Consumer Confusion and Attitudes

A Study of Eco-Labels

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Abstract

**Purpose:** The purpose of this study was to explain whether the conceptualized model of consumer confusion regarding the multiple number of brands and products also applies to the increasing number of eco-labels. The study also examined how the attitudes were affected if confusion occurred amongst the consumers. More specifically, whether consumer confusion leads to negative attitudes.

**Theoretical Framework:** The conceptualized model of consumer confusion, including the three dimensions of ambiguity, information overload and similarity was used in this research. In addition, theories regarding attitudes and indicators that affect consumer’s attitudes were presented and used for the analysis.

**Methodological Framework:** This research took an explanatory and deductive approach. The research was carried out with a quantitative method including three hypotheses derived from the literature. Data was collected through a questionnaire that was spread online on social media. The gathered data was coded accordingly in order to get the results from the frequencies, descriptive statistics, correlation and the regression analysis.

**Empirical Results:** It was discovered that the respondents were confused by eco-labels and eco-labelled products regarding all the three dimensions of the conceptualized model of consumer confusion. However, the fact that the attitudes towards eco-labels and eco-labelled products were very positive, led to a rejection of all the three hypotheses. Consequently, supportive questions from the questionnaire and the demographic details of the sample served as additional support to further discuss the results of the study.

**Conclusions:** This study showed that the conceptualized model of consumer confusion also applies to eco-labels. However, the consumers still had positive attitudes towards eco-labels and eco-labelled products which could be seen as contradictory. Nevertheless, positive beliefs about eco-labels and its effects and demographic details were found to have an impact on the positive attitudes.

**Keywords:** Eco-labels, confusion, ambiguity, information overload, similarity, attitudes, consumer
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1. Introduction

This chapter presents the background of environmental and social consciousness and the development of eco-labels regarding food products. This background provides a foundation for a problem formulation and research gap. Thereafter, research question and research aim are presented.

1.1 Background

The concept of sustainability has been given a lot of attention in today’s society. There have been many attempts to try to define and create a common understanding of sustainability but met with little success. However, one general understanding of sustainability is the most known definition suggested by Brundtland (1987): “Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.”

In the recent years, an increasing number of private initiatives has been introduced in order to promote more sustainable choices of products and services. One of these initiatives refers to the use of eco-labels which means that companies incorporate sustainable practices in several stages of their production (Joshi & Rahman, 2015). In fact, eco-labels are, according to Environmental Protection Agency (2018), defined as “a visual communication tool that indicates environmentally preferable products, services, or companies that meet specific standards.” Hence, as a way to demonstrate that eco-practices have been done, the products are marked with eco-labels that have the purpose to inform consumers about the quality of the product (Smirnova, 2012). The main task of companies who tag their products with eco-labels is to clearly communicate what the label stands for. The information provided is supposed be trustworthy and comparable to other eco-labels (Moon, Costello & Koo, 2017).

The interest in ecology regarding consumption got attention already in the 1960s when negative environmental and social impacts of the production were recognized (Taufique, Siwar, Talib, Sarah & Chamhuri, 2014). During the last decades, the consumption of products and services has been growing remarkably all over the world leading to consequences of depletion and damage of natural resources and the environment (Joshi & Rahman, 2015). Actually, these problems were noticed already in 1992 when the United Nations proposed the European eco-labelling scheme as one of the action steps of The Agenda 21, to mitigate impacts of
consumption and production. In Europe, it was the first scheme integrating the environmental protection with sustainable development on the larger scale (Erskine & Collins, 1997). As a response to this, national policies were developed to promote more sustainable production practices and mitigate impacts on the environment and society. The environmental and social labelling programs are one part of these policies. In fact, these policies may be seen as an effective instrument leading to environmental and human rights’ protection (Erskine & Collins, 1997; Gulbrandsen, 2006). By the Agenda 21, eco-labelled products were defined as “encouraging consumers to alter their consumption patterns and to make wiser use of resources and energy in the drive for sustainable development into the next century” (as cited by Erskine & Collins, 1997, p.125). Thus, the environmental labelling programs help consumers to make choices based on the information provided about the environmental and social impacts of the products that they purchase.

The declaration of the Sustainable Development Agenda 2030, proposed by the United Nations in 2015, is another important driver that has made the society more aware of global issues. The Agenda 2030 consists of 17 Sustainable Development Goals including environmental, social and economic aspects that need to be addressed by all the signatories (United Nations, 2018). One of these goals, goal number 12, is specifically aimed to ensure sustainable consumption and production patterns. In order to reach this goal, several sub-goals have been developed and implicate that companies should use natural resources in an efficient way, adopt sustainable practices and integrate sustainability information into their reporting cycle. Additionally, the aim of the goal is to ensure that people everywhere are informed and aware about sustainable development and lifestyles in harmony with the nature (International Institute for Sustainable Development, 2018)

Due to the different initiatives and concerns, the market has faced a growing number of different eco-labels relating to food and food production. It is said that one reason for this is the increasing consciousness of environmental and health issues amongst consumers (Paul & Rana, 2012). It is argued that eco-labels act as important symbols for consumers since they are able to recognize products that have been made with less negative environmental and social impacts (Galarraga Gallastegui, 2002). More specifically, Galarraga Gallastegui (2002), states that eco-labels have two goals. Firstly, to inform consumers about the environmental effects of their consumption and generate a change towards more environmentally friendly consumption patterns. Secondly, to encourage producers, governments and other agents to increase the
environmental standards of products or services (Galarraga Gallastegui, 2002). Today, there are multiple eco-labels that have been developed by both private and public actors and recently, it has been estimated that there are 464 eco-labels of which 148 relate to food products (Ecolabel Index, 2018).

1.2 Problem Formulation

The purchase of eco-labelled products has been seen as one way to encourage consumers to make more responsible choices (Grunert, Hieke & Wills, 2014). Galarraga Gallastegui (2002) argues that eco-labelling schemes provide various benefits such as, increasing sustainability awareness amongst consumers. Additionally, these schemes encourage companies to act in a more responsible manner and help to contribute to better environmental and social conditions (Galarraga Gallastegui, 2002). Due to this, a change in consumer behavior has been triggered and the sales of eco-labelled food products have turned out to be successful (Paul & Rana, 2012). Actually, many consumers are concerned about their health and the environmental and social impacts that are related to the production of various products (Paul & Rana, 2012).

Many researchers have focused on identifying what factors drive consumers to buy eco-labelled products. However, a less investigated aspect regarding consumer behavior and the purchase of eco-labelled products is whether there is any confusion regarding the increasing number of eco-labels and eco-labelled products and if so, how it affects consumers’ attitudes. In fact, confusion can easily occur when consumers with limited cognitive ability are not able to understand the purpose of the eco-labels (Moon et al., 2017). However, eco-labelled products’ impact is supposed to be positive and less harmful to the environment. Thus, eco-labels and eco-labelled products’ market has been growing due to the increased interest from the consumers’ side. Nevertheless, the eco-labels’ market has now reached a point where it is difficult for consumers to understand what these labels stand for (Galarraga Gallastegui, 2002; Taufique et al., 2014). Therefore, more research of confusion regarding eco-labels needs to be done (Moon et al., 2017). In order to address this gap, the purpose of this study was to explain whether consumer confusion occurs in terms of eco-labels. The study also examined how the attitudes were affected if confusion occurred amongst the consumers.

1.3 Research Questions and Aim

In recent years, lots of research has focused on consumer confusion regarding numerous regular brands and products (Walsh, Hennig-Thurau & Mitchell, 2007). Many studies revealed that
attitudes are often negatively affected by confusion that stems from the ever-increasing number of different brands and products (Walsh et al., 2007). However, to the best of the authors’ knowledge, confusion and attitudes in relation to eco-labels is still an undiscovered research topic. Therefore, the research questions were defined as follows:

1. Do consumers perceive eco-labels to be confusing?
2. Does consumer confusion lead to negative attitudes towards eco-labels and eco-labelled food products?

The aim of this study was to explore whether consumers perceive the eco-labels and eco-labelled products to be confusing. In order to provide a more in depth understanding of this, the study also investigated consumers’ attitudes towards eco-labels and eco-labelled products in relation to confusion. Confusion regarding food labelling has been recognized as a marketing problem (Mitchell & Papavassiliou, 1999). Therefore, recognition and understanding consumer confusion is needed for relevant marketing since confusion might affect consumers in a negative way (Walsh, Hennig-Thurau & Mitchell, 2007). With this in mind, this study could serve to address a relevant and important issue that could provide valuable information for companies, supermarkets as well as consumers.
2. Theoretical Framework

This chapter presents the theoretical framework of consumer confusion starting with a general overview of this phenomenon. This is followed by an explanation of the conceptualized model of consumer confusion. Thereafter, a description of attitudes as an aspect closely linked to the overall consumer perception of eco-labels is provided. Additionally, a classification of the typical consumer of eco-labelled products is given. Lastly, a clarification of how the theoretical framework was applied in this research is presented.

2.1 Consumer Confusion

Consumer confusion has become an important problem in many markets. Especially, since consumers are offered an increasing number of products from numerous channels which are promoted in several different ways (Mitchell & Papavassiliou, 1999). In fact, it is said that the growing number of products and information confuse consumers and might lead to negative consequences such as stress, frustration and sub-optimal decisions (Mitchell & Papavassiliou, 1999). In the literature, different reasons for consumer confusion have been discussed and several definitions have been made. Actually, one of the first researchers who defined consumer confusion was Papavassiliou (1995; as cited by Turnbull, Leek & Ying, 2000, p.145) who argued that confusion is "a consequence of information processing errors caused by an overload of information." Except for overload of information, consumer confusion has also been linked to similarity, where for example, Loken, Ross & Hinkle (1986) studied confusion in relation to brand similarity. In fact, brand similarity might lead to consumer confusion since companies tend to imitate each other. However, in order to capture a multi-dimensional idea of consumer confusion, Turnbull et al. (2000) introduced a broader definition and defined confusion as "a consumer failure to develop a correct interpretation of various facets of products or services during the information processing procedure. As a result, this creates misunderstanding or misinterpretation of the market" (p.145). Although several definitions and reasons for consumer confusion have been developed and discussed, Mitchell et al. (2005) started working on a conceptualized model of consumer confusion. Later on, in 2007, Walsh et al. introduced consumer confusion concept by adding the aspect of proneness, which will be further explained in the following sections.

