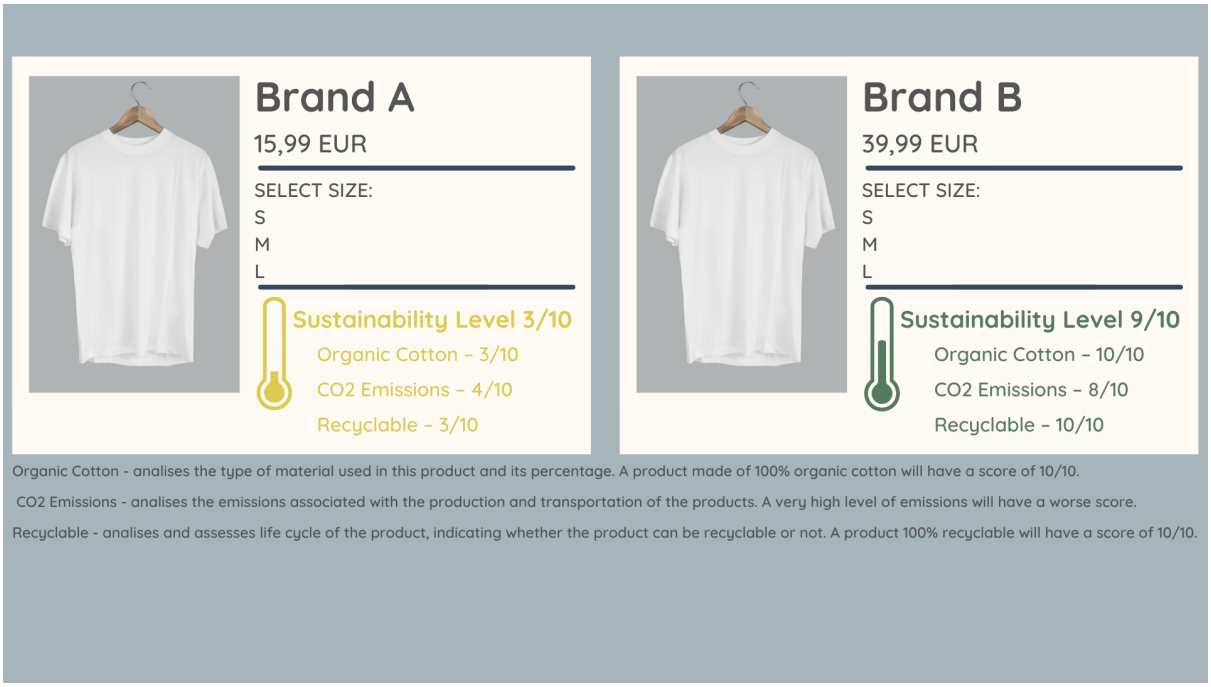


Organic Cotton - analises the type of material used in this product and its percentage. A product made of 100% organic cotton will have a score of 10/10.

CO2 Emissions - analises the emissions associated with the production and transportation of the products. A very high level of emissions will have a worse score.

Recyclable - analises and assesses life cycle of the product, indicating whether the product can be recyclable or not. A product 100% recyclable will have a score of 10/10.

Scenario 4



Appendix 3: Main Study Survey

Survey Introduction Block

Dear Participant,

Thank you for agreeing and taking the time to answer this survey. The main purpose of this questionnaire is to study consumer's purchase intentions.

The survey will take approximately **5 minutes** to complete.

Please be assured that the information you give will remain **anonymous and confidential**. There are no right or wrong questions, so I ask that you answer honestly.

Thank you for your help,

Mariana

Block 1: Environmental Consciousness
Q1: On a scale from 1 (not at all informed) to 7 (very well informed) please rate your knowledge in Environmental Sustainability:

	1.Strongly Disagree (1)	2.Disagree (2)	3.Somewhat disagree (3)	4.Neither agree nor disagree (4)	5.Somewhat agree (5)	6.Agree (6)	7. Strongly Agree (7)
I would describe myself as	○	○	○	○	○	○	○

environmentally conscious.							
I am concerned about wasting the resources of the Earth.	○	○	○	○	○	○	○
I have purchased greener/ sustainable products.	○	○	○	○	○	○	○
The climate crisis is a real problem, that needs to be urgently solved.	○	○	○	○	○	○	○
My actions have an impact on the environment.	○	○	○	○	○	○	○
I always recycle.	○	○	○	○	○	○	○
I'm currently trying to change my habits to be more sustainable.	○	○	○	○	○	○	○
We should pay more for natural resources.	○	○	○	○	○	○	○

Block 2: Randomized Stimuli (Example: high information level, low price discrepancy)
Imagine that you are currently browsing an online store, looking for a simple white T-shirt. This specific online store uses the Green index on its clothing (represented by the thermometer symbol below). This index indicates the level of sustainability of each product and is represented on a scale from 1 (very poor sustainability level) to 10 (excelent sustainability level). The store also has different brands, to have a more diverse offer.

