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The Use of Eco-Labels on Packaging Communication: Investigating the Impact of Colour and Claim on Purchase Intention

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ABSTRACT

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Beatriz Neto

Environmental friendly products are becoming a preference choice among consumers, since they're becoming more environmentally concerned and aware of the impact of their consumption habits on the Environment. To identify environmental friendly products there are labels established by the International Organization for Standardization: the eco-labels. These eco-labels are a mark or a logo awarded to communionate to consumers the fulfilment of several environmental criteria, usually regarding ethical qualities about products, like fair-trade, labor practices, animal rights, environmental orientation, energy efficiency, among others.

Generally, eco-labels are well received by consumers and generate positive perceptions of environmental friendliness, especially for low-involvement products. Furthermore, a review of the existent literature indicates that eco-labels are an important element affecting purchase intention and that the attitude towards eco-labels may vary according to several factors, such as consumer awareness of eco-labels, the demographic profile of consumers and their environmental motivations.

This thesis aims at understanding what elements impacts more purchase intention when communicating eco-labels: colour or claim. Additionally, the impact of consumers' eco-label awareness on purchase intention was study.

To test the hypotheses drawn on the present study, a survey based on literature review was conducted. Respondents were exposed to a eco-label assigned to them randomly and asked about several questions not only regarding the eco-label it-self, but also about eco-labels in general.

Findings indicate that claim is the eco-label element that impacts more purchase intention, followed by consumer awareness of eco-labels and in third place by green colour, whenever associated with emotional and environmental concepts.

Keywords: Eco-label; Purchase Intention; Packaging Communication; Colour; Claim; Awareness.

SUMÁRIO

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Os consumidores estão cada vez mais preocupados com o ambiente e conscientes do impacto do seu consumo nele. Assim, os produtos amigos do ambiente estão a tornar-se uma escolha de preferência entre os consumidores. Para os identificar, existem logos estabelecidos pela Organização Internacional de Normalização, os eco-labels, que comunicam ao consumidor o preenchimento de vários requisitos ambientais associados a qualidades éticas dos produtos, como o comércio justo, práticas laborais, direitos dos animais, orientação ambiental, eficiência energética, entre outros.

Geralmente, os eco-labels são bem recebidos pelos consumidores, gerando perceções positivas quanto à orientação ambiental dos produtos, sobretudo nos de low-involvement. Ademais, a literatura existente indica que os eco-labels impactam a intenção de compra e que a atitude perante eles pode variar mediante vários fatores, como a notoriedade dos eco-labels, o perfil demográfico dos consumidores e as suas motivações ambientais.

Esta tese procura entender quais os elementos que mais impactam a intenção de compra quando se comunica um eco-label: cor ou claim (conteúdo escrito do eco-label). Adicionalmente, foi estudado o impacto da notoriedade dos eco-labels na intenção de compra.

Para testar as hipóteses levantadas neste estudo, foi aplicado um questionário baseado numa revisão da literatura existente. Os participantes, expostos a um eco-label atribuído aleatoriamente, responderam a várias questões sobre o eco-label mostrado e sobre os eco-labels em geral.

Os resultados indicam que o claim é o elemento dos eco-labels que mais impacta a intenção de compra, seguido pela notoriedade dos eco-labels e pela cor verde, quando associada a emoções e conceitos ambientais.

Palavras-chave: Eco-label; Intenção de Compra; Packaging Communication; Cor; Claim; Notoriedade; Awareness.

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Finishing this thesis means starting a new chapter in my life. Thank you to all who accompanied me here.

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GLOSSARY

GEN Global Ecolabelling Network

PI Purchase Intention

CHAPTER 1: INTRODUCTION

1.1 Background and problem statement

Nowadays environmental issues have become increasingly important. Consumers began to make their purchase decisions according to their environmental and ethical concerns because they realized that their purchase behavior and consumption have a direct impact on the Environment (De Chiara, 2015; Laroche, M., Bergeron, J., & G.Barbaro-Forleo, 2001; Mei, Ling, & Piew, 2012; Rundh, 2005).

The ecologically conscious marketplace has thus increased since consumers are becoming more environmental concerned and aware of the impact of their consumption on the Environment (Laroche et al., 2001). Therefore, products that are environmental friendly - green products as they are called in literature (Mei, et al., 2012; Tanner & Kast, 2003) - are becoming a preference choice among consumers. Environmental motivations are one of the reasons for consumers to buy green products. For example, ecologically conscious consumers are more likely to buy green products (Cai et al., 2017; Roberts & Bacon, 1997). Consumers who prefer this type of products because of environmental issues are commonly called green consumers (Laroche et al., 2001).

To identify green products there are labels established by the International Organization for Standardization: the eco-labels. These eco-labels are a mark or a logo awarded that attest the fulfilment of several environmental criteria. Usually, eco-labels signal ethical qualities about products, like fair-trade, labor practices, animal rights, environmental orientation, energy efficiency, among others (Pancer, McShane, & Noseworthy, 2015).

Atkinson and Rosenthal (2014) noted that eco-labels are typically well received by consumers and generate positive perceptions of environmental friendliness (mostly for low-involvement products). Furthermore, there are consumers who like to think themselves as environmentally conscious and because of that they prefer to buy eco-labeled products as a reflection of this ideal (Stokes & M. Turri, 2015). Despite all this, some literature suggests that there is some skepticism about green products among consumers (Cai et al., 2017).

Still, a review of the existent literature indicates that the attitude towards eco-labels may vary according to several factors, such as consumer awareness of eco-labels and the demographic profile of consumers (Cai et al., 2017; D'Souza, Taghian, Lamb, & Peretiatko, 2006; Teisl,

Rubin, & Noblet, 2008), as well as environmental motivations (Cai et al., 2017; Roberts & Bacon, 1997).

Thereby, considering that eco-labels and packaging are important elements affecting purchase intention (Butkevicienė, Stravinskienė, & Rutelionė, 2008; Clement, 2007; Jerzyk, 2016; Kuvykaite, Dovaliene, & Navickiene, 2009; Silayoi, Pinya; Speece, 2004; Underwood, Klein, & Burke, 2001), this thesis will try to understand what elements have more influence on purchase intention when communicating eco-labels: colour or claim.

1.2 Problem Statement

The scope of this research is to understand how the use of eco-labels on packaging influences purchase intention. For this purpose, the use of eco-labels as a way of communicating environmental orientation or concern will be studied as a determinant of purchase intention. Moreover, eco-labels will be analyzed in its visual (colour) and informational (claim) elements in order to understand if there is any difference on the purchase intention between eco-labels that contains more visual elements related to environmental issues or more informational elements. Furthermore, it will be also study the impact of eco-label awareness on purchase intention.

Hence, the problem statement of this thesis is:

When using eco-labels on packaging communication (visual vs informational), what elements impacts more consumer's purchase intention?

It can be expressed through the following research questions:

RQ1: What is the impact of the use of eco-labels on consumers' purchase intention?

RQ1a: How does the visual elements (colour) impact the consumers' purchase intention?

RQ1b: How does the visual elements (green colour) impact the consumers' purchase intention?

RQ1c: How does the informational elements (claim) impact the consumers' purchase intention?

RQ2: How does the consumers' awareness of eco-labels impact purchase intention?

1.3 Relevance

As mentioned before, the market of environmentally friendly products is increasing over the years. Because of that and because results from several studies indicate that the use of eco-labels have impact on consumers purchase intention, this thesis has both academic and managerial relevance, particularly because this type of labels are increasing their influence among different products. Research indicates that adding an eco-label to a product generates positive reactions from consumers, especially in low-involvement products (Atkinson & Rosenthal, 2014), being an effective lead to purchase intention (Mei et al., 2012; Rashid, 2009). According to Silva, Bioto, Efraim, & Queiroz (2017), in 2012 the influence of eco-labels for coffee was 40% comparing to the world's overall production.