2.2 A Conceptualized Model of Consumer Confusion

The idea of conceptualizing a model of consumer confusion developed since Mitchell et al. (2005) recognized a lack of a commonly approved understanding of consumer confusion. Due
to this, they proposed a conceptual model of consumer confusion including the antecedents, the moderators and the consequences of it. In this model, Mitchell et al. (2005) argue that consumer confusion might occur due to ambiguous information, information overload, and similar design and attributes of different products and brands. And consequently, the model suggests that consumer confusion might lead to negative word-of-mouth, dissonance and dissatisfaction. Since each of the three dimensions leads to different consequences, it is important to distinguish between them to recognize where the marketers should pay attention (Walsh et al., 2007). In the following sections, the antecedents of consumer confusion will be further explained. Figure 1 presents the conceptualized model of consumer confusion.

Figure 1: Concept of Consumer Confusion

![Concept of Consumer Confusion Diagram](source)

Source: Own depiction based on the conceptualized model of consumer confusion proneness by Walsh et al. (2007)

2.2.1 Ambiguity Confusion Proneness

The first dimension of the conceptualized model of consumer confusion proneness is ambiguity. Ambiguity is defined as “a lack of understanding during which consumers are forced to re-evaluate and revise current beliefs or assumptions about products or purchasing environment” (Mitchell et al., 2005, p. 143). Ambiguity confusion proneness occurs when previously known information differs from the new information obtained about a product (Mitchell et al., 2005). The newly obtained information may be in conflict with consumers’ beliefs and knowledge and it can cause confusion (Walsh et al., 2007). This happens due to the complexity and difficulty to understand the information about different brands and products (Walsh & Mitchell, 2010).

Moreover, this dimension implies that consumers tend to get confused by unclear advertising or messages that may eventually undermine their trust in companies (Walsh et al., 2007). If
consumers perceive the message as uncertain, their trust in different products and brands decreases (Walsh & Mitchell, 2010). Therefore, extra time and processing spent on obtaining additional information that would help to reduce ambiguity, anxiety and increase satisfaction with the companies and their products, would be needed (Walsh & Mitchell, 2010). However, Walsh & Mitchell (2010) also argue that the consumers tend to reject processing new information that could help them to add the information into a currently known category. This implies that consumers are not willing to involve a higher level of cognitive effort (Walsh & Mitchell, 2010).

In terms of eco-labels, ambiguity occurs if companies communicate their sustainable actions in a misleading and unclear way (Kalafatis, Pollard, East & Tsogas, 1999). Galarraga Gallastegui (2002) argues that companies tend to use terms such as “organic” or “bio” since these terms are not protected by the law. In many cases, products of these companies are overstated and do not meet the specific criteria to be considered environmentally and socially friendly (Galarraga Gallastegui, 2002). Moon et al. (2017) add that consumers are often unable to relate to these terms since they may be considered too technical and general and may lead to ambiguity. Moreover, this creates an uncertainty whether the products meet the consumers’ needs since they are not able to recognize the purpose of different eco-labels (Galarraga Gallastegui, 2002; Moon et al., 2017).

2.2.2 Information Overload Confusion Proneness

The second dimension of the conceptualized model of consumer confusion proneness relates to information overload. Information overload is defined as “a lack of understanding caused by the consumer being confronted with an overly information rich environment that cannot be processed in the time available to fully understand, and be confident in, the purchase environment” (Mitchell et al., 2005, p.143). Several factors have been discovered causing information overload amongst consumers. It is argued that information overload occurs in situations where there is a large number of brands as well as where a high amount of “decision-relevant” information is put on a product. In fact, a greater number of features on products, will make it more difficult for the consumer to make a choice (Mitchell et al., 2005). In addition, it is said that the shopping environment has an impact on information overload since too many products are positioned on the same shelves (Mitchell et al., 2005). Furthermore, time limitations, in terms of decreased processing time, is another factor that is considered to increase information overload (Mitchell et al., 2005). As a consequence, Simon (1962; as cited
by Walsh et al., 2007, p.703) argues that it is impossible for consumers to analyze all the information obtained, due to consumers’ limited cognitive abilities. Also, it is said that consumers’ capacity to make choices is not expandable infinitely (Walsh et al. 2007). However, it is also claimed that consumers, due to the time constraints, might reduce information overload in some situations since they might seek to obtain and process less information (Mitchell et al., 2005).

Information overload creates various consequences for the consumers. Actually, when consumers are faced with an overly rich information environment, feelings of anxiety might occur (Walsh et al., 2007). Especially since consumers do not know how to deal with information or on what attributes they should base their decision (Iyengar & Lepper, 2000). It has also been stated that when consumers perceive an overload of information, it can interrupt their decision-making process since they have to deal with all the information and try to reduce the number of attributes in order to make a decision (Mitchell et al., 2005).

Information overload can be linked to the increasing number and variety of eco-labels used in online and offline contexts (Moon et al., 2017). It is said that eco-labelling is one of the ways to communicate the quality of goods in terms of various concerns such as better environmental and production practices (Galarraga Gallastegui, 2002; Brécard, 2014). Yet, the multiple number of eco-labels on a product can create confusion because the consumers are not able to distinguish which eco-label is environmentally or socially better than another (Brécard, 2014). In addition, Moon et al. (2017) argue that eco-labels provide space for information overload due to the fact that consumers are not able to process all the information from eco-labels because of their limited cognitive capacity.

2.2.3 Similarity Confusion Proneness

The third dimension of the conceptualized model of consumer confusion proneness is similarity. According to Mitchell et al. (2005), similarity confusion proneness is defined as “a lack of understanding and potential alteration of a consumer’s choice or an incorrect brand evaluation caused by the perceived physical similarity of products or services” (p. 143). The perceived physical and functional similarity of products causes confusion (Mitchell et al., 2005). The reason for this is because consumers often have troubles to differentiate between the brands and attributes of the products (Mitchell et al., 2005). When distinguishing between the prior mentioned two, consumers tend to rely on the visual cues (Walsh & Mitchell, 2010).
Thus, when they are presented with similar brands or products, they are likely to purchase a fake or retailer own product because they are not able to recognize the differences (i.e. Walsh & Mitchell, 2010, Mitchell et al., 2005). This results in dissatisfaction with the original brand because consumers often do not find out that they purchased an imitation (Mitchell et al., 2005). In addition, it decreases trust in manufacturers (Mitchell et al., 2005).

Perceived similarity often leads to a decision-making postponement or abandonment (Mitchell et al., 2005). Therefore, consumers would need to take more time to find out whether the alternatives are actually comparable or the same (Mitchell et al., 2005). This happens if there are two or more similar brands or products on the market (Mitchell & Papavassiliou, 1999; Blythe, 1997). The fact that consumers are unable to differentiate between various brands or products leads to incorrect evaluation of the products (Walsh et al., 2007). In addition, this results in indecision that leads to a possibility of buying a product that does not meet the consumers’ needs and creates dissatisfaction. This occurs because consumers want to avoid extensive decision-making or making trade-offs (Walsh & Mitchell, 2010).

Similarity confusion in the eco-labelled market is usually caused by the same attributes of the labels such as shape or color (Moon et al., 2017). Eco-labels often have a similar design and consumers are not able to differentiate between them (Moon et al., 2017). Henryks & Pearson (2010) suggest that if there are many different eco-labels on the market, the trust in them decreases because consumers are not able to relate to them due to the lack of knowledge. This suggests that even though the eco-labels’ purpose is to inform consumers about the environmental and social impact of the product, it may lead to a counterproductive effect (Galarraga Gallastegui, 2002). In addition, eco-labelled products can also be misunderstood with regular products. The consumers may assume that a non-eco-labelled product was eco-certified based on the picture or the claims on the packaging referring to a more responsible production (Henryk & Pearson, 2010).

### 2.3 Consumer Attitudes

Attitudes have always had a vital role in trying to understand human thoughts and behavior (Kraus, 1995). A reason for this could be that an understanding of how attitudes are created, will make it easier to influence consumers’ attitudes towards new offerings and behavior (Hoyer & MacInnis, 2001). It is claimed that an attitude is an overall judgement that conveys how much a person likes or dislikes factors such as an object, product, brand, ads and other
people (Hoyer & MacInnis, 2001). In fact, an attitude is defined as “a learned tendency to respond to an object in a consistently favorable or unfavorable way” (Onkvisit & Shaw 1994; as cited by Blythe, 1997, p.69). According to Hoyer & MacInnis (2001) attitudes have three functions. Firstly, attitudes have a cognitive function which means that they can guide people’s thoughts or beliefs. Secondly, attitudes have an affective function which means that they can influence people’s feelings. Thirdly, attitudes have a conative function which means that they can affect people’s behavior (Hoyer & MacInnis, 2001). Due to these different functions, attitudes are considered very important (Hoyer & MacInnis, 2001).

It is said that attitudes are formed when the consumer’s needs are translated into motivation to process information that consequently leads to the exposure to stimulus. The processing of this information thereafter leads to responses in terms of cognitive (thought) and affective (emotional) reactions that may lead to conation or intended behavior. In this process, it is said that consumers acquire salient beliefs about products. Actually, the cognitive system can only hold a small number of facts in mind and therefore, the salient beliefs are considered to be the most important ones since they will impact the consumer and the judgement making of a product (Blythe, 2006).