You have found two very similar T-shirts, from two different brands, and have to decide which one you will purchase, considering all the information provided.

Q2: Which product would you be more likely to choose?

- ○ Product from brand A (1)
- ○ Product from brand B (2)

Now consider brand A when answering the following questions. **You can scroll up if you need to see the product** of this brand again.

Q3: How likely would you be to purchase from brand A?

- ○ Extremely unlikely (1)
- ○ Moderately unlikely (2)
- ○ Slightly unlikely (3)
- ○ Neither likely nor unlikely (4)
- ○ Slightly likely (5)
- ○ Moderately likely (6)
- ○ Extremely likely (7)

Q4: Please rate your level of agreement with the following statement, on a scale from 1 (strongly disagree) to 7 (strongly agree):

	1.Strongly Disagree (1)	2.Disagree (2)	3.Somewhat disagree (3)	4.Neither agree nor disagree (4)	5.Somewhat agree (5)	6.Agree (6)	7. Strongly Agree (7)
Brand A is sustainable	○	○	○	○	○	○	○

Q5: On a scale from 1 (strongly disagree) to 7 (strongly agree), please indicate your level of agreement with the following sentences:

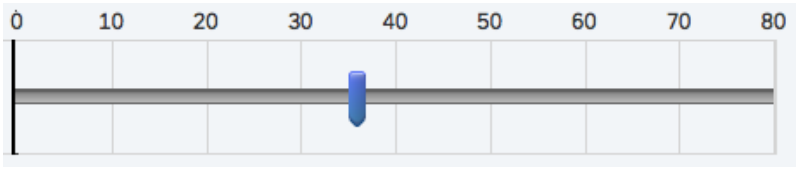
	1.Strongly Disagree (1)	2.Disagree (2)	3.Somewhat disagree (3)	4.Neither agree nor disagree (4)	5.Somewhat agree (5)	6.Agree (6)	7. Strongly Agree (7)
Brand A respects moral norms	○	○	○	○	○	○	○
Brand A always respects the law	○	○	○	○	○	○	○
Brand A is a social responsible brand	○	○	○	○	○	○	○
Brand A is a good brand	○	○	○	○	○	○	○

Q6: On a scale from 1(strongly disagree) to 7 (strongly agree), please indicate how you perceive the following characteristics of the T-shirt from brand A:

	1.Strongly Disagree (1)	2.Disagree (2)	3.Somewhat disagree (3)	4.Neither agree nor disagree (4)	5.Somewhat agree (5)	6.Agree (6)	7. Strongly Agree (7)
The T-shirt has a high quality	○	○	○	○	○	○	○
The T-shirt has an appealing design	○	○	○	○	○	○	○
The T-shirt looks comfortable	○	○	○	○	○	○	○

Q7: How much would you be willing to pay for the T-shirt of brand A?

Price in €



Q8: How likely would you be to purchase from brand B?

- ○ Extremely unlikely (1)
- ○ Moderately unlikely (2)
- ○ Slightly unlikely (3)
- ○ Neither likely nor unlikely (4)
- ○ Slightly likely (5)
- ○ Moderately likely (6)

- Extremely likely (7)

Q9: Please rate your level of agreement with the following statement, on a scale from 1 (strongly disagree) to 7 (strongly agree):

	1.Strongly Disagree (1)	2.Disagree (2)	3.Somewhat disagree (3)	4.Neither agree nor disagree (4)	5.Somewhat agree (5)	6.Agree (6)	7. Strongly Agree (7)
Brand B is sustainable	○	○	○	○	○	○	○

Q10: On a scale from 1 (strongly disagree) to 7 (strongly agree), please indicate your level of agreement with the following sentences:

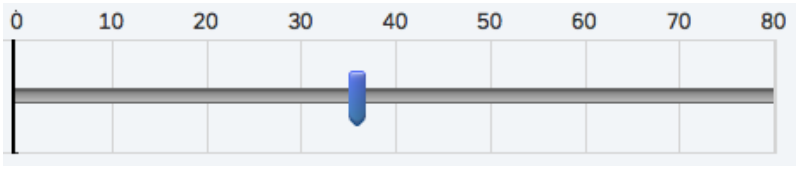
	1.Strongly Disagree (1)	2.Disagree (2)	3.Somewhat disagree (3)	4.Neither agree nor disagree (4)	5.Somewhat agree (5)	6.Agree (6)	7. Strongly Agree (7)
Brand B respects moral norms	○	○	○	○	○	○	○
Brand B always respects the law	○	○	○	○	○	○	○
Brand B is a social responsible brand	○	○	○	○	○	○	○
Brand B is a good brand	○	○	○	○	○	○	○

Q11: On a scale from 1(strongly disagree) to 7 (strongly agree), please indicate how you perceive the following characteristics of the T-shirt from brand B:

	1.Strongly Disagree (1)	2.Disagree (2)	3.Somewhat disagree (3)	4.Neither agree nor disagree (4)	5.Somewhat agree (5)	6.Agree (6)	7. Strongly Agree (7)
The T-shirt has a high quality	○	○	○	○	○	○	○
The T-shirt has an appealing design	○	○	○	○	○	○	○
The T-shirt looks comfortable	○	○	○	○	○	○	○

Q12: How much would you be willing to pay for the T-shirt of brand B?

Price in €



Block 3: Demographic Questions

Q13: What is your gender?

- Male
- Female
- Other

Q14: What is your age?

- Under 18 years
- 18 – 24 years
- 25 – 34 years
- 35 – 44 years
- 45 – 54 years
- 55 – 64 years
- 65 years and over

Q15: In which country do you currently reside?

▼ Afghanistan * ... Zimbabwe (1357)

Q16: What is the highest level of education you have completed?

- Less than High School
- High School
- Bachelor Degree
- Master Degree
- Doctoral Degree
- Other

Q17: What is your current occupation?

- Student
- Working student
- Employed
- Unemployed
- Retired

Q18: What is your monthly income?

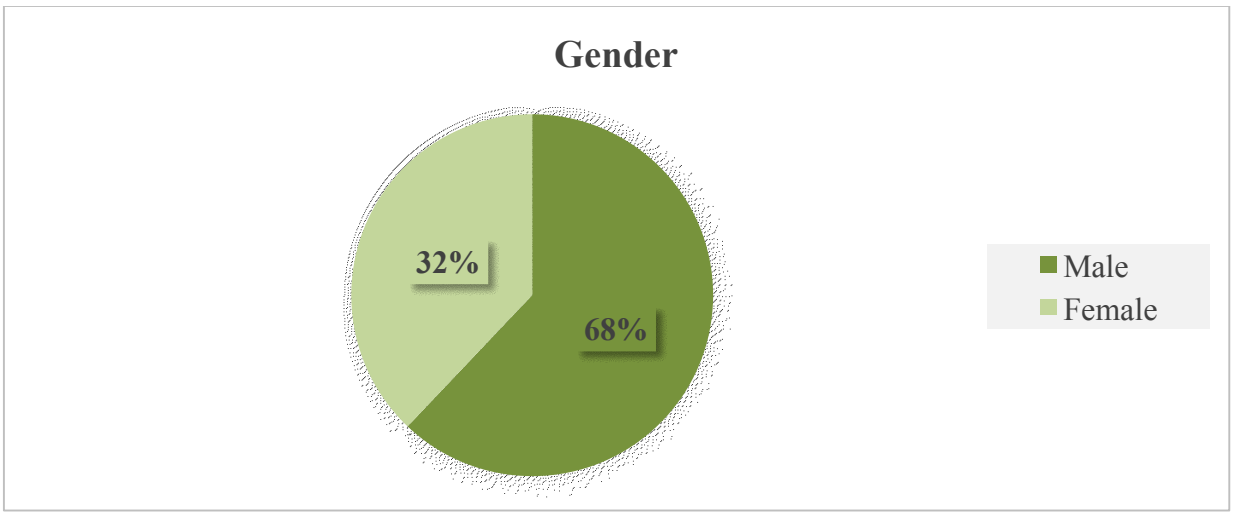
- Less than 500€
- 501€ - 1000€
- 1001€ - 1500€
- 1501€ - 2000€
- More than 2000€
- Don't feel comfortable answering