Packaging conveys descriptive and persuasive information that allows consumers to know more about the product (Bassin, 1988). This way, eco-labels are used on packaging to convey a message that the product is environmentally friendly. As Atkinson and Rosenthal (2014) argued, eco-labels are often the way to consumers identify a green product, communicating the fulfilment of several environmental criteria.

In terms of academic relevance, this study will aggregate theory about packaging communication, the use of eco-labels, visual and verbal elements, purchase intention and eco-label awareness, so that new conclusions can be drawn.

In a managerial perspective, the relevance of this subject lies in the growing consumer awareness of environmental issues, as mentioned before (Cai et al., 2017). As Banerjee & Solomon (2003) noted, environmental claims and eco-labels have been increasingly used since 1980's. Furthermore, the results obtained in this study can help companies that are creating new eco-labels, to create a logo that communicates better the environmental friendly nature of their products.

In a marketing point of view, the use of eco-labels is a way to communicate the environmentally friendly dimension of the product to consumers (Atkinson & Rosenthal, 2014; Cai et al., 2017). Thus, studying the impact of eco-labels is important because its usage has grown among marketers, since it is a way to promote the identification of green products (D'Souza et al., 2006). As Testa, Iraldo, Vaccari, & Ferrari (2013) stated, environmental marketing is getting more and more importance. Consequently, and because of the ecologically conscious marketplace's growth, it is important to integrate a "green marketing"

perspective into business, specifically in the marketing field. Additionally, and in order to reinforce the importance of the subject, Laroche et al. (2001) found that the number of consumers willing to pay more for environmentally friendly products is large enough to call marketers' attention.

The aim of this thesis is to understand what elements of eco-labels impacts more purchase intention: colour or claim. The impact of consumers' awareness of eco-labels on purchase intention will be studied as well.

1.4 Research methods

To collect the necessary data for this thesis both primary and secondary data were used.

Secondary data was collected by making a literature review of the presented topics in study, such as packaging communication, purchase intention, eco-labels, visual and informational elements and awareness of eco-labels.

Primary data was collected through an online survey questionnaire, tested previously on a pilot questionnaire. After, data was analyzed, conclusions were drawn and this thesis' hypotheses were answered.

1.5 Dissertation outline

The next chapter presents a literature review that explains and describes the relevance of the variables used to investigate what elements of eco-labels impacts more purchase intention: colour or claim. Still in this chapter, the development of the hypotheses that guides this study is displayed.

The third chapter presents the methodology used to answer the research questions. For this purpose, the chapter is composed by the constructs that constitute the questionnaire and the procedure.

The fourth chapter contains the results and findings obtained with the questionnaire conducted.

Finally, the fifth chapter presents conclusions and dissertation's limitations and indications for further research in this area of study.

CHAPTER 2: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

The following chapter is a literature review about the relevant topics of this thesis. For this purpose, findings, definitions and arguments of previous studies were summed up, compared and criticized so that a theoretical framework for the research questions of this thesis could be built.

Foremost, there's a presentation and literature review of this thesis' main concepts, such as purchase intention – as dependent variable -, packaging communication, eco-labels, visual and informational elements of eco-labels – as independent variables.

At last, a conceptual framework is drawn along with the hypotheses synthesized in the model. Therefore, this part gives an overview about the construct of the study considering the interdependencies between the variables and all the hypotheses stated.

2.1 Purchase Intention

Before buying a product, consumers idealize and have an expectation on products' use. Thus, the level of satisfaction of these expectations is crucial for consumer's purchase intention (Kupiec & Revell, 2001). As Spears & Singh (2004:56) defined, purchase intention is "an individual's conscious plan to make an effort to purchase a brand".

According to Kotler & Keller (2009), consumer decision making process is generally composed by five stages: problem identification, search for information, evaluation of alternatives, decision to purchase and post-purchase behavior. This way, purchase decision is a result of an evaluation of the product and competitors' products, and so it can either be a plan or be an immediate reaction.

For the purpose of this thesis, it is important to understand that there are people who prefer to buy products that don't have a serious negative impact on the Environment – green products – over the conventional ones, which according to Rashid (2009) and Aman, Harun, & Hussein (2012) can be named as green purchase intention.

In addition, it is also important to note that sometimes there's a gap between intention and behavior: sometimes people say they want to buy something not because they want it genuinely, but because they are expressing a self-ideal or the ideal they think society accept (Hawkins, Farrington, & Catalano, 1998).

2.2 Packaging Communication: the use of Eco-Labels

2.2.1 Packaging

Packaging is a product container (Kotler & Keller, 2009), a protection cover that provides information about the product to costumers (Nickels & Jolson, 1976). It has also a logistic function, since it allows product handling and storing (Bassin, 1988; Nickels & Jolson, 1976; Prendergast & Pitt, 1996).

Nevertheless, packaging has a significant role in marketing, since it is a vehicle for communication and branding (Garber, Burke, & Jones, 2000; Kotler & Keller, 2009; Rettie, Ruth; Brewer, 2000). It gives symbolic cues to consumers about product's benefits and its difference from competitors (Nickels & Jolson, 1976), as well as it communicates brand identity (Gómez, Martín-Consuegra, & Molina, 2015). Moreover, packaging conveys descriptive and persuasive information that allows consumers to know more about the product and to identify it with a brand (Kotler & Keller, 2009; Bassin, 1988). This way, package can highlight the uniqueness and originality of a product (Silayoi & Speece, 2007), being an important element for consumer decision making process, since it allows to distinguish between products (Clement, 2007; Nickels & Jolson, 1976).

As Nickels & Jolson (1976) argued, packaging is not only a way to communicate product's features but also to broaden consumer perceptions of the product's benefits. Furthermore, packaging is important in terms of a company's brand image, because it enhances recognition of the company (Rundh, 2005), especially if it is distinctive from competitors.

According to Kotler & Keller (2009), product choice at the point of purchase is encouraged by packaging, as it is the first encounter between consumer and product. Package is a way to attract consumers to buy a certain product by improving its brand image and influencing consumer's perception about the product (Kuvykaite et al., 2009). This way, packaging is a way to influence consumer decision-making process at the store, since the communication elements in the package influences the choice (Butkevicienė et al., 2008; Jerzyk, 2016; Silayoi & Speece, 2007). Furthermore, packaging is the last moment to persuade consumers to buy the product rather than competitors' product (Jerzyk, 2016; McDaniel & Baker, 1977).

A literature review on this topic also indicates that package and its elements have impact on consumer's overall purchase decision (Butkevicienė et al., 2008; Clement, 2007; Jerzyk, 2016; Kuvykaite et al., 2009; Silayoi & Speece, 2007; Underwood et al., 2001; Ares &

Deliza, 2018), although this impact may be different depending on the consumer's involvement level, time pressure and/or individual characteristics (Butkevicienė et al., 2008; Silayoi & Speece, 2007). Here, Butkevicienė et al. (2008) argue that the more time consumers have to make a decision, the less the impact of the package.

All these considerations reveal the importance of packaging in purchase decision and therefore the importance of packaging research as a way of maximizing the effectiveness of package in a store (Kuvykaite et al., 2009). Besides, packaging is a powerful tool capable to change product perception and create a new market position (Rundh, 2005).