In the literature, several studies have focused on attitudes in relation to sustainability and sustainable consumption behavior. It was revealed that holding positive attitudes towards sustainable products is a starting point to embrace sustainable consumption (Vermeir & Verbeke, 2006). Due to this, and in regard to consumer confusion, it is necessary to consider which are the factors that could affect the attitude-behavior relationship. Actually, several aspects have been found that affect whether a person’s attitudes will influence the behavior. It is believed that the level of a person’s knowledge and experience will have an impact on the attitude towards a certain behavior. For example, a person with more extensive knowledge will more likely form a stronger attitude that is based on more detailed information than a novice. Hence, a behavior can easily be predicted due to the person’s level of knowledge (Hoyer & MacInnis, 2001). Another factor that is related to this and that affects the attitude-behavior relationship is attitude confidence. This means that when an attitude is based on a great amount of trustworthy information, consumers have stronger confidence and the behavior is easier to predict (Hoyer & MacInnis, 2001). Moreover, accessibility of attitudes is another factor that strongly shapes behavior. It is claimed that the direct experience, such as product usage, increases accessibility for attributes that need to be experienced. For example, taste and touch
meanwhile advertising can produce accessible attitudes for attributes search in terms of price and ingredients (Hoyer & MacInnis, 2001). Additionally, normative factors such as, beliefs, motivations and personality variables will affect the attitude-behavior relationship (Hoyer & MacInnis, 2001).

Previous research has discovered various aspects that affect consumers’ attitudes and buying behavior of eco-labelled food. In fact, price has been found to be a determinant factor when it comes to food. Eco-labelled food products are usually more expensive, and a higher price could be an obstacle for the consumers to purchase these products (Borin, Cerf & Krishnan, 2011; Magnusson, Arvola, Koivisto Hursti, Åberg & Sjödén, 2001). However, consumers often relate a higher price of an eco-labelled product to a higher quality in comparison to non-eco-labelled products (Paul & Rana, 2012). On the contrary, Borin et al. (2011) claim that many studies have proven that eco-labelled products are overpriced and often not worth a higher price. Further on, another aspect that influences consumers’ attitudes towards eco-labelled food products is the concern about the environment and the consumers’ personal health. For example, Liu, Yan & Zhou (2017) conclude that consumers buy eco-labelled products because of their health and environmental concerns. These concerns tend to differ between regular and irregular buyers because frequent buyers are more experienced (Magnusson et al., 2001). In addition, these attitudinal factors are as well to the certain extent determined and combined with the demographic details of consumers (i.e. Paul & Rana, 2012; Magnusson et al., 2001; Jørgensen & Moen, 2015). Thus, factors regarding beliefs and demographic details might impact attitudes and therefore, also affect the attitude-behavior relationship in terms of eco-labelled products.

2.4 Eco-Labelled Products and Consumers

The rising awareness of environmental issues amongst the public has led to an increasing demand for environmentally friendly products. As a result, the food industry has reacted by offering products with eco-labels in both national and international markets with very successful outcomes (Loureiro, McCluskey & Mittelhammer, 2001). Therefore, it was important to elaborate on the characteristics of the typical buyer of eco-labelled food products.

In terms of consumer behavior and purchasing of eco-labelled products, the literature has revealed patterns of a typical consumer. According to D’Souza, Taghian, Lamb & Peretiakto (2007), demographic details of consumers were discovered as being essential factors in relation
to the purchase of eco-labelled products. Similarly, Taufique et al. (2014) argue that demographic details such as age, education, gender and income play a vital role. For example, Singh & Verma (2017) discovered in their research that frequent buyers of eco-labelled products are people who fall into the age category between 31-40 years old. On the contrary, Magnusson et al. (2001) revealed that younger people up to the age of 25 years old are generally more interested in the eco-labelled food. However, their interest is not always translated into a buying behavior (Magnusson et al., 2001; Aertsens, Verbeke, Mondelaers & Van Huylensbroeck, 2009).

Furthermore, Singh & Verma (2017) state that higher educated people are more interested in buying eco-labelled products. In addition, Liu et al. (2017) suggest that higher educated consumers often have a higher income than those less educated and that might be the reason for a more frequent buying behavior. Also, Magnusson et al. (2001) found that higher educated people are willing to pay a higher price for eco-labelled products that they consider being of a better quality. On the contrary, Aertsens et al. (2009) did not find any positive relation between the level of education and a more sustainable buying behavior. Still, most of the literature indicates a positive relationship.

Magnusson et al. (2001) also mention gender as a factor that influences the purchasing behavior of eco-labelled products. Magnusson et al. (2001) suggest that women are more likely to be interested in eco-friendly food. This is well-aligned with most of the studies relating to eco-labelled food. For instance, Irianto (2015) confirms previous studies and implies that women are more interested in environmental and social issues and care more about the well-being of others. Also, Paul & Rana (2012) add that women buy eco-labelled products more frequently than men since eco-labelled products are more environmentally and socially friendly. Based on these findings, it can be assumed that mostly young, well educated women with slightly higher income, are more positive about purchasing eco-labelled products.

**2.5 Theoretical Framework Application**

As already presented earlier in this chapter, the conceptualized model of consumer confusion mainly focuses on confusion associated with brands and products (Walsh et al., 2007). This study took this concept one step further by applying it to eco-labels. In order to do this, ambiguity confusion was considered to be created by unclear information and uncertain attributes of the eco-labels presented. Confusion in terms of information overload was
determined by the multiple eco-labels used on food products. And finally, similarity confusion was created by the similar design and attributes of various eco-labels that were presented to consumers. Furthermore, these three dimensions of confusion were measured in relation to attitudinal factors such as quality, preferences, price and beliefs of eco-labelled products that might influence consumers’ attitudes towards eco-labels and eco-labelled products.
3. Methodological Framework

This chapter presents the methods applied in this study. Firstly, a description of research strategy is presented, followed by the research approach and research method. Thereafter, data collection design, sampling technique, data analysis method and research quality are outlined. These aspects were important to consider before conducting the research. The last part describes the operationalization process.

3.1 Research Strategy

This research takes on a positivist perspective since it aimed on observing a social reality where the empirical data can be generalized (Saunders, Thornhill & Lewis, 2009). In accordance with this perspective, this research strived to generate a research strategy including building hypotheses from existing theory of consumer confusion and attitudes. Particularly, this research examined the level of consumer confusion regarding its three dimensions and the causal relationship between confusion and attitudes. Due to this, an explanatory research approach was considered to be the most suitable.

Based on the theoretical framework of consumer confusion and attitudes, three hypotheses were derived from the literature. The current literature of consumer confusion suggests that the consequences of confusion are negative in nature (Walsh et al., 2007). Therefore, the authors of this research assumed that if consumer confusion regarding eco-labels and eco-labelled products occurs, it will most likely also create negative attitudes amongst the participants. In order to measure the relationships between the three dimensions of consumer confusion and attitudes, the three hypotheses presented below aimed to be tested. The expected relationship is presented in the Figure 2.

**H1:** The more consumers perceive eco-labels as ambiguous, the more likely they build negative attitudes.

**H2:** The more consumers perceive an overload of information regarding eco-labels, the more likely they build negative attitudes.

**H3:** The more consumers perceive eco-labels as similar, the more likely they build negative attitudes.
3.2 Research Approach and Research Method

For this study, a methodological research approach was defined in the early stage. Actually, deciding upon a research approach is of importance since the selected approach will influence the research process and the specific questions addressed (Babbie, 2012). There are two different research approaches (1) inductive and (2) deductive. In the context of this study, a deductive approach was decided to be the most appropriate. The reason for this was because a deductive approach aims to test and modify already existing theory by collecting and analyzing data whether expected patterns still occur (Babbie, 2012). This research analyzed patterns of the existing literature regarding the concept of consumer confusion proneness and attitudes to discover whether these patterns still existed. In practice, the deductive approach often includes creating and testing hypotheses (Saunders et al. 2009). The authors therefore, created three hypotheses which are defined in Chapter 3.1.

It is very common for a deductive research approach to use a quantitative research method. In quantitative method, the data is collected from a large group of people that can easily be translated into numerical information and further analyzed (Saunders et al., 2009). This study is quantitative in nature because it met all the prerequisites proposed by Muijs (2004). Firstly, the aim was to objectively measure why the chosen phenomenon occurs. Secondly, data was collected and transformed into a numerical format. Lastly, a statistical software was used to
analyze the data. In addition, Muijs (2004) suggests that the quantitative method is explicitly suitable in case the researchers aim to test hypotheses. Nonetheless, the quantification of the data survey may bring drawbacks such as low-response rates and loss of data richness because the respondents do not often have the possibility to develop their opinions and responses further (Babbie, 2012). In terms of this study, the main difficulties of using a quantitative method were the inability to control the environment of the respondents and ensure that the respondents understood the questions since no personal contact with respondents could be provided.

3.3 Data Collection Design

In the context of this study, a survey strategy was applied, using a questionnaire as a tool to obtain empirical data. The questionnaire was built in a way so that it could meet the study’s purpose and reach a broader audience. In survey strategy, respondents are asked the same set of questions which provides an extensive database for further analysis (Saunders et al., 2009). There are various types of questionnaires; (1) self-administered, which is completed by respondents and includes internet and intranet-mediated questionnaires, (2) postal questionnaires or (3) delivery and collection questionnaires. Apart from this, there are two types of questions – open-ended and closed-ended questions (Babbie, 2012). The questionnaire in this research was self-administered and consisted of closed-ended questions only. There were two reasons why the questionnaire was designed using no open-ended questions. Firstly, it was easier for the respondents to answer the questions and secondly, it was easier to code and analyze the data for the researchers.

Furthermore, there are three types of variables suggested by Saunders et al. (2009) that can be studied when using a questionnaire. Firstly, there are opinion variables that record questions on respondents’ beliefs or feelings about the certain issue, more specifically, about eco-labels and eco-labelled products. Secondly, behavior variables which encompass the past, present or future behavior of respondents. In this study, these variables represented buying behavior. And thirdly, attribute variables which consist of demographic questions such as age, gender, education to discover how opinions differ depending on these attributes. These variables were important to analyze as they are closely linked to consumer confusion and attitudes. This distinction is necessary to make in order to design questions that suit the study (Saunders et al., 2009, p.368).
3.3.1 Questionnaire Design

The questionnaire was created in accordance with the theoretical framework presented in Chapter 2. The questionnaire consisted of seventeen questions and was divided into four main parts; (1) Demographic Details, which served as the attribute variables, (2) Supportive Questions that served as the behavior variables (3) Consumer Confusion Proneness that included ambiguity, information overload and similarity which served as the independent and opinion variables (4) Attitudes which represented the dependent and opinion variables. The answers for the questions regarding “Consumer Confusion” and “Attitudes” were ranked by using a Likert Scale from 1-5, where 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree. Additionally, one of the supportive questions was a multiple-choice question.