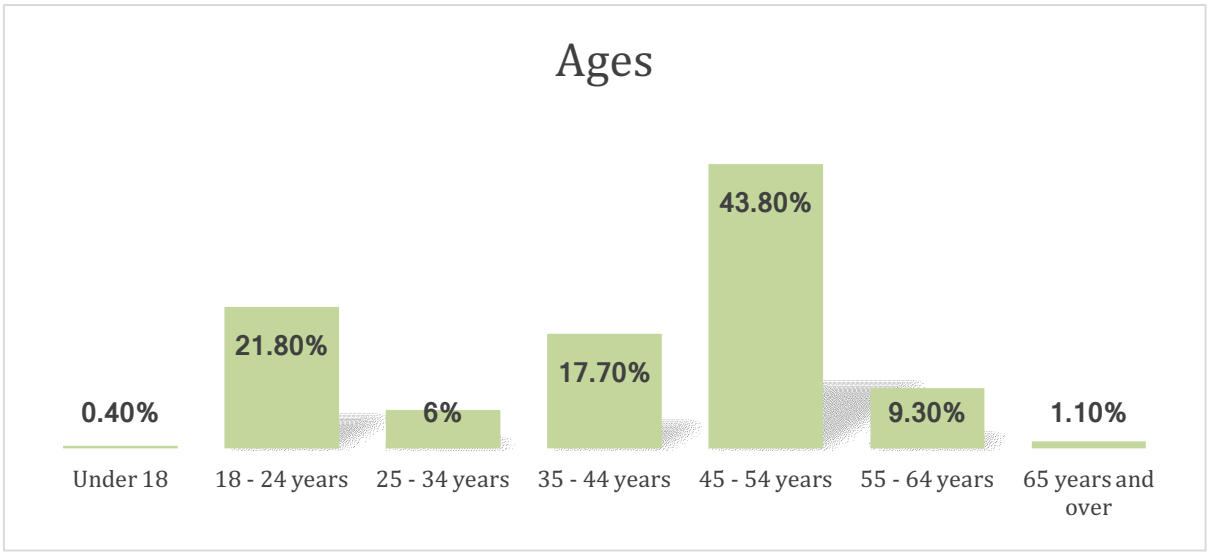
Acknowledgment Block

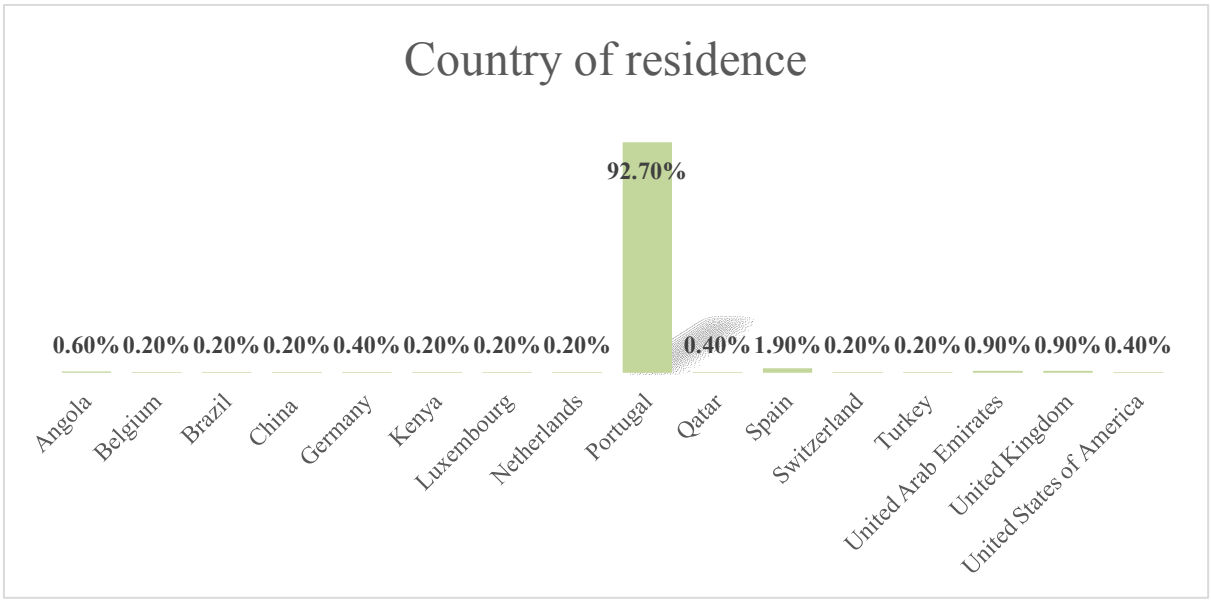
Thank you for your time spent taking this survey.