Regarding packaging elements, there is no agreement in literature about its classification and importance. Silayoi & Speece (2004) separate visual and informational elements. Graphics, colour, shape and size are considered as visual elements, related to the affective side of the decision-making process, while informational elements are associated to information and the cognitive side of the decision and thus it is expressed by conveying information about producer, country of origin, brand and technology. Differently, Underwood et al. (2001) don't consider verbal elements of package, but distinguish graphic elements such as colour, typography, shape and images, from structural elements, including form, size of containers and material. To Vladić, Milica, Kašiković, Magdolna, & Mladen (2015) graphic design, material, colour and shape are the most important packaging elements. For Spence & Velasco (2018), colour is the most important packaging element, especially on online sales. Accordingly, (Garber et al., 2000) have chosen to study colour because they consider it as the dominant visual feature because if it is changed it doesn't affect package's function, unlike package shape. On the other hand, Kotler & Keller (2009) pointed out six different packaging elements - size, shape, material, colour, text and graphics - although they give more prominence to colour, since it is an "important aspect of packaging", according to them. In turn, Kuvykaite et al. (2009) summarizes all this different points of view in two main blocks of packaging elements: visual and verbal elements. The first ones are graphic, colour, size, shape and material, while the second ones are information about the producer, country-of-origin and brand. Besides, Ares and Deliza (2010) as well as Ampuero & Vila (2006) reveal the importance of shape and colours in package design. Magnier & Schoormans (2017) differentiate packaging elements into tree main categories: structure, graphics and textual informational/claim. Structure includes shape, weight and materials, while graphics includes colours, photographs, images and logos. At the informational level, all the textual information

that describes the product and package, either claims or scientific description, is included. Thus, Magnier & Schoormans (2017) defend that to communicate environmentally friendly attributes, it is crucial to consider all this elements, particularly graphical and textual elements, since sometimes structure elements may sometimes be not so explicit as the other ones. In addition, these authors indicate that prior studies show that shapes and colours send cues for consumers to evaluate brands. For instance, Becker, Rompay, Schifferstein, & Galetzka (2011) concluded through their study that consumers with higher sensitivity to design rate differently yoghurt's taste regarding the its package form, being the angular shape more associated with an intense flavour when compared to rounded shape package yoghurt.

All in all, packaging has multiple purposes and because of that it is a source of interest not only in terms of research but also from a managerial point of view, starting forthwith because packaging can have strong impact on sales (Twedt, 1968) specially because it is a crucial factor in communication at the point of sale (Silayoi & Speece, 2007).

2.2.2 Eco-labels

In physical terms, a label can be either a simple attached tag or a designed graphic that constitutes the package and might describe the product (Kotler & Keller, 2009). As part of package, labels are an important tool to consider when thinking about increasing consumers' purchase intention, since food product expectations can be generated from packaging, labelling and product information (Silayoi & Speece, 2007).

According to the international standards established by the International Organization for Standardization (Secretariat, 2012), the ISO 14020:2000 is the international standard that sets the general principles for the development and use of environmental labels and declarations. There are three types of environmental labelling: Type I – eco-labels; Type II – self-declared environmental claims; Type III – environmental declarations.

Hence, Type I environmental labelling (eco-labels) can be defined as a mark or a logo awarded based on the fulfilment of various environmental criteria. According to International Standard Organization, the eco-labels' purpose is to educate and increase consumer awareness of environmental impacts of a product, encouraging them to buy products with lower environmental impact. Thereby, eco-labels are often a way for consumers to identify a green product (Atkinson & Rosenthal, 2014).

ISO 14024 provides the requirements for operating an ecolabelling scheme with several principles that must be fulfilled for awarding the eco-label. This standard was adopted by the Global Ecolabelling Network (GEN), the international network of ecolabelling organizations, that currently works to promote, develop and consolidate all the ecolabelling programs around the world (*GEN POSITION ON THE ISO 14024 STANDARD: Type I Environmental Labelling*, 1999).

From a marketing point of view, eco-labels can be also defined as a tool used to communicate that a product is environmentally friendly and that has socially desirable characteristics to the final consumer (Cai et al., 2017). As Rotherham (1999) wrote, eco-labels are designed to help consumers in their judgement and choice between similar products. In other words, eco-labels can help consumers to make well-informed decisions at the moment of the purchase (Stokes & M. Turri, 2015). It is a way to influence consumers to have environmentally friendly behaviors (Delmas & Lessem, 2015).

Summing up, eco-labels give information about the environmental impact of the product, both in its production and in its usage (Rotherham, 1999). It also signals various ethical qualities about products, such as fair-trade, labour practices, animal rights, environmental orientation, energy efficiency, among others (Delmas & Grant, 2014; Pancer et al., 2015).

In addition, GEN consider that eco-labels are preferable to any "green" symbols or claim statements used by manufacturers and/or services providers because the attribution of eco-labels is dependent on impartial third parties that will verify all the requirements determined according to life-cycle considerations of the product (*GEN POSITION ON THE ISO 14024 STANDARD: Type I Environmental Labelling*, 1999). As D' Souza et al. (2006) stated, this process confers credibility to the label itself since it involves an independent third-party assessment of a firm's environmental standards. Similarly, De Chiara (2016) affirmed that the perceived credibility of environmental claims is essential to build strong environmental associations. In fact, purchase intention of consumers that trust in a given environmental information that it is conveyed on the packaging is affected if their attitude towards the message is favourable (Jerzyk, 2016). In terms of credibility, there is literature showing that consumer perceived credibility of eco-labels impacts purchase intention (Cai et al., 2017; Teisl et al., 2008), even though this credibility varies according to certification agencies and domestic markets (Sønderskov & Daugbjerg, 2011). In addition, consumers use labels in their decision-making process only when they trust them (Bui, 2005; Mei et al., 2012).

Although Atkinson & Rosenthal (2014) noted that eco-labels are typically well received by consumers and generate positive perceptions of environmental friendliness (mostly for low-involvement products), a review of the existent literature indicates that the attitude towards eco-labels may vary according to several factors, such as consumer awareness of eco-labels and the demographic profile of consumers (Arslanagić, Peštek, & Kadić-Maglajlić, 2014; Cai et al., 2017; D'Souza et al., 2006; Teisl et al., 2008), as well as environmental motivations (Cai et al., 2017; Roberts & Bacon, 1997).

Lastly, according to Testa, Iraldo, Vaccari, & Ferrari (2013) eco-labels knowledge is a significant predictor of green purchasing intention. Nevertheless, sometimes eco-labels may send confusing messages to consumers, so it is important that eco-labels communicate clearly their message, specially what are the environmental attributes and benefits that they are awarding (Delmas & Lessem, 2015).

2.2.2.1 Visual and Informational Elements of Eco-Labels

As stated in the literature review about packaging communication, packaging has two main different elements: visual and informational. As Underwood et al. (2001) mentioned, visual and verbal information are important to maximize communication effectiveness at the point of purchase. Both are important for consumers to form judgements (Childers, Houston, & Heckler, 1985).

Usually in advertisements visual information attracts more attention than verbal content (Underwood et al., 2001) and the information presented in pictures is learnt quicker than the information presented in words (Underwood et al., 2001). Additionally, studies indicate that when products or brands are unfamiliar to consumers they generally prefer visual information over verbal (Townsend & Kahn, 2014). Visual information may serve to set expectations for the contents of the verbal elements (Underwood et al., 2001).

For the purpose of this thesis, eco-labels will be considered as a visual element regarding this distinction made by Silayoi & Speece (2004), but they will be studied has having also both visual and informational elements. The scope is to understand in what extent colour and claim impacts purchase intention. Along with this, it will be studied if the green colour impacts purchase intention, since literature support its importance (Cavallo & Piqueras-Fiszman, 2017; Kotler & Keller, 2009; Pancer et al., 2015; Sundar & Kellaris, 2015). Although the elements' placement is important (in this case the eco-label's placement), mostly because of

the concept of brain laterality (Silayoi & Speece, 2007; Rettie & Brewer, 2000) it will not be studied in this thesis since it isn't its purpose.

As a visual elements, the colour will be analysed since studies recognize that using colour as a cue can potentiate a strong association between a given theme/subject and a product. Research about brands logos indicate that consumers' symbolic associations are generated by a logo's shape (Becker et al., 2011; Fajardo, Zhang, & Tsiros, 2016; Jiang, Gorn, Galli, & Chattopadhyay, 2016) and colour (Fajardo et al., 2016; Madden, Hewett, & Roth, 2000). Both elements are important to shape consumers' perception of the brand (Keller, 1993), especially if it is unfamiliar to them (Magnier & Schoormans, 2017; Sundar & Kellaris, 2015). Furthermore, variations in colour influence purchase intention (Babin, Hardesty, & Suter, 2014). Spence & Velasco (2018) have studied the impact of packaging colour regarding its hue (broad colour category), brightness (amount of black/white added to the hue) and saturation (intensity of the hue).