The questionnaire took approximately three to five minutes to fill out. However, the respondents could take more time to complete the questionnaire if needed and their identity remained unrevealed which could have been convenient to them. The questionnaire was available in English to avoid biases caused by the translation to mother tongues since none of the authors were native English speakers and the research was conducted in English. For the final version of the questionnaire, see Appendix A.

As an illustration before answering the questionnaire, the respondents were presented with two eco-labelled products from two rather common food categories in order to demonstrate various eco-labels. Therefore, coffee and chocolate marked with four different types of eco-labels each were presented. Many people recognize coffee and chocolate as the European countries are one of the greatest coffee and chocolate importers and consumers (International Coffee Organization, 2018; Statista, 2015). To make the respondents aware that they were supposed to pay attention to the eco-labels on the packages, the labels were marked. However, being familiar with the products was not important in order to answer the questionnaire.

In order to create a questionnaire and collect empirical data, the authors of this study created a questionnaire in Google Forms. Google Forms is a suitable helping tool that served for a further analysis. Firstly, Google Forms platform is user friendly and secondly, the data was easily transferable to be analyzed in SPSS.
3.3.2 Pilot Study

After creating the questionnaire, a pilot study was conducted to make sure that the respondents understood the questions (Bryman & Bell, 2011). Therefore, the questionnaire was distributed amongst ten other students. At first, it turned out that some questions were unclear, especially the attitudinal questions. Due to this, some of the questions were rephrased to make the questionnaire clearer and obtain more accurate data. Thereafter, the changes were confirmed by a professor working within the field of consumer behavior.

3.4 Sampling Technique

When selecting a sample for a study, researchers are able to choose between different sampling techniques depending on their study. One the one hand, there is the probability sampling which is defined as a technique where all the members of a population have the same probability to be selected. This technique suggests a random selection procedure (Etikan, Mussa & Alkassim, 2016). On the other hand, there is the non-probability sampling technique. Non-probability sampling is rather defined as a technique where all the members of a population do not have the same chance to be selected in the sample. Hence, randomization of respondents is not prioritized in the selection of the sample (Etikan et al., 2016).

For this study, a non-probability sampling technique was chosen. There are different types of non-probability sampling techniques where this study used a combination of a convenience sampling and a self-selection technique. The convenience sampling, consists of respondents from a population that meet certain practical criteria that are desirable for the researcher. For example, being easy reachable, available within the time frame for the survey and willing to participate in the survey so that the purpose of the research can be fulfilled (Etikan et al., 2016). Moreover, the self-selection technique implies that the researcher publishes the survey on social media and expresses the need of people to participate in the survey and thereafter collect the responses (Saunders et al., 2009).

In accordance with these techniques, the questionnaire was sent out on social media, in different Facebook groups relating to food and grocery shopping, with the aim to get responses from reachable, available and willing potential participants. The main intention was to target a sample including consumers who have an interest in food and most likely have been exposed to eco-labels and eco-labelled products. This technique helped the authors of this study to reach
a broader population. Moreover, this could make the results more diverse since people of different age, gender and education were approached. However, a problematic aspect of this sampling method was that the authors of this study could not ensure an equal distribution of respondents in terms of demographic details.

When using these sampling techniques, both advantages and disadvantages were defined which could have had an impact on this study. The advantages of this technique include the low cost and easy way for the researchers to reach out to potential participants (Etikan et al., 2016). The collected data in this study were therefore gathered in a trouble-free and inexpensive way. Nevertheless, Bryman & Bell (2011) propose that there is a concern relating to generalizability when not having a population defined. This might lead to a problem with the generalization of the results. However, the results produced by using this type of sample may serve as a starting point for further research or to be linked with current findings within the same area (Bryman & Bell, 2011).

This study aimed to obtain data in order to discover patterns. Saunders et al. (2009) claim that most of the research is often time constrained, therefore, cross-sectional studies are very common in social research. This means that a phenomenon is studied at a particular time (Saunders et al., 2009). The empirical data collection for this research was time limited to a period of two weeks in April of 2018. Hence, a cross-sectional study was considered to be the most suitable.

3.5 Data Analysis Method

Bryman & Bell (2011) argue that SPSS - Statistical Package for the Social Sciences, is the most widely used and appropriate tool to analyze quantitative data. Thus, in order to analyze the data, SPSS was used. The empirical data was categorized depending on the type of question and coded respectively. In this research, ordinal and dichotomous data was used which means that the data needed to be coded into quantifiable formats (Saunders et al., 2009). In general, there are different analyzing methods that can be used in a quantitative research. However, in accordance with the design and the hypotheses for this research, the most suitable analysis measurements were (1) Frequencies Analysis which presented the demographic details of the respondents in terms of gender, age and education. (2) Descriptive Analysis, which showed the means and modes of the different variables. (3) Correlation, which analyzed, if and how strongly the variables were related. The most suitable method of bivariate correlation in the
context of this study was Spearman's Rho. The reason for using Spearman’s Rho was because the data was ordinal and lastly (4) *Multiple Regression Analysis* which was important to predict dependent variable from several independent variables (Field, 2009, p. 98).

### 3.6 Research Quality

#### 3.6.1 Validity of a Measure

Validity is linked to the research design and tools. Validity, according to Babbie (2012) refers “*to the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration*” (p.191). Babbie (2012) suggests that there are three main validities that were also considered in this study. (1) content validity, (2) construct validity and (3) criterion validity. In the context of this study, an expert in the field of consumer behavior was asked to evaluate the questions in the questionnaire to ensure that they sufficiently covered the scope of the chosen variables. This itself did not provide a guarantee. However, the extensive study of the literature helped the authors to create suitable questions that provided sufficient coverage for each group of questions per variable. This secured the content validity. Secondly, the pilot study was conducted where the respondents were given an opportunity to provide a feedback on questions in the questionnaire. Thereafter, a revised version with clearer questions was developed to ensure that concepts of confusion and attitudes were measured. This aimed to ensure the construct validity. Lastly, the hypotheses based on the literature were built and subsequently tested to discover the relationships between variables to measure the criterion validity.

#### 3.6.2 Reliability of a Measure

According to Heale & Twycross (2015) reliability is defined as “*the extent to which a research instrument consistently has the same results if it is used in the same situation on repeated occasions*” (p. 66). In this study, reliability refers to a consistency of the findings. There are three main components to assess reliability. (1) test-retest, (2) internal consistency, (3) alternative form. However, due to a limited time and resources, the authors of this study were only able to measure the internal consistency. The internal consistency correlates the responses to each question in the questionnaire within the same category (Saunders, 2009, p.374). Therefore, the respondents should always provide consistent answers to the questions in the same category, even though the statements are put in the different way (Heale & Twycross, 2015). Reliability and particularly, the internal consistency was measured by testing the
Cronbach Alpha which was obtained from SPSS. Bryman & Bell (2011) state that the coefficient varies between 0 and 1, where 1 denotes perfect internal reliability and 0 refers to no internal reliability. Cronbach Alpha is measured for each series of questions per variable. Bryman & Bell (2011) imply that 0.8 is an acceptable level of the internal validity. However, Muijs (2004) argues that a level of 0.7 is already considered to be reliable.

Babbie (2012) argues that the survey design often tends to be weak on validity and strong on reliability. The reason for this is because surveys are generally less flexible in terms of the scaling of the answers and the respondents rarely have such a constrained opinion (Babbie, 2012, p.263).

3.7 Operationalization

According to Babbie (2012) an operationalization is described as “the process of developing operational definitions, or specifying the exact operations involved in measuring a variable.” (p.556). In this study, this means that the questions were aligned with the theoretical framework and were set to measure consumer confusion proneness and attitudes to fulfil the purpose of this study. The literature was presented in the theoretical part before determining the hypotheses and the content of the questionnaire (see Appendix A). Table 1 represents different parts of the operationalization process. It also demonstrates the values of Cronbach Alpha coefficient retrieved from SPSS. The Cronbach Alpha values showed good reliabilities between the different groups of questions that belonged to each variable. As described in the Chapter 3.6.2, the level of 0.7 and higher suggests that the questionnaire is internally consistent which applies that all the groups of questions measured the same thing. In order to obtain comprehensive data regarding all the measures used, questions number 6 and 11 were coded reversely as compared to other questions measuring the same variable. The reason for this was because the question number 6 was asked in a positive way in contrast to the rest of the questions in the same group, which were put in a more negative way. Regarding the question number 11, it was the opposite way.
Table 1: Operationalization

<table>
<thead>
<tr>
<th>Variable</th>
<th>Concept</th>
<th>Dimensions of concept</th>
<th>Questions</th>
<th>Answer Types</th>
<th>Reasoning</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Likert</td>
<td>Measure the three dimensions of consumer confusion concept proposed by</td>
<td>0.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Scale 1-5</td>
<td>Walsh et al., (2007)</td>
<td></td>
</tr>
<tr>
<td>Independent</td>
<td>Consumer Confusion</td>
<td></td>
<td>#5, #6, #7</td>
<td></td>
<td></td>
<td>0.65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ambiguity</td>
<td></td>
<td>Likert Scale 1-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Information Overload</td>
<td>#7, #8, #9</td>
<td></td>
<td></td>
<td>0.74</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Similarity</td>
<td>#10, #11</td>
<td>Likert Scale 1-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependent</td>
<td>Attitudes</td>
<td>#12, #13, #14, #15, #16</td>
<td></td>
<td>Likert Scale 1-5</td>
<td>Measures the attitudes towards eco-labelled products</td>
<td>0.80</td>
</tr>
</tbody>
</table>

Source: Own formulation based on the literature and SPSS
4. Empirical Results

This chapter presents the analyzed results obtained from SPSS. The chapter consists of five main parts. The first part shows the frequencies over the sample. This is followed by the descriptive statistics, bivariate correlation analysis, multiple regression and the results from the supportive questions.