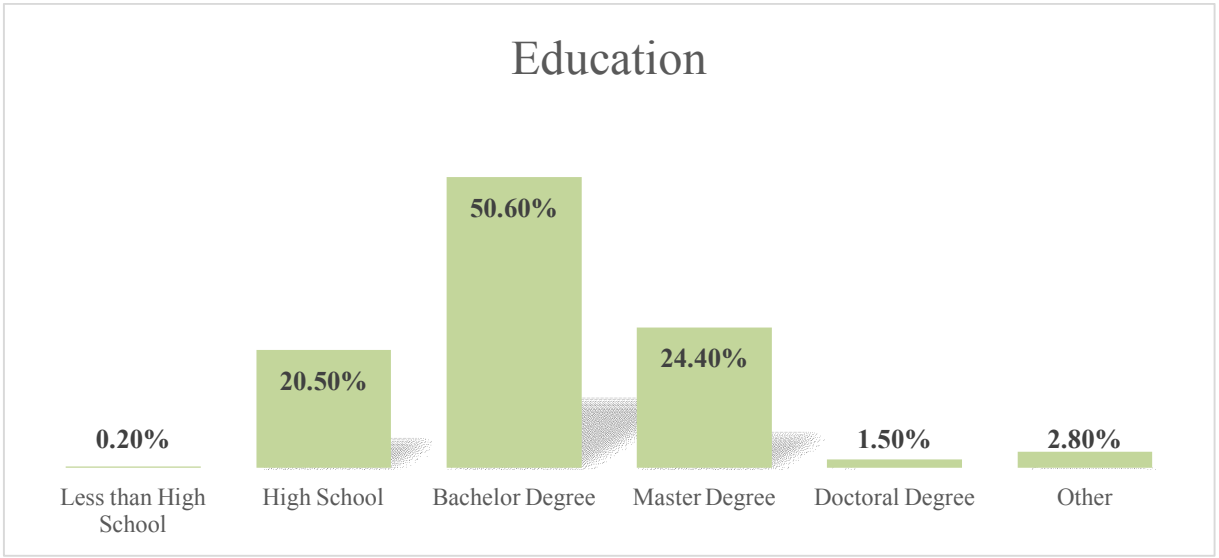
Your response has been recorded.

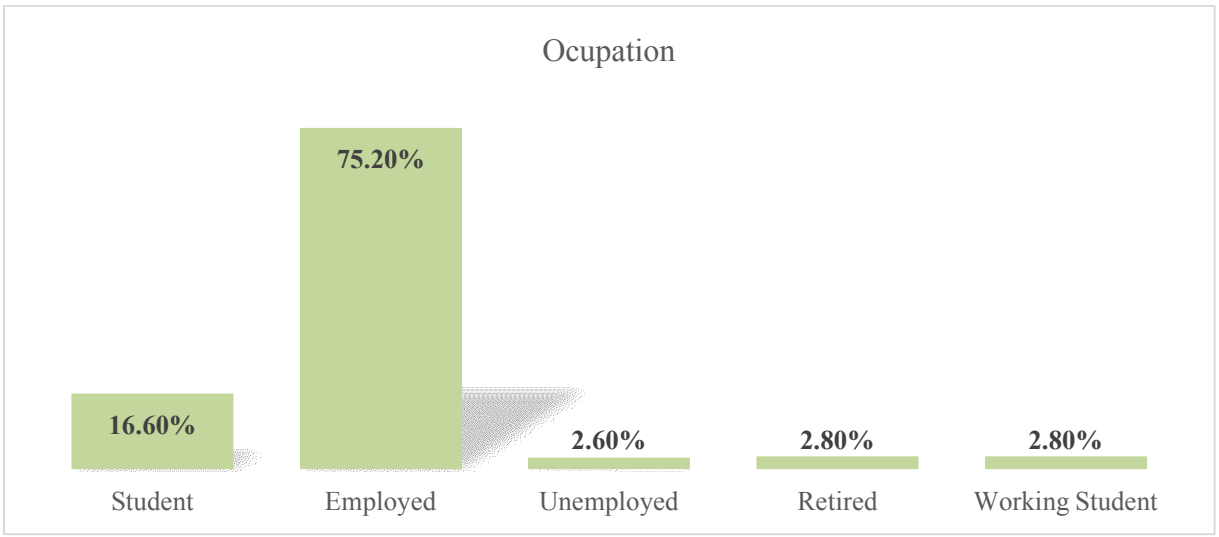
Appendix 4: Demographic results.