In this case, the usage of green colour on packaging has a strong association with environmentally friendliness and orientation as well as organic or recycled products (Cavallo & Piqueras-Fiszman, 2017; Kotler & Keller, 2009; Pancer et al., 2015; Sundar & Kellaris, 2015). In general, green is connotated positively and it usually stimulates good environmental behaviors (Bock, Pandelaere, & Kenhove, 2013). This way, the presence of green in a logo convey an eco-friendly and a socially responsible message, according to Sundar & Kellaris (2015). In addition, the authors suggested that the connotative meaning of colour green is more powerful in a logo than the verbal word green usually used in branding strategy to evoke environmental responsibility.

Despite all mentioned above, it is important to understand that the colours' meaning changes regarding consumer's culture as well as through different market segments (Kotler & Keller, 2009; Madden et al., 2000; Silayoi, Pinya; Speece, 2007). However, as Spence & Velasco (2018) stated, the more abstract the concept, the easier the association of a colour with it.

As informational elements the claim written on the eco-label will be analysed in order to understand if the eco-labels' claim impacts purchase intention.

Furthermore, since Underwood et al. (2001) claimed that visual content has a higher impact on a product's attention than verbal content, visual elements of an eco-label might thus have a higher impact on purchase intention than informative elements of an eco-label.

Based on the findings described so far, the first hypotheses can be conducted:

H1a: Colour positively impacts consumer's purchase intention.

H1b: Green Colour positively impacts consumer's purchase intention.

H1c: Claim positively impacts consumer's purchase intention.

H1d: Eco-labels' green colour have a higher impact on consumer's purchase intention than eco-labels' claim on the logo.

Despite the differentiation made above, eco-label awareness will be also studied, since it is identified in literature as a key element for purchase intention (McEachern & Warnaby, 2008; Rashid, 2009; Testa et al., 2013).

2.3 Consumer Awareness of Eco-Labels

According to Banerjee & Solomon (2003), consumer awareness designates to what extent consumers know of the program's existence. The same authors argue that understanding means "how thoroughly a consumer can interpret the connection between the environmental issue, the label's meaning, and actions needed to elicit results" (Banerjee & Solomon, 2003: 109).

Despite the difficulty to promote sustainable consumption behavior (Cornelissen, Pandelaere, Warlop, & Dewitte, 2008), environmental awareness has increased since the early 1970's (Cai et al., 2017; Kilbourne & Pickett, 2008). However, Alwitt & Pitts (1996) argued that regardless of this higher awareness, there is an attitude-behavior gap, which means that the consumers' motivations to use environmental friendly product or services often conflict with their environmental concerns.

The importance of knowing the eco-labels is indicated by McEachern & Warnaby (2008) as an important factor to influence purchase intention, especially for animal welfare labelled products. In fact, Testa et al. (2013) have indicated that eco-labels knowledge is a significant predictor of green purchase intention and Rashid (2009) has referred that consumer awareness of eco-labels has a positive effect between knowledge of green products and consumer's intention to purchase.

At the same time, there are also studies demonstrating that consumers do not always understand environmentally friendly labels attached to products (Kangun & Polonsky, 1995) and that eco-label awareness doesn't influence automatically purchase intention, mostly because consumers have difficulties in associating environmental problems with products – its production and use (Leire, C., & Thidell, 2005).

Taking into account what's been said above, the second hypothesis can be drawn:

H2: Awareness of eco-labels positively impacts consumer's purchase intention.

2.4 Conceptual Framework

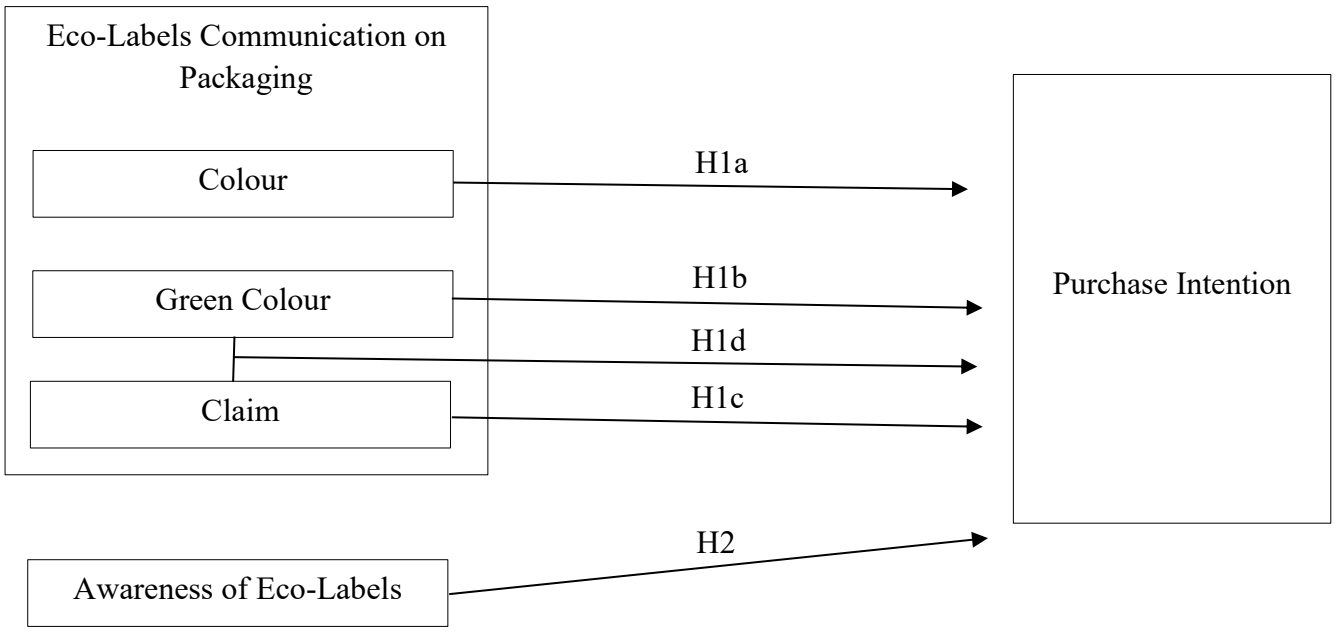


Figure 1: Conceptual Framework

CHAPTER 3: METHODOLOGY

The following chapter presents and justifies the methodology of this thesis. It explains how the research questions are going to be studied and shows how the hypotheses from the previous chapter are addressed.

In the first place, the research approach will be defined, describing how objectives will be achieved, followed by a summary of the primary and the secondary data used for the study.

Lastly, the approach of primary data collection will be described and explained in detail, as well as the measurement and data analysis techniques used.

3.1 Research Approach

The eco-labels analyzed in this thesis were selected from the website Eco Label Index[1] where there is a list of the 37 eco-labels in Portugal. Among those, the eco-labels chosen were those that are awarded to food products regarding its production and the product itself. The labels awarded to sustainable packaging were not considered, since sustainable and environmentally friendly packaging isn't the scope of this thesis. To make clear, eco-labels are awarded regarding different areas, fulfilling different specific requirements of each area, reason why a given eco-label aiming to reward the environmentally friendly practices of production is not the same that communicates environmentally friendly practices. Thus, the investigation is rather focused only on food products and its production.

The objective of this study is to understand to what extent the colour and claim of eco-labels affect purchase intention by reviewing literature about the subjects related to this thesis. Plus, the impact of eco-labels's awareness on purchase intention will be also measured. This way, the eco-labels selected to conduct this study are merely a means to arrive at conclusions, since it is not intended to study exactly the impact of each logo on the purchase intention, but rather to understand the impact of eco-labels' colour, claim, and awareness in general.