4.1 Frequencies - Information about the Sample

The questionnaire was open for 13 days in April of 2018 and during that time period, data was collected from a total of 124 participants. The sample consisted of 88 female respondents (71%) and 36 male respondents (29%). In terms of age, 65 respondents (52,4%) belonged to the age group between 0-25 years. The age group of 26-35 years old consisted of 44 respondents (35,5%). It was followed by the age group of 36-45 years old and included 5 respondents (4%). And finally, 3 respondents (2,4%) were part of the age group of 46-55 years old; 6 respondents (4,8%) were in the group age between 56-65 and 1 respondent (0,8%) was 66 years or older. Regarding the achieved education level, the results showed that 31 respondents (25%) had finished high school; 50 respondents (40,3%) had obtained a bachelor’s degree; 40 respondents (32,3%) had obtained a master’s degree and 3 respondents (2,4%) had obtained neither of them. The results of gender, age and education were summarized in Table 2, 3 and 4.

Table 2: Frequencies of Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>88</td>
<td>71,0</td>
</tr>
<tr>
<td>Male</td>
<td>36</td>
<td>29,0</td>
</tr>
<tr>
<td>Total</td>
<td>124</td>
<td>100,0</td>
</tr>
</tbody>
</table>

Source: Data collected from the questionnaire
Table 3: Frequencies of Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-25</td>
<td>65</td>
<td>52.4</td>
</tr>
<tr>
<td>26-35</td>
<td>44</td>
<td>35.5</td>
</tr>
<tr>
<td>36-45</td>
<td>5</td>
<td>4.0</td>
</tr>
<tr>
<td>46-55</td>
<td>3</td>
<td>2.4</td>
</tr>
<tr>
<td>56-65</td>
<td>6</td>
<td>4.8</td>
</tr>
<tr>
<td>66-older</td>
<td>1</td>
<td>.8</td>
</tr>
<tr>
<td>Total</td>
<td>124</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Data collected from the questionnaire

Table 4: Frequencies of Education

<table>
<thead>
<tr>
<th>Education</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>31</td>
<td>25.0</td>
</tr>
<tr>
<td>Bachelor's Degree</td>
<td>50</td>
<td>40.3</td>
</tr>
<tr>
<td>Master's Degree</td>
<td>40</td>
<td>32.3</td>
</tr>
<tr>
<td>None of above</td>
<td>3</td>
<td>2.4</td>
</tr>
<tr>
<td>Total</td>
<td>124</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Data collected from the questionnaire

4.2 Descriptive Statistics

In order to measure the level of confusion and whether the attitudes were positive or negative, the mean values were used to demonstrate the results. Table 5 represents the means of the responses per each variable. For specific indications of means per question per variable, see Appendix B. The means of the independent variables - ambiguity, information overload and similarity, were 3.08, 3.02 and 3.13 respectively. Hence, this reveals that the level of confusion amongst the participants was quite neutral with a tendency to be confused. Moreover, for the
dependent variable - attitudes, the mean value was 3.81. This suggests that the participants had positive attitudes towards eco-labels and eco-labelled products.

Besides the mean, the authors of this study also measured the mode values as an additional aspect for each variable. As shown in Table 5, the mode values for the independent variables were 3.67 and 4.0, where 4.0 applied to both information overload and similarity. The mode values further confirmed the findings from the mean values and indicated that there was a confusion caused by eco-labels amongst the respondents. Furthermore, for the dependent variable, attitudes, the mode value gave a score of 3.75, which showed a slightly lower score in comparison to the mean. Nevertheless, the values still implied that the respondents had positive attitudes towards eco-labels and eco-labelled products.

Table 5: Descriptive Statistics of the Variables

<table>
<thead>
<tr>
<th></th>
<th>Ambiguity</th>
<th>Overload</th>
<th>Similarity</th>
<th>Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Valid</td>
<td>124</td>
<td>124</td>
<td>124</td>
<td>121</td>
</tr>
<tr>
<td>N Missing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Mean</td>
<td>3.08</td>
<td>3.02</td>
<td>3.13</td>
<td>3.81</td>
</tr>
<tr>
<td>Mode</td>
<td>3.67</td>
<td>4.00</td>
<td>4.00</td>
<td>3.75</td>
</tr>
</tbody>
</table>

Source: Statistical Software SPSS

4.3 Correlation Analysis

In order to measure the relationships between the different variables of confusion and attitudes, a bivariate analysis was conducted. By using this analyzing method, the authors were able to explore different relationships and search for evidence if the variation in one variable would correlate with the variation in another variable (Bryman & Bell, 2011). In the context of this study, Spearman's Rho best suited to measure the relationships because the variables were ordinal. The value of Spearman's Rho lies between -1 and +1, where the closer the coefficient is to 1, the relationship will be either positively or negatively related. When the coefficient is closer to 0, the relationship is rather weak or does not exist (Bryman & Bell, 2011). When measuring the relationships between the set of independent variables and dependent variable, the results indicated a very weak or non-existent relationship. As presented in Table 6, it accounted for -0.188 for ambiguity, -0.108 for information overload and -0.034 for similarity towards attitudes respectively. The relationship was also measured between the three
dimensions of consumer confusion where the strongest relationship was between information overload and similarity (0.482), followed by ambiguity and information overload (0.473) and similarity and ambiguity (0.223). This illustrated a rather weak relationship between the set of the independent variables.

Table 6: Spearman’s Rho Coefficients

<table>
<thead>
<tr>
<th></th>
<th>Ambiguity</th>
<th>Overload</th>
<th>Similarity</th>
<th>Attitudes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambiguity</td>
<td>1.000</td>
<td>0.473</td>
<td>0.223</td>
<td>-0.188</td>
</tr>
<tr>
<td>Overload</td>
<td>0.473</td>
<td>1.000</td>
<td>0.482</td>
<td>-0.108</td>
</tr>
<tr>
<td>Similarity</td>
<td>0.223</td>
<td>0.482</td>
<td>1.000</td>
<td>-0.034</td>
</tr>
<tr>
<td>Attitudes</td>
<td>-0.188</td>
<td>-0.108</td>
<td>-0.034</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Source: Statistical Software SPSS

4.4 Regression Analysis

4.4.1 Testing the Assumptions

In order to conduct a regression analysis, the number of respondents per independent variable should account for a minimum of ten. If the number of respondents is lower, there is a risk that the regression model would be biased and not provide a sufficient coverage (Peduzzi, Concato, Kemper, Holford & Feinstein, 1996). In this study, the number of responses per independent variable accounted for 41 which provided a sufficient coverage. There were several assumptions that needed to be met before conducting the multiple regression. More specifically, these were normality, linearity, homoscedasticity and multicollinearity that were tested before the multiple regression analysis was undertaken.

The test of normal distribution applied to the dependent variable and deviations were detected when calculating skewness and kurtosis. The three outliers, specifically respondents number 20, 58 and 75 were identified because their standardized residual value was greater than predicted value (-2.7 for respondent 20 and -3.7 for 58 and 75 respectively). Standardized residuals with an absolute value greater than 2.58 and 3.29 (2.5 and 3 can be used as an approximation) are cause for concerns, because in an average sample case, a higher value is unlikely to occur by chance (Field, 2009, p.216). Therefore, these outliers were coded as missing values and replaced by the mean of the dependent variable when calculating the regression. This was done so that the sample could remain of 124 respondents. After removing
the outliers, the data was normally distributed and homoscedastic which implied that is also was linear.

The second main prerequisite was the multicollinearity. Multicollinearity is measured to ensure that the independent variables are not strongly correlated to each other (Muijs, 2004). The tolerance of collinearity varies between 0 and 1 where 1 means that one independent variable does not explain the other independent variable (Muijs, 2004). In terms of this study, multicollinearity was not a problem since none of the values regarding independent variables was close to 0. The values of multicollinearity are presented in Table 7.

Table 7: Multiple Linear Regression

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficients</th>
<th>Collinearity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unstandardized Coefficients</td>
<td>Standardized Coefficients</td>
</tr>
<tr>
<td>(Constant)</td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td></td>
<td>4.207</td>
<td>.259</td>
</tr>
<tr>
<td>Ambiguity</td>
<td>-.131</td>
<td>.076</td>
</tr>
<tr>
<td>Overload</td>
<td>-.008</td>
<td>.086</td>
</tr>
<tr>
<td>Similarity</td>
<td>.011</td>
<td>.068</td>
</tr>
</tbody>
</table>

Source: Statistical Software SPSS

4.4.2 Results of Regression

In the context of this research, the regression analysis studied how ambiguity, information overload and similarity predicted an outcome. More specifically, if increase in confusion led to increase in negative attitudes towards the eco-labels and eco-labelled products. Therefore, the regression model tested the hypotheses presented in the Chapter 3.1. Table 8 represents a summary of the model. R square showed how well the independent variables predicted the outcome. However, the Adjusted R Square was considered to be a more important coefficient in terms of this study. Adjusted R Square implied that the phenomenon was studied on a sample and not on a population as a whole. The value of Adjusted R Square acquires values between 0 to 1 (Muijs, 2004). A value close to 1 represents a high probability that the set of independent
variables predicts and outcome (Muijs, 2004). The value of 0.010 implies that ambiguity, information overload and similarity did not have any contribution to negative attitudes towards eco-labels and eco-labelled products.

Table 8: Multiple Linear Regression - Model Summary

<table>
<thead>
<tr>
<th>Source: Statistical Software SPSS</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Model Summary</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R</strong></td>
<td><strong>R Square</strong></td>
</tr>
<tr>
<td>--------------</td>
<td>--------------</td>
</tr>
<tr>
<td>.184</td>
<td>.034</td>
</tr>
</tbody>
</table>

Table 7, presented in Chapter 4.4.1, represents the Beta coefficients which explain how much the dependent variable changes if the independent variables change by one unit. The Beta coefficients vary between 0 and 1 where 1 means the strongest effect (Muijs, 2004). Ambiguity and information overload were both of negative values. This means that an increase in ambiguity caused -0.179 decrease in negative attitudes and increase in information overload caused -0.015 decrease in negative attitudes. An increase in similarity caused an increase in negative attitudes by 0.018. These values implied that there was no relationship between the independent and the dependent variables.