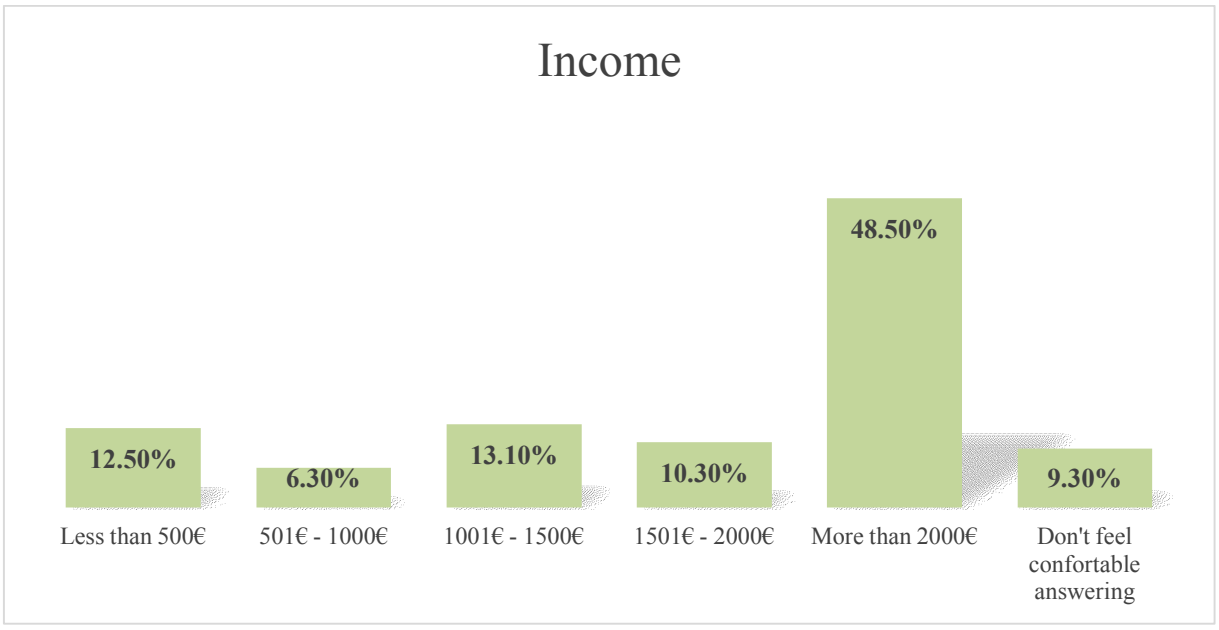



Ages
0.40%
21.80%
6%
17.70%
43.80%
9.30%
1.10%
Under 18
18 - 24 years
25 - 34 years
35 - 44 years
45 - 54 years
55 - 64 years
65 years and over


Country of residence
0.60%
0.20%
0.20%
0.20%
0.40%
0.20%
0.20%
0.20%
92.70%
0.40%
1.90%
0.20%
0.20%
0.90%
0.90%
0.40%
Angola
Belgium
Brazil
China
Germany
Kenya
Luxembourg
Netherlands
Portugal
Qatar
Spain
Switzerland
Turkey
United Arab Emirates
United Kingdom
United States of America


Education
0.20%
20.50%
50.60%
24.40%
1.50%
2.80%
Less than High School
High School
Bachelor Degree
Master Degree
Doctoral Degree
Other


Ocupation
16.60%
75.20%
2.60%
2.80%
2.80%
Student
Employed
Unemployed
Retired
Working Student


Income
12.50%
6.30%
13.10%
10.30%
48.50%
9.30%
Less than 500€
501€ - 1000€
1001€ - 1500€
1501€ - 2000€
More than 2000€
Don't feel confortable answering

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