To answer the hypotheses stated previously on chapter two, a quantitative approach was applied to investigate whether the hypotheses were confirmed or rejected. Thereafter, an online survey was designed and conducted, followed by an analysis of the data collected.

[1] http://www.ecolabelindex.com/ecolabels/?st=country,pt, visited on 05/06/2018.

3.2 Secondary Data

Secondary data was used largely in form of articles from top journals and publications. Other information sources were used, such as websites and reports from the International Organization for Standardization and from The Global Ecolabelling Network (*GEN POSITION ON THE ISO 14024 STANDARD: Type I Environmental Labelling*, 1999; Secretariat, 2012).

This kind of data was fundamental to develop the previous chapter – the literature review – but also to build up the methodology chapter and to contribute for the overall thesis, since it is essential to support concepts, research questions and hypotheses, conceptual model and conclusions.

3.3 Primary Data

To answer this thesis' hypotheses, primary data was collected through an online survey questionnaire. To better meet the research objetives, a pilot study was conducted, followed by the main study. The survey questionnaire distributed on the pilot study was similar to the main study. With the feedback obtained on the first study it was possible to make improvements to the main test survey questionnaire.

3.3.1 Pilot Study: Survey Questionnaire

Between the 17th January 2019 and the 19th January 2019 the pilot online survey questionnaire has been spread via social media channels and email.

In total 14 responses had been collected but due to exclusions made accordingly to the control question present on the survey, only 12 responses were valid.

Since all the Cronbach's alpha values were higher than 0.7, the survey was considered reliable and thus had been taken for further analysis.

However, participants gave valuable feedback in order to clarify some aspects of the survey questions. This allowed the final questionnaire to be clearer.

3.3.2 Main Study: Survey Questionnaire

3.3.2.1 Data Collection

Between the 20th February 2019 and the 6th March 2019 an online survey questionnaire has been spread via social media channels and email.

The survey begins with a description of the study, followed by a control question to guarantee that all respondents are people who bought food products during the last year. Respondents who do not fulfil this condition were automatically excluded.

The survey was launched in English so that a large amount of people could understand it since the target of this survey wasn't based on nationality or/and language.

Data was collected through non-probability sampling techniques, convenience and snowball sampling, since it was spread essentially via my social media channels and e-mail. However, the techniques used were appropriated for this thesis because as Saunders et al. (2008) stated, non-probability sampling is a reasonable technique whenever the researcher has several resource and time constrains and the population is hard to specify.

In total, 350 fully completed responses were collected, but only 345 were valid.

3.3.2.2 Measurement / Indicators

First of all, a control question was asked "Did you buy any food product during the last year?".

The survey comprised twelve different blocks of questions regarding each eco-label in study (see Figure 2). Those blocks were randomly assigned to the respondents. Each block included four main groups of questions.

Participants' familiarity with the eco-label was checked by questioning participants "How familiar are you with this logo?", with a 7-point scale anchored by "Very Familiar" (1) and "Very Unfamiliar" (7) (Bickart & Ruth, 2012).

Secondly, to understand how green colour impacts consumer perception of logo and its intention to buy a certain product, a question was created. Participants were asked to answer in a 7-point likert scale to what extent they agree with the following sentence: "The green colour is well represented in the following logo".

To measure consumer perception of colour and claim, a construct from Sundar & Kellaris (2015) was adapted. Accordingly, it was asked how would participants rate the colour and the claim of the logo shown regarding the following items: eco-friendly (anchored: 1 = ‘‘not very eco-friendly,’’ 7 = ‘‘very eco-friendly’’), warm (anchored: 1 = ‘‘cold,’’ 7 = ‘‘warm’’), like (anchored: 1 = ‘‘dislike,’’ 7 = ‘‘like’’), pleasant (anchored: 1 = ‘‘not very pleasant,’’ 7 = ‘‘pleasant’’), strong (anchored: 1 = ‘‘weak,’’ 7 = ‘‘strong’’), and positive (anchored: 1 = ‘‘negative,’’ 7 = ‘‘positive’’). To answer this questions, participants were elucidated on what a claim is, since it was identified in the pilot test, through the participants' feedback, the need to define what is a claim.

Figure 2: Eco-labels presented to respondents

Then, adapted from Sundar & Kellaris (2015), participants were asked about ‘‘How eco-friendly do you suppose a product is if it has in its packaging this eco-label?”. All measurements were rated on 7-point scale, (1) Not at all Eco-friendly to (7) Very Eco-friendly.

Furthermore, respondents were asked about logo attractiveness using a construct from Magnier & Schoormans (2017) used for packaging attractiveness. It was assessed on four

semantic differential scales ('poorlooking/nice-looking', 'displeasing/pleasing', 'unattractive/attractive', 'ugly/beautiful').

In order to assess purchase intention a construct tested previously by Spears and Singh (2004) was used. According to them, purchase intention can be measured at a 7-point semantic differential scale, asking to respondents their probability of buying the product ("I would never buy it – I would definitely buy it", "I definitely do not intend to buy it – I definitely intend to buy it" and "I have very low purchase interest – I have very high purchase interest").

After the block of questions regarding the eco-label it-self, respondents were all asked about the same questions.

Firstly, to assess participants' awareness of eco-labels they were asked to tell on a 7-point scale in what extent they agree with the following sentences: I think I have heard of eco-labels; I know eco-labels; I am able to distinguish between products with eco-labels and without eco-labels. This construct was adapted from Kim & Kim, (2016).

To complement consumer awareness of eco-labels measurement, the consumer awareness model used by Silva, Bioto, Efraim, & Queiroz (2017) was also applied and adapted. Participants had to answer yes/no to the following questions: "Do you consider important to know the origin of the raw material used to manufacture the food product you eat?"; "Are you interested in certified products?"; "Do you know that eco-labels are used in food products?"; "Have you ever eat food products with eco-labels?".

At last, demographic questions were asked.

	Construct	Scale	# of Items	Source
	Familiarity with Eco-labels	7-Point Likert Differential Scale	1	(Bickart & Ruth, 2012)
Eco-Label comunication packing	Green colour	7-Point Likert Differential Scale	1	Own development base on Sundar & Kellaris (2015)
	Visual Elements Stimuli	7-Point Semantic Differential Scale	6	(Sundar & Kellaris, 2015)
	Informational Elements Stimuli	7-Point Semantic Differential Scale	6	(Sundar & Kellaris, 2015)
	Product Eco-Friendliness	7-Point Semantic Differential Scale	1	(Sundar & Kellaris, 2015)
	Logo Attractiveness	Dichotomous Scale	4	(Magnier & Schoormans, 2017)
	Purchase Intention	7-Point Semantic Differential Scale	6	Spears and Singh (2004)
	Awareness of Eco-labels	7-Point Likert Differential Scale	3	Kim & Kim (2016)
	Awareness of Eco-labels	Dicothomous Scale	4	Silva, Bioto, Efraim, & Queiroz (2017)

Table 1: Measurement Model

3.3.2.3 Data Analysis

All quantitative data collected was analyzed using SPSS version 25.0.

In order to compare the packaging information in the eco-labels shown on the survey questionnaire, paired t test was used to identify if there is more informational content on the eco-label than colour, or if the information carried by the eco-label have both characteristics.

Correlation analysis made through linear regression models were conducted in order to analyze the impact on purchase intention of the main predictors: colour, claim and awareness of eco-labels. The green colour on the eco-label was highly related with the emotions carried by the 6 items of colour (see Appendix 1, Block 2) which created a multicollinearity problem

in the regression model. Thus, an interaction variable was produced resulting from the product of green by eco-friendly colour. So, six linear regression models were estimated by OLS (Ordinary Least Squares is the estimation method of parameters in the regression models). The first four were created using only simple linear regression models with purchase intention as the dependent variable and each of the important variables in study (green colour, colour, claim and awareness of eco-labels) as predictors. The fifth model was estimated using purchase intention as dependent variable and all the previous variables as predictors. However, due to the high relation between green and colour, an interaction variable was used. Finally, the last model introduced, besides the previous variables, used all the demographic variables and familiarity with eco-label as predictors.