Table 7 also shows the level of significance per each variable. Regarding the hypotheses, the level of significance per each variable was set to p=0.05 to discover whether the findings were statistically significant. Since the level of significance acquired higher values, all three hypotheses were rejected. Ambiguity was rejected at the level of significance of 0.083, information overload at the level of 0.898 and similarity at the level of 0.864. This suggested that there was no causal relationship between ambiguity, information overload, similarity towards negative attitudes. There are several factors that could have, to a greater or lesser extent, influenced these relationships. Therefore, they will be discussed in the following chapter to clarify the results of regression.
4.5 Results from the Supportive Questions

Two supportive questions in the questionnaire served to provide a broader picture of the respondents’ beliefs and purchasing behavior of eco-labelled products. The results shown in Graph 1, demonstrated that 19% of the respondents always bought eco-labelled food products and 73% of them purchased it spontaneously. This was followed by 3% of the participants who answered that they never had bought eco-labelled products. Lastly, 6% of the respondents did not know whether they had purchased eco-labelled products or not.

Graph 1: How often do you buy eco-labelled products when you do your grocery shopping?

![Pie chart showing percentage of respondents by purchase frequency]

Source: Data collected from the questionnaire

Regarding the reasons for why the respondents bought eco-labelled food products, the results of the non-compulsory multiple-choice question presented in Graph 2 showed that the environmental and social concerns were the biggest motive with 76% of all the answers. This was followed by 48% of all the answers suggesting that the respondents bought eco-labelled products for their personal health. Moreover, the fact that the eco-labelled products would be of a better quality received 43% of all the answers and pressure from the society was the least considered reason to buy eco-labelled products with 11% of all the answers.
Graph 2: For what reason do you buy eco-labelled products?

Source: Data collected from the questionnaire

4.6 Summary of the Findings

The results presented earlier in this chapter showed that the participants in this research were confused regarding eco-labels and eco-labelled products. From the descriptive statistics, and by measuring the means and the modes, the results showed that confusion of eco-labels and eco-labelled products occurred amongst the respondents of this research. However, the differences of the values between the three dimensions were minor. Moreover, the results from the means and the modes also discovered that the respondents had positive attitudes towards eco-labels and eco-labelled products. Due to this, no relationships between the dimensions of consumer confusion and negative attitudes were found. Therefore, all the three hypotheses were rejected.

Table 9: Hypotheses Summary

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Level of significance</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>\textbf{H1}: The more consumers perceive eco-labels as ambiguous the more likely they build negative attitudes.</td>
<td>.083</td>
<td>Rejected</td>
</tr>
<tr>
<td>\textbf{H2}: The more consumers perceive an overload of information regarding eco-labels, the more likely they build negative attitudes.</td>
<td>.898</td>
<td>Rejected</td>
</tr>
<tr>
<td>\textbf{H3}: The more consumers perceive eco-labels as similar the more likely they build negative attitudes.</td>
<td>.864</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

Source: Own formulation based on the literature
5. Discussion

This chapter aims to discuss the results which were presented in Chapter 4. The chapter starts with a detailed analysis over the frequencies and final sample. This is followed by a discussion regarding the four variables - ambiguity, information overload, similarity and attitudes.

5.1 Frequencies - Analysis over the Final Sample

The convenience sampling technique used in this research carried out an uncertainty of the demographic details of the final sample. However, the demographics of the final sample coincided with the existing literature regarding the demographics of the consumers who tend to pay more attention to eco-labels and eco-labelled products. As shown in Chapter 4, in Table 2, the answers from the questionnaire revealed that a clear majority, 71% of the participants, were women while only 29% of the participants were men. This unequal distribution could in fact, be explained by current findings that suggest that there is a difference in the interest and attitudes towards eco-labels and eco-labelled food products between women and men. For example, Paul & Rana (2012) state that ecological consumers are often well-educated women. In addition, Irianto (2015) found in his study that there is a difference in attitudes and purchase intentions of eco-labelled products between genders. He suggests that women have positive attitudes because they are concerned about their personal health as well as the future generations’ well-being (Irianto, 2015). Due to these earlier findings, the unequal distribution of the sample could be explained by the fact that women seemed to be more interested in eco-labelled food and therefore also had a stronger incentive to participate in answering the questionnaire.

The unequal age distribution of the respondents was also one important factor that to the certain extent influenced the sample. Almost 90% of the respondents belonged to the age category up to 35 years old. Various authors (i.e. Jørgensen & Moen, 2015; Paul & Rana, 2012) propose that young people are generally more concerned about the environmental issues. Thus, this explains why the final sample encompassed young people who were probably more interested in answering the questionnaire which touched upon this topic.

A third factor that might have influenced the final sample was the participants’ level of education. D’Souza et al. (2007) argue that people who attained a higher level of education are more sensitive regarding environmental and social issues. Amongst the respondents, the results
of this study showed that 72% had obtained either a bachelor’s or a master’s degree. This could explain the high proportion of educated people in the sample who were willing to fill out the questionnaire concerned with the topic of eco-labels and eco-labelled food products.

5.2 Consumer Confusion

5.2.1 Ambiguity Confusion Proneness

The results from the empirical data showed that the respondents were confused in terms of ambiguous information regarding the eco-labels. Even though many of the respondents agreed that the information provided on the eco-labels was clear, the results still indicated that the respondents were confused. More specifically, the results showed that 60% of the respondents needed more information to know the eco-labels’ exact purpose in comparison to 23% who rather said that they did not need more information (see Appendix C). Actually, this finding can be supported by current literature regarding confusion that claims that consumers tend to be confused since they do not know the eco-labels’ specific purpose (Moon et al., 2017). Further on, almost half of the participants stated that they were uncertain if the eco-labels presented, would meet their particular interests. Relating this finding to Drexler, Fiala, Havlíčková, Potůčková & Souček (2018), this level of confusion could be understood by the fact that not all the eco-labels are met with success unless the information about them is clearly addressed and the consumers are able to recognize what the eco-labels stand for. Actually, it is said that insufficient or ambiguous information may lead consumers to various forms of negative attitudes towards eco-labels and eco-labelled products (Drexler et al., 2018). However, in this research, confusion, in terms of ambiguity was not a driver towards negative attitudes amongst the respondents. The attitudes were, in fact, very positive towards eco-labels and eco-labelled products which therefore led to a rejection of the first hypothesis presented in Table 8.

5.2.2 Information Overload Confusion Proneness

The results from the empirical data also showed that the respondents were confused in terms of information overload. Almost 60% of the respondents agreed that they would not have the time to evaluate all the eco-labels while doing their grocery shopping. Around 50% of the respondents found it difficult to distinguish between eco-labels due to the number of various eco-labels used on the products (see Appendix D). This could be explained by the consumers’ limited cognitive ability to analyze all the information that was obtained in a limited time.
(Simon, 1962; as cited by Walsh et al., 2007). Additionally, Ermeç Sertoğlu & Kavak (2017) argue that situational factors, such as time constraints are triggers to consumer confusion. Due to this, the time constraints can also be seen as a key determinant leading to confusion regarding the overload of eco-labels. This suggests that even though the consumers might have a basic knowledge of eco-labels, they would need more time to be able to differentiate between multiple eco-labels. Furthermore, Youssef & Abderrazak (2009) suggest that consumers, due to a multiplicity of eco-labels, often base their decision on price to avoid extensive information processing and decision making which is typical in terms of information overload. They believe that a higher price reflects the quality of the product (Youssef & Abderrazak, 2009). In the context of this study, willingness to pay a premium price was high and did not affect the attitudes negatively. This differs from Walsh et al. (2007) who suggest that information overload leads to negative consequences for the consumer. Since the results showed that the respondents were confused but had very positive attitudes towards eco-labels and eco-labelled products, the second hypothesis presented in Table 8 was rejected.

5.2.3 Similarity Confusion Proneness

The results from the empirical data showed that the respondents were confused in terms of similarity. More specifically, 48% of the respondents agreed that the eco-labels on the presented products looked similar. Nevertheless, 43% of the respondents did not agree that the design of eco-labels made it difficult to distinguish between them (see Appendix E). Thus, the perceived similarity regarding design did not occur, even though the eco-labels had a similar color and shape. This is contradictory to Moon et al. (2017) who revealed that consumers tend to be confused by the similar design of eco-labels. However, a majority of the respondents in this research performed a buying behavior of eco-labelled products. This could indicate that they were relatively familiar with various eco-labels. However, Brécard (2014) suggests that consumers often tend to choose the product based on the image it carries rather than the environmental and social quality it represents. This could result in consumers’ unwillingness to differentiate between different eco-labels because they do not intrinsically care about what is behind these labels and therefore do not have a need to distinguish between them (Brécard, 2014). Consequently, this indicated that consumers felt less confused in the context of eco-labels and its design. Moreover, when looking at confusion concerning similarity and the attitudinal aspect, the respondents had positive attitudes towards eco-labels and eco-labelled products which led to a rejection of the third hypothesis presented in Table 8.
5.3 Attitudes

The results from the empirical data showed that the participants had very positive attitudes towards eco-labels and eco-labelled products even though they were confused. This relationship is illustrated in Figure 3. Actually, these results differ from the conceptualized model of consumer confusion regarding brands and products which rather indicates that confusion affects consumers in a negative way (Walsh et al., 2007). Factors that had helped to form positive attitudes as well as factors that could have triggered confusion amongst the sample will be further discussed in the following two sections. For this discussion, demographic details, supportive questions regarding consumers’ beliefs and buying behavior as well as findings from already existing theory will be analyzed.