CHAPTER 4: RESULTS AND DISCUSSION

The next chapter is about the main results obtained in the data analysis described previously.

First, the research sample will be analyzed and characterized, followed by a validation of the online survey and a description of the results obtained from the hypotheses testing. To close this chapter, a connection is made between the results presented and the research questions.

To facilitate the interpretation of the data presented in this chapter, the figure below assigns a number to each logo used on the study. The eco-labels analyzed were selected among the 37 eco-labels present in Portugal. The ones that were selected were those that are awarded to food products regarding its production and the product itself.

This way, in the following tables of this chapter will only be mentioned the number, being always referred to the logo attributed below.

Figure 3: Eco-labels' numbering

4.1 Sample characterization

The online survey gathered 350 fully completed answers, being the sample size N=350. However, 5 respondents (1,4%) where excluded since they answered in the control question that they did not make purchases in the last year. Moreover, it was possible to verify that the sample distribution by eco-label is almost 1/12 of the total sample which can be seen by Table 2. Here, it is important to point out that all the respondents were randomly allocated to the twelve eco-labels, which ensured that all groups were homogenous.

Eco-label	Number of Respondents	Percentage
1	28	8,1%
2	30	8,7%
3	27	7,8%
4	30	8.7%
5	29	8,4%
6	30	8.7%
7	29	8,4%
8	26	7,5%
9	28	8,1%
10	29	8,4%
11	29	8,4%
12	30	8,7%

Table 2: Distribution of Respondents by Eco-label

The demographic characteristics of the 345 respondents are presented in the Table 3 below, where it is possible to see the sample characterization by gender, age, nationality, level of education and income:

		Total
Gender	Female	69%
	Male	31%
Age	Under 12	0,3%
	Between 18-24	47,2%
	Between 25-34	29,0%
	Between 35-44	11,0%
	Between 45-54	8,1%
	Between 55-64	4,1%
	More than 65	0,3%
Nationality	Portuguese	92,8%
	English	1,4%
	Other	5,8%
Level of Education	Less than High School	2,3%
	High School or similar	14,2%
	Bachelor	37,1%
	Master / MBA or similar	46,1%
	Doctoral / PhD	0,3%
Income	Less than €10.000	36,8%
	€10.000 to €19.999	35,7%
	€20.000 to €29.999	14,2%
	€30.000 to €39.999	8,7%
	€40.000 to €49.999	2,3%
	€50.000 to €59.999	2,3%

Table 3: Characteristics of Respondents in the Demographic Variables

Due to non-probability sampling, the large majority of respondents were Portuguese, aged between 18 and 24 and had an yearly income smaller than €10.000. Additionally, 69% of the respondents were female and 31% were male. Since the population of the respondents was not demographically restricted, the sample can't be considered representative.

To analyze the consumers' perception of eco-labels, a descriptive statistic of the questions present in Table 4 was made. Below, it is possible to see that more than half of the respondents think they heard of eco-labels (mean of 5,81 on a 1-7 likert scale) and know eco-labels (mean of 5,16 on a 1-7 likert scale). Furthermore, the majority of respondents consider to be able to distinguish between products with eco-labels and without them, being the mean 4,94 on a 1-7 likert scale.

Question	Mean	Standard deviation	Mode
"I think I have heard of eco-labels."	5,81	1,26	Agree (35,9%)
"I know eco-labels."	5,16	1,44	Agree (29,0%)
"I am able to distinguish between products with eco-labels and without eco-labels."	4,94	1,55	Agree (27,8%)

Table 4: Characterization of Consumers' Perception of Eco-labels. 7-items likert scale

To complement the sample characterization, a descriptive statistic of the questions "Do you consider important to know the origin of the raw material used to manufacture the food product you eat?"; "Are you interested in certified products?"; "Do you know that eco-labels are used in food products?" and "Have you ever eat food products with eco-labels?" was made. Results can be seen in Table 5. Overall, the majority of respondents consider important to know the origin of the raw material usaed to manufacture the food products they eat, are interested in certified products, knows that eco-labels are used in food products and already have ate food products with eco-labels.

Question	Mode
"Do you consider important to know the origin of the raw material used to manufacture the food product you eat?"	Yes (91,3%)
"Are you interested in certified products?"	Yes (90,1%)
"Do you know that eco-labels are used in food products?"	Yes (79,7%)
"Have you ever eat food products with eco-labels?"	Yes (77,1%)

Table 5: Characterization of Consumers Awareness of Eco-labels. Dichotomus Scale.

4.2 Measure reliability

Even though all items used in the survey were approved by previous literature and by the pilot test, the reliability of all constructs with more than 1 item used among this sample was checked.

Cronbach's alpha is a measure usually used to verify the internal consistency of a construct answered in a likert scale and it is pointed out as the most important coefficient to measure accuracy (Maroco, 2010). The value of the coefficient allow us to verify the homogeneity of the constructs. The values above 0,70 show a satisfactory consistence.

Items 2, 3 and 5 of Purchase Intention question were recoded to a positive point of view by taking the difference of the actual answer to eight.

Construct	Number of Items	By Eco-label	Cronbach's α	Cronbach's α Total
Colour	6 items	1	0,895	0,863
		2	0,872	
		3	0,673	
		4	0,886	
		5	0,756	
		6	0,755	
		7	0,768	
		8	0,802	
		9	0,945	
		10	0,901	
		11	0,887	
		12	0,721	
Claim	6 items	1	0,904	0,887
		2	0,752	
		3	0,886	
		4	0,912	
		5	0,875	
		6	0,898	
		7	0,769	

		8	0,867	
		9	0,946	
		10	0,921	
		11	0,860	
		12	0,649	
Construct	**Number of Items**	**By Eco-label**	**Cronbach's α**	**Cronbach's α Total**
Purchase Intention	6 items	1	0,814	0,869
		2	0,844	
		3	0,890	
		4	0,837	
		5	0,893	
		6	0,732	
		7	0,826	
		8	0,869	
		9	0,910	
		10	0,910	
		11	0,885	
		12	0,756	

Table 6: Cronbach´s Alpha by Eco-label and Total

Construct	Number of Items	Cronbach's α
Awareness	3 items	0,848

Table 7: Cronbach's Alpha of Awareness of Eco-labels

In general and by eco-label, all constructs have good validity since Cronbach's alpha is above 0,70. So, the data can be used to investigate the hypotheses of the present study.

4.3 Variables in Study

To use as regressors in the regression models, the following variables were created as the mean of the answers in each item: purchase intention, colour, claim and awareness of eco-labels. Demographic variables (nationality, education level and income) were recoded into dummy variables (see Table 8).

		Variable	Description
Dependent Variable		Purchase Intention (PI)	Composite measure of the 6 items, taking the mean of the answers in each item, Metric
Independent Variables	**Predictors**	Green (G)	Item: "The green colour is well represented in the logo" in a Likert 1 to 7 scale, Interval
		Colour (CO)	Composite measure of the 6 items, taking the mean of the answers in each item, Metric
		Claim (CL)	Composite measure of the 6 items, taking the mean of the answers in each item, Metric
		Green Colour (GCO)	Product of Green by ecofriendly colour, Metric
		Awareness of Eco-labels (AWAR)	Composite measure of the 3 items, taking the mean of the answers in each item, Metric

	Control Variables	Gender (GENDER)	0 – female; 1 – male, Dummy
		Nationality (NAT)	0-Portuguese; 1- otherwise, Dummy
		Age (AGE)	0- Under 24; 1- Above 25, Dummy
		Education level (EDUC)	0-Under High School; 1 – Above or equal to Bachelor, Dummy
		Income (INC)	0 – under 30000; 1- above 30000, Dummy
		Familiarity with Eco-labels	Item: "How familiar are you with this logo?" in a Likert 1 to 7 scale, Interval

Table 8: *Variables in Study*

4.4 Results from the Hypotheses Testing

4.4.1 Differences of colour and claim by Eco-label

A paired-sample t-test was performed to check if in each eco-label shown there was "more colour than packaging information". Overall, the results indicate that the majority of eco-labels were considered by respondents with equal colour and claim or more claim than colour (see Table 9).

Below, it is also indicated the familiarity of participants with the eco-labels (remembering, each participant viewed an eco-label that was assigned to him randomly), being most of the eco-labels "very unfamiliar".

Eco-label	**Colour (mean, std dev)**	**Claim (mean, std dev)**	**t-test (sig)**	**Claim *vs* Colour**	**Familiarity (Mode)**
1	4,185 (1,650)	5,137 (1,501)	-3,553 (0,001)	More Claim	Very Unfamiliar
2	4,628 (1,144)	4,889 (0,912)	-1,695 (0,101)	Equal	Very Unfamiliar

3	3,605 (1,150)	4,191 (1,456)	-3,011 (0,006)	More Claim	Very Unfamiliar
4	4,883 (1,161)	5,061 (1,358)	-1,295 (0,205)	Equal	Very Unfamiliar
5	5,282 (0,904)	5,213 (1,218)	0,412 (0,684)	Equal	Very Familiar
6	5,989 (0,745)	5,206 (1,089)	4,662 (0,000)	More Colour	Very Unfamiliar
7	5,259 (0,806)	4,453 (0,922)	3,894 (0,001)	More Colour	Very Familiar
8	5,532 (0,785)	5,135 (0,915)	2,780 (0,010)	More Colour	Very Unfamiliar
9	4,310 (1,783)	4,571 (1,823)	-2,467 (0,020)	More Claim	Very Unfamiliar
10	4,621 (1,643)	4,563 (1,630)	0,780 (0,442)	Equal	Very Unfamiliar
11	4,489 (1,467)	4,943 (1,430)	-3,932 (0,001)	More Claim	Very Unfamiliar
12	4,539 (0,924)	4,644 (0,917)	-0,712 (0,482)	Equal	Very Unfamiliar

Table 9: Paired t-test between Colour and Claim in each Eco-label

4.4.2 The Impact of Colour, Claim and Awarenes of Eco-labels on Purchase Intention

The Hypotheses H1a, H1b, H1c and H2 propose that colour, green colour, claim and awareness of eco-labels (respectively) positively impacts purchase intention. In order to identify the impact of these predictors, several regression models were built.

Firstly, Pearson's correlations between predictors and purchase intention were made (see Table 10).

Variables	Green Colour by Colour	Colour	Claim	Awareness	Green Colour
Green Colour by Colour	1				
Colour	,557***	1			
Claim	,290***	,733***	1		
Awareness	,133*	,134*	,081	1	
Green Colour	,799***	,741***	,437***	,144**	1
Purchase Intention	,257***	,553***	,603***	,270***	,415***

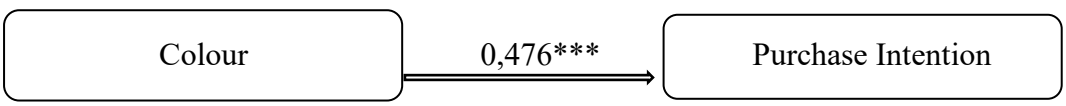
*** Significant at p<0,1% , ** Significant at p<1% , * Significant at p<5%

Table 10: Pearson Correlations between Predictors and Purchase Intent

Analyzing Table 10, it is concluded that claim and colour are the most related predictors with purchase intention. However, 'colour and claim' and 'green and colour' are highly related, which could create a multicolinearity problem in a regression model if put together.

H1a: Colour positively impacts consumer's purchase intention.

The linear regression model 1 ($\widehat{PI}_i = \beta_1 + \beta_2 CO_i$ i=1,...,345), where PI represents purchase Intents and CO the colour in Eco-Label, may answer the hypothesis if the slope of the model β_2 is positive.

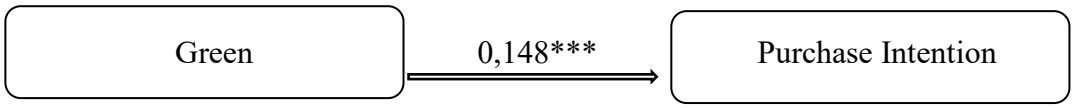


*** Significant at p<0,1% , ** Significant at p<1% , * Significant at p<5%

Based on the value present above, it is possible to say that 30,5% of the purchase intention variation can be explained by the colour of the eco-labels and it has a significant positive impact on purchase intention. Thus, ***H1a is verified***.

H1b: Green Colour positively impacts consumer's purchase intention.

The linear regression model 2 ($\widehat{PI}_i = \beta_1 + \beta_2 G_i$ i=1,...,345), where PI represents purchase intention and G the intensity of green colour present on the eco-label, may answer the hypothesis if the slope of the model β_2 is positive.

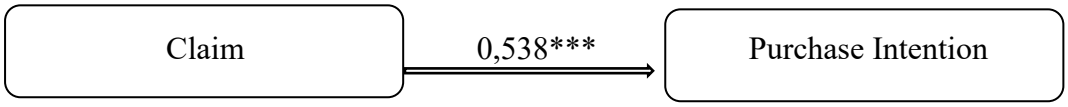


*** Significant at p<0,1% , ** Significant at p<1% , * Significant at p<5%

As explained above, 6,6% of the purchase intention variation can be explained by green colour on eco-labels. Similar to model 1, this model 2 reveals that green colour has a significant positive impact on purchase intention. Therefore, ***H1b is verified***.

H1c: Claim positively impacts consumer's purchase intention.

The linear regression model 3 ($\widehat{PI}_i = \beta_1 + \beta_2 CL_i$ i=1,...,345), where PI represents purchase intention and CL the claim present on the eco-label, may answer the hypothesis if the slope of the model β_2 is positive.

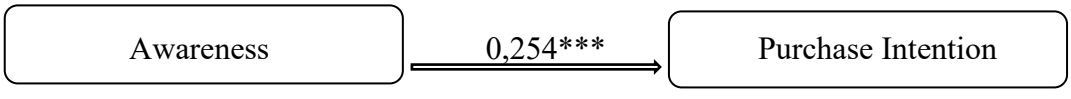


*** Significant at p<0,1% , ** Significant at p<1% , * Significant at p<5%

Once more, it was verified that 36,4% of the purchase intention variation can be explained by claim. In fact, claim has a significant positive impact on purchase intention (***H1c is verified***).

H2: Awareness positively impacts consumer's purchase intention

The linear regression model 4 ($\widehat{PI}_i = \beta_1 + \beta_2 AWE_i$ i=1,...,345), where PI represents purchase intention and AWE is the consumers' awareness of eco-labels, may answer the hypothesis if the slope of the model β_2 is positive.



*** Significant at p<0,1% , ** Significant at p<1% , * Significant at p<5%

Based on the value present above, it is possible to say that 7,3% of the purchase intention variation can be explained by consumers' awareness of eco-labels. Therefore, awareness of eco-labels has a significant positive impact in purchase intention, and thus ***H2 is verified***. This result is in agreement with what the existing literature indicates. To recall what was mentioned in the literature review, Testa et al. (2013) have indicated that eco-labels knowledge is a significant predictor of green purchasing intention. Other findings present in the literature review reveal that the attitude towards eco-labels may vary according to several factors, such as consumer awareness of eco-labels.

Since green colour and the feelings carried by the items of colour (eco-friendliness, warmness, likeliness, pleasantness, strength, positiveness) are highly related, this means that there is an interaction between the two variables. Therefore, it was created a new variable resulting from the product of green colour by colour (GCO).