Figure 3: Relationship between Confusion and Attitudes regarding Eco-Labels

![Diagram depicting the relationship between confusion and attitudes regarding eco-labels](image)

Source: Own depiction derived from the results of the analysis

5.3.1 Demographic Details

The demographic details of respondents are important aspects when assessing people’s attitudes towards eco-labels and eco-labelled products (D’Souza et al., 2007). And as already mentioned in Chapter 2.4, it is argued that demographic details such as gender, age and education influence consumers’ perception of eco-labels and eco-labelled products (Taufique et al., 2014). In this study, it was found that these elements not only influenced the attitudes but might also had an impact on the level of confusion.

The sample of this research composed of almost 90% of young respondents up to the age of 35 years old. They held very positive attitudes towards eco-labels and eco-labelled products. This
can be explained by the fact that young consumers are likely to have positive attitudes towards eco-labelled food products (Magnusson et al., 2001). Paul & Rana (2012) imply that the reason for this is because younger people are more concerned about the impact of their consumption, particularly on the environment and the well-being of the society. This is confirmed by the results from one of the supportive questions that revealed that the main motive for buying eco-labelled products were environmental and social concerns.

As already presented, a majority of the sample were women who had very positive attitudes towards eco-labels and eco-labelled products. In fact, regarding the aspect of gender, it is said that women are more concerned about their health, other people’s well-being and the environment. In addition, they are also willing to spend more money on eco-friendly products (Paul & Rana, 2012; Magnusson et al. 2001). On the contrary, when studying the means of the attitude variables between males and females, no significant difference was discovered. However, it was difficult to make any comparisons and draw any conclusions since the sample was unequally distributed which could have had an effect on the final results of this research. Moreover, even though the respondents had strong positive attitudes towards eco-labels and eco-labelled products, confusion still occurred. According to Walsh & Mitchell (2005), women are more likely to be confused due to the greater level of difficulties regarding processing new information and making decisions. This could explain the prevailing level of confusion since the sample mostly consisted of women.

Several studies (i.e. Irianto, 2015; Grunert et al., 2014) have discovered that education is an important factor when studying consumers’ attitudes towards eco-labels and eco-labelled products. However, it is claimed that the level of education does not necessarily need to be translated into knowledge and awareness of eco-labels (Grunert et al., 2014). Actually, Grunert et al. (2014) imply that a higher education is an indicator for willingness to learn more, but it does not necessarily apply to eco-labels and an increase in awareness about environmental and social issues. Similarly, Aertsents et al. (2009) argue that there is no significant relationship between education and knowledge towards eco-labelled food. Hence, even though the level of education was high amongst the respondents, this can explain why confusion existed. More specifically, the results showed that the respondents needed more information to know the exact purpose of the eco-labels and if the labels met their particular interests. This suggests that the respondents were confused and needed to learn more. Highly educated people have, according to Walsh & Mitchell (2005), increased ability to obtain and process new information. One can
therefore assume that the respondents with regards to their positive attitudes and higher level of education, would be willing and able to learn more when provided with sufficient amount of time in order to decrease the level of confusion.

5.3.2 Beliefs and Behavior

The empirical findings showed that 71% of the participants preferred eco-labelled products to non-eco-labelled products. In addition, almost 80% of the respondents agreed or strongly agreed that they contribute to better environmental and social conditions by buying eco-labelled products (see Appendix F). This could actually serve as a foundation for the positive beliefs regarding eco-labelled products and the formation of positive attitudes. Moreover, factors such as quality and price were used as measurements of attitudes, and it was discovered that these factors had a positive influence on the attitudes towards eco-labels and eco-labelled products. Regarding product quality, the results of this study revealed that a majority of the respondents believed that eco-labelled products are of a better quality than non-eco-labelled products. This can be supported by the findings of other researchers. For example, Brécard (2014) argues that amongst consumers, eco-labels are signs that represent quality. In addition, it is argued that consumers believe that sustainable products, such as eco-labelled products, are better. Particularly, in terms of taste, freshness, quality, safety as well as they are more advantageous regarding the aspects of human health, the environment and regional economies (Vermeir & Verbeke, 2006). It was claimed that many people buy eco-labelled products because of the health concerns and believe that they significantly can improve their lives because there are no agrochemical inputs used in the production (Paul & Rana, 2012). Hence, this research confirmed the existing literature regarding the beliefs that eco-labelled products are of a better quality. Thus, this affected the attitudes in a positive way.

Further on, price is another factor that affects attitudes and often relates to quality (Brécard, 2014). In this research, more than two thirds of the participants agreed or strongly agreed that eco-labelled products were worth a higher price. This could be linked to existing literature since Drexler et al. (2018) argue that consumers are willing to pay extra money for products that they consider being of a better quality. In addition, the literature review by Galarraga Gallastegui (2002, p. 322) suggests that a majority of the consumers are willing to pay a premium price for environmentally and socially friendly products. On the contrary, it is also said that the price variable might affect the consumers’ attitudes in a negative way (Irianto, 2015). However, Irianto (2015) claims that some studies have also shown that consumers are tolerant to premium
prices. When relating this argument regarding the price to the sample of this research, one must consider the fact that a majority of the participants obtained a higher education. In fact, Liu et al. (2017) point out that the level of education has an impact on the willingness to pay for the eco-labelled products since higher educated people usually have a higher income than less educated people. This could have been the case amongst the respondents of this research and made them less price sensitive to the products that they believe are better.

Another aspect that was taken into consideration relating to confusion and attitudes was the participants’ level of confidence regarding eco-labels and eco-labelled products. The fact that the respondents were confused probably had an impact on their confidence. Especially, since they needed more information to know their purpose and whether the products met their particular interests. Hence, this can describe why some respondents did not have fully positive attitudes regarding eco-labelled products. It is said that consumers’ attitudes may predict their behavior (Hoyer & MacInnis, 2001). However, the positive attitudes towards eco-labels and eco-labelled products amongst the respondents did actually not lead to a more frequent purchasing behavior of eco-labelled food products. In fact, it was discovered that only 19% of respondents always purchased eco-labelled products during their grocery shopping. This gap between attitudes and behavior can be confirmed by Aertsens (2009) who states that even though younger people have more positive attitudes, it is not always translated into buying behavior. Due to this, the findings of this research brought up some questions regarding the theory of attitude-behavior relationship that suggests that attitudes predict consumer behavior. Especially since one could assume that positive attitudes would lead to a more frequent purchasing behavior which did not occur in the context of this research. Due to this, consumers’ behavior might be complicated to predict in terms of eco-labelled products.
6. Conclusions

This chapter answers the research questions by integrating the findings together. This helps to derive final conclusions regarding the conceptualized model of consumer confusion proneness and attitudes in relation to eco-labels.

6.1 Conclusions of the Research

The purpose of this study was to investigate whether the conceptualized model of consumer confusion proposed by Walsh et al. (2007), regarding the multiple number of brands and products, also applies to the increasing number of eco-labels. The study also examined how the attitudes were affected if confusion occurred amongst the consumers. More specifically, whether consumer confusion might lead to negative attitudes towards eco-labels and eco-labelled products. In order to meet this purpose, a quantitative method using a self-administered online questionnaire was applied.

Regarding the first research question “Do consumers perceive eco-labels to be confusing?”, the results showed that confusion existed in all the three dimensions of the conceptualized model of consumer confusion. Due to this, the authors found that the model of consumer confusion can be extended and also refers to eco-labels. The results concerning the second research question “Does consumer confusion lead to negative attitudes towards eco-labels and eco-labelled food products?”, were not in line with what the authors expected to be the consequences of confusion. The study revealed that the respondents had very positive attitudes towards eco-labels as opposed to negative attitudes in the context of regular brands and products suggested by Walsh et al. (2007). Hence, the three hypotheses were rejected. Moreover, in order to be able to generalize this on a broader scale, more research needs to be done.

Even though confusion occurred regarding eco-labels and eco-labelled products in all the three dimensions of the conceptualized model of consumer confusion, the respondents held positive attitudes towards them. This could be seen as a contradictory finding. Therefore, possible factors that could have positively influenced the attitudes, were discussed from various perspectives. For instance, it was discovered that the respondents had strong beliefs that eco-labelled products are of a higher quality and price worthy. Also, by the fact that the respondents preferred eco-labelled products to non-eco-labelled products. Additionally, they believed that
they contributed to better environmental and social impacts by buying eco-labelled products. Moreover, the demographic details were discussed as having an effect on attitudes. The findings of this research were well-aligned with current literature suggesting that young, well-educated people, especially women, tend to care more about environmental and social issues. This was further confirmed by this research where the final sample encompassed young, well-educated women, who purchased eco-labelled products because of the environmental and social concerns. Thus, the attitudes towards eco-labels and eco-labelled products were positive.
7. Contributions, Limitations and Further Research

In this chapter, empirical contributions together with managerial implications are presented. This is further followed by the research limitations and suggestions for further research.

7.1 Empirical Contributions and Managerial Implications

This study contributed to the existing literature of consumer confusion by adding eco-labels in the context of the conceptualized model of consumer confusion. The main learning was that the concept of confusion is applicable to eco-labels, although it was firstly used in the context of regular brands and products. However, the expected negative attitudes towards eco-labels and eco-labelled products did not occur. This was a considerably different finding as opposed to regular brands and products, where the concept of consumer confusion implies negative outcomes.

This research adds value to companies regarding the design and message of the labels since confusion existed. For example, Comas Martí & Seifert (2012; as cited by Brécard, 2014, p.65) argue that out of 1000 managers and sustainability practitioners who were surveyed, 92% of them considered confusion to be a big challenge that needs to be addressed. This suggests that the managers who are in charge of designing eco-labels and companies using eco-labels on their products, should now be able to identify as well as tackle the sources of confusion. Due to the findings of this research, the authors have therefore, several suggestions for managers and companies to mitigate the perceived level of confusion in terms of ambiguity, information overload and similarity, amongst the consumers. Firstly, the managers should make the purpose of eco-labels clearer in order to increase the understanding amongst the consumers and inform them where to obtain more information even before purchasing eco-labelled products. Secondly, the companies should also consider the market strategies used, especially with consumers who have no or little knowledge regarding eco-labels to overcome persistent beliefs. Thirdly, the managers should design eco-labels in such a way so that the labels differ from each other. Fourthly, a reasonable number of eco-labels on the products should be used so that consumers can easily distinguish between them.

7.2 Limitations

The authors of this study came across various aspects of limitations that might have affected the research method and the final results. Firstly, the limited time for the data collection led the authors to choose a convenient sampling technique. For the final sample, this resulted in an
unequal distribution of the final sample in terms of demographic details, such as, gender, age and education, which made it difficult for the authors to make and justify any comparisons. For example, the authors found theories suggesting that there are differences between gender (Paul & Rana; Irianto, 2015), age (Magnusson et al., 2001), and education (Liu et al., 2017) and how different groups respond to and perceive eco-labels and eco-labelled products. In addition, the sampling technique and the fact that the authors did not know anything about the final sample or population, made it difficult to generalize the findings on a broader scale.

Secondly, only two eco-labelled products, coffee and chocolate, were presented in the questionnaire as illustrations for the respondents. It must be taken into consideration that the respondents might have had prior, or no prior, knowledge about the two food products and the eco-labels on the products which could have resulted in biases of the findings. Additionally, the respondents might think of the two products differently in terms of confusion which might have created biases in the results. Despite the limitations, these two products served as an illustration only and no prior knowledge was needed. Nevertheless, these two products were found to be the most suitable for the research purpose. Regarding the questionnaire (see Appendix A), the authors, during the analyzing process, noticed that two of the questions could have been put in a different way. Firstly, it would make it easier for the respondents to answer the questions and secondly, it would simplify the process of analysis for the authors. This refers to the questions number four and five, which served as the two supportive questions. More specifically, there was no alternative for answering “I don't buy eco-labelled products” in the question number four. This could have created uncertainty for the respondents if some of them did not buy eco-labelled products. Concerning the question number five, the option to answer “spontaneously” could have had different interpretations in terms of the actual frequency for the respondents. This made it difficult for the authors to discover the real frequency of buying since no clear definition was given of what “spontaneously” in this context meant. However, due to the other answering alternatives of this question, “spontaneously” could be understood as equal to “regular” buying behavior.

7.3 Further Research

This study could serve as a basis for consumer confusion and consumer attitudes of eco-labels and eco-labelled products. However, this area needs more attention and research since it is quite an unexplored and important topic for many actors in today’s society, such as businesses, consumers, producers and policymakers. Especially, since many of them aim to become more
sustainable and increase awareness regarding the environmental and social effects of consumption. Therefore, to get a more extensive understanding, the authors would suggest carrying out this research again but using another sampling technique in order to compare demographic details of the respondents and generalize the results on a broader scale. Additionally, qualitative methods combined together with quantitative methods could be applied to provide richer data since the pure quantification of the data provided a less space for the respondents to express their opinions. The future research could also study trends regarding the eco-labels and confusion over the years since increasing number of eco-labels has been introduced on the market. Therefore, a long-attitudinal instead of a cross-sectional study could be considered. This would also increase reliability and validity of the results. Furthermore, it would be of interest to study specific eco-labels as well as eco-labels used in other areas such as cosmetic products and products for daily use in households.
8. List of References


Appendix A: Questionnaire

Consumer Confusion in Eco-labelled Food Market

Hello,

We are two master students in the field of Sustainable Management at Uppsala University. We are currently writing our master thesis about Consumer’s Attitudes towards Eco-Labels. We would really appreciate if you could answer our questions below. The survey takes approximately 5 - 10 minutes to complete. Your answers will be treated anonymously. As a background for the questions 6 - 13, please look at the two eco-labelled products before answering the questions.

Thank you very much!

Karolina & Charlotte

For any questions, please contact us on:
karolina.lorenzova.7744@student.uu.se or charlotte.borlind.3712@student.uu.se

1. Gender
   □ Female
   □ Male

2. Age
   □ 0-25
   □ 26-35
   □ 36-45
   □ 46-55
   □ 55-older
3. Education
   (obtained by now)
   □ High School
   □ Bachelor's Degree
   □ Master's Degree
   □ None of above

**Definition of Eco-Labels:** Eco-labels represent the official symbol that shows that a product has been designed to do less harm to the environment as well as it adds socially responsible practices in comparison to non-eco-labelled products.

4. For what reasons do you buy eco-labelled product?
   - □ Environmental and social concerns
   - □ Personal health
   - □ Better quality of the products
   - □ Pressure from the society

5. How often do you buy eco-labelled products when you do your grocery shopping?
   - □ always
   - □ spontaneously
   - □ never
   - □ I don’t know
6. The information that I get about the eco-labels on these products is clear.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. I need more information about the eco-labels on the products above to know their purpose.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. I am uncertain whether the eco-labels on the products above meet my particular interests.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9. Seeing several kinds of eco-labels on the products above makes me confused.

   Strongly disagree    Disagree    Neutral    Agree    Strongly agree
   ☐                      ☐                ☐        ☐        ☐

10. The number of eco-labels on the products above makes it hard to distinguish between them.

   Strongly disagree    Disagree    Neutral    Agree    Strongly agree
   ☐                      ☐                ☐        ☐        ☐

11. I would have the time to evaluate all the eco-labels on the products above when doing grocery shopping.

   Strongly disagree    Disagree    Neutral    Agree    Strongly agree
   ☐                      ☐                ☐        ☐        ☐

12. The eco-labels on the products above look similar.

   Strongly disagree    Disagree    Neutral    Agree    Strongly agree
   ☐                      ☐                ☐        ☐        ☐

13. The design of the eco-labels on the products above makes it difficult to distinguish between them.

   Strongly disagree    Disagree    Neutral    Agree    Strongly agree
   ☐                      ☐                ☐        ☐        ☐
14. Eco-labelled products are better quality than regular products.

15. I prefer eco-labelled products to non-eco-labelled products.

16. Eco-labelled products are worth a higher price.

17. I contribute to better environmental and social conditions by buying eco-labelled products.
## Appendix B: Descriptive Statistics - Questions per Variable

### Descriptive Statistics - Ambiguity

<table>
<thead>
<tr>
<th>Question</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. The information that I get about the eco-labels on these products is clear.</td>
<td>124</td>
<td>1</td>
<td>5</td>
<td>2.44</td>
<td>0.940</td>
</tr>
<tr>
<td>7. I need more information about the eco-labels on the products above to know their purpose.</td>
<td>124</td>
<td>1</td>
<td>5</td>
<td>3.52</td>
<td>1.115</td>
</tr>
<tr>
<td>8. I am uncertain whether the eco-labels on the products above meet my particular interests.</td>
<td>124</td>
<td>1</td>
<td>5</td>
<td>3.27</td>
<td>1.098</td>
</tr>
</tbody>
</table>

Source: Statistical Software SPSS

### Descriptive Statistics - Overload

<table>
<thead>
<tr>
<th>Question</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Seeing several kinds of eco-labels on the products above makes me confused.</td>
<td>124</td>
<td>1</td>
<td>5</td>
<td>2.91</td>
<td>1.223</td>
</tr>
<tr>
<td>10. The number of eco-labels on the products above makes it hard to distinguish between them.</td>
<td>124</td>
<td>1</td>
<td>5</td>
<td>3.23</td>
<td>1.188</td>
</tr>
<tr>
<td>11. I would have the time to evaluate all the eco-labels on the products above when doing grocery shopping.</td>
<td>124</td>
<td>1</td>
<td>5</td>
<td>3.59</td>
<td>1.052</td>
</tr>
</tbody>
</table>

Source: Statistical Software SPSS
<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. The eco-labels on the</td>
<td>124</td>
<td>1</td>
<td>5</td>
<td>3.25</td>
<td>1.025</td>
</tr>
<tr>
<td>products above look similar.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. The design of the eco-labels</td>
<td>124</td>
<td>1</td>
<td>5</td>
<td>3.02</td>
<td>1.162</td>
</tr>
<tr>
<td>on the products above makes it</td>
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<td>difficult to distinguish</td>
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<td>between them.</td>
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</table>

Source: Statistical Software SPSS
Appendix C: Answers from the Questionnaire - Ambiguity

6. The information that I get about the eco-labels on the products above is clear.

7. I need more information about the eco-labels on the products above to know their purpose.

8. I am uncertain whether the eco-labels on the products above meet my particular interests.
Appendix D: Answers from the Questionnaire – Information Overload

9. Seeing several kinds of eco-labels on the products above makes me confused.

- Strongly Agree: 32.3%
- Agree: 24.2%
- Neutral: 20.2%
- Disagree: 11.3%
- Strongly Disagree: 12.1%

10. The number of eco-labels on the products above makes it hard to distinguish between them.

- Strongly Agree: 17.7%
- Agree: 35.5%
- Neutral: 11.7%
- Disagree: 7.8%
- Strongly Disagree: 25.0%

11. I would have the time to evaluate all the eco-labels on the products above when doing grocery shopping.

- Strongly Agree: 21%
- Agree: 23.4%
- Neutral: 17.7%
- Disagree: 21%
- Strongly Disagree: 37.1%
Appendix E: Answers from the Questionnaire – Similarity

12. The eco-labels on the products above look similar.
134 respondents

13. The design of the eco-labels on the products above makes it difficult to distinguish between them.
134 respondents
Appendix F: Answers from the Questionnaire – Attitudes

14. Eco-labelled products are better quality than non-eco-labelled products.
   - Strongly Agree: 26%
   - Agree: 37%
   - Neutral: 10%
   - Disagree: 19%
   - Strongly Disagree: 14%

15. I prefer eco-labelled products to non-eco-labelled products.
   - Strongly Agree: 36%
   - Agree: 21%
   - Neutral: 7%
   - Disagree: 32%
   - Strongly Disagree: 6%

16. Eco-labelled products are worth a higher price.
   - Strongly Agree: 12%
   - Agree: 20%
   - Neutral: 21%
   - Disagree: 19%
   - Strongly Disagree: 26%

17. I contribute to better environmental and social conditions by buying eco-labelled products.
   - Strongly Agree: 27%
   - Agree: 14%
   - Neutral: 21%
   - Disagree: 27%
   - Strongly Disagree: 11%