Consider now the linear regression model 5 (introducing the new variable created above GCO) and linear regression model 6 (introducing demographic variables and familiarity with eco-labels):

Model 5) $\widehat{PI_i} = \beta_1 + \beta_2 GCO_i + \beta_3 CL_i + \beta_4 AWE_i$ i=1,...,345,

Model 6) $\widehat{PI_i} = \beta_1 + \beta_2 GCO_i + \beta_3 CL_i + \beta_4 AWE_i + \beta_5 GENDER_i + \beta_6 NAT_i + \beta_7 AGE_i + \beta_8 EDUC_i + \beta_9 INC_i + \beta_{10} FAM_i$ i=1,...,345,

Through model 5, it is possible to concluded that claim is the most important factor to explain purchase intention, followed by awareness of eco-labels. Yet, by model 6, familiarity with the eco-label has a significant positive impact on purchase intention, although any of other demographic variables has a significant impact on purchase intention.

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Constant	2,572*** (0,193)	3,134*** (0,354)	2,243*** (0,193)	3,519*** (0,263)	1,165*** (0,262)	1,314*** (0,346)
Colour (CO)	0,476*** (0,039)					

Green Colour (G)		0,148*** (0,030)				
Interaction Green by Colour (GCO)					0,007*** (0,002)	0,008*** (0,002)
Claim (CL)			0,538*** (0,038)		0,461*** (0,040)	0,450*** (0,041)
Awareness (AWE)				0,254*** (0,049)	0,193*** (0,039)	0,178*** (0,040)
Gender (GENDER)						-0,140 (0,114)
Nationality (NAT)						0,078 (0,223)
Age (AGE)						0,082 (0,100)
Education Level (EDUC)						-0,151 (0,135)
Income (INC)						0,114 (0,177)
Familiarity (FAM)						0,282** (0,136)
R Squared	0,066	0,305	0,364	0,073	0,434	0,447
Adjusted R Squared	0,063	0,303	0,362	0,070	0,429	0,432
F statistic	24,187***	150,839***	196,011***	27,066***	86,996***	30,034***

Durbin Watson Test Statistic	1,849	2,018	2,070	1,960	2,191	2,245
Breusch-Pagan Test (sig)	0,169	0,253	0,362	0,096	0,075	0,058
Normality of residuals (sig)	0,074	0,086	0,098	0,087	0,077	0,051

Table 11: Linear Regression Models' Table

To conclude, it can be said that the most important factor to explain purchase intention is the claim, followed by the awareness of eco-labels and after by green eco-friendly colour (see Appendix 2, Model 5). Therefore, ***H1d is not verified.***

Conditions of the OLS method were verified through Durbin Watson Test (no auto correlation of residuals), Breusch-Pagan Test (homocedasticity of residuals) and Normality of Residuals test, to assure that estimators of the models are BLUE (Best Linear Unbiased Estimators).

4.4.3 Hypotheses Testing Overview

Hypothesis	Description	Result
H1a	Colour positively impacts consumer's purchase intention.	Significant and validated.
H1b	Green Colour positively impacts consumer's purchase intention.	Significant and validated.
H1c	Claim positively impacts consumer's purchase intention.	Significant and validated.

H1d	Eco-labels' green colour have a higher impact on consumer's purchase intention than eco-labels' claim on the logo.	Not validaded, on the contrary claim is more important.
H2	Awareness of eco-labels positively impacts consumer's purchase intention.	Significant and validated.

Table 12: Results from Hypotheses Testing

CHAPTER 5: CONCLUSIONS AND LIMITATIONS

The following chapter summarizes the main findings of the study, draws conclusions, identify managerial and academic implications, recognize this thesis limitations and advances with suggestions for future research.

5.1 Main Findings & Conclusions

The goal of this thesis was to understand the impact of colour, claim and green colour (as elements of eco-label communication on packaging) on purchase intention. Other objective of this study was to understands the impact of eco-label awareness on purchase intention.

Against what literature says, the results of this study reveal that claim is the eco-label element that impacts more purchase intention. Secondly, awareness of eco-labels is a significant predictor of purchase intention. Then, the third element that impacts more purchase intention is the green colour whenever associated with more emotional and environmental concepts. Despite the results about the colour and claim, it is important to invest in consumer awareness of eco-labels, the second most important factor of this thesis' conceptual model. Testa et al. (2013) have indicated that eco-labels knowledge is a significant predictor of green purchasing intention and Rashid (2009) has referred that consumer awareness of eco-labels has a positive effect between knowledge of green products and consumer's intention to purchase.

Furthermore, demographics don't have relevance to explain purchase intention. Although, familiarity with the eco-label has a positive impact in purchase intention, which is somehow related to eco-label awareness.

5.2 Managerial / Academic Implications

This study contributes to the existing literature, helping to understand the most important elements when creating an eco-label: colour or claim. As literature review demonstrate, the use of eco-labels is a way to communicate the environmentally friendly dimension of the product to consumers (Atkinson & Rosenthal, 2014; Cai et al., 2017) and thus, since sometimes eco-labels may send confusing messages to consumers, it is important that eco-labels communicate clearly their message, specially what are the environmental attributes and benefits that they are awarding (Delmas & Lessem, 2015). To do so, it is important to know what elements have more impact on consumers. This study offers a perspective on that.

In terms of managerial implications, the results and conclusions of this study are important, particularly because packaging can have a strong impact on sales (Twedt, 1968), since it is a critical factor in communication at the point of sale (Silayoi & Speece, 2007). In addition, the results of this thesis prove that the claim and eco-label awareness are the elements that influence more consumers regarding their purchase intention. In fact, existing literature already said that these elements had an impact. However, this study goes somewhat against what the literature says, since it places the claim as the most influential element, rather than colour.

Overall, this study could be a good basis for the construction of future eco-labels, guiding companies and managers about the most influential elements of eco-labels. Regarding the results, companies should have a clear claim, since it is the most important element of eco-label communication, followed by an investment on awareness of eco-labels. Here, it could be interesting to associate the claim also with this feelings in order to convey a clear and direct message (note that green eco-friendly colour is the third most important factor of this thesis' conceptual model). Despite all this, it is recommended to apply this study to a more representative sample, both in terms of age, gender, academic degree and income.

To conclude, research indicates that adding an eco-label to a product generates positive reactions from consumers, especially in low-involvement products (Atkinson & Rosenthal, 2014), being an effective lead to purchase intention (Mei et al., 2012; Rashid, 2009). Therefore, this study not only reinforces that importance, but also offers a perspective on the most important elements when communicating a eco-label on packaging.

5.3 Limitations and Further Research

As fields of study, green marketing, eco-labels and other topics related to environmental friendly purchases still leaves a lot of space for further research.

The limitations of this studies are mainly associated with the size and characteristics of the sample, which cannot be considered as representative, not only because of its relative low size, but also because of non-probability sampling that led to a random distribution of demographics. This way, for further research, the study could be repeated with a more representative sample and a larger number of respondents. Another limitation is the fact that most of eco-labels used in this study were considered by respondents as having more claim or

equal claim than colour. Maybe that's could be a reason why claim is more important than colour, towards purchase intention.

Additionally, it is also important to remember what has been mentioned previously on this thesis: sometimes there is a gap between intention and behavior. As Hawkins, Farrington, & Catalano (1998) clarify, this gap means that when consumers say they want to buy something, they can be expressing a self-ideal or the ideal they think society accept instead of expressing their true intention. Consequently, it is not recommended to draw direct conclusions about purchase behavior from the findings of this study.

Take into account the literature review made and the results of the present thesis, it could be interesting to study potential variables that can affect the conceptual framework of this thesis. For example, Cai et al. (2017) and Roberts & Bacon (1997) have identified environmental motivations as having impact on purchase intention. Therefore, it is likely that purchase intention can be also impacted by these variables, along with the ones studied in this thesis.

Furthermore, it could be interesting to study other eco-labels rather than the ones awarded to food products. Perhaps, other eco-labels would be more familiar to consumers and might influence differently purchase intention.

Summarizing, it is important to be aware of all these limitations and to consider them as recommendations for further research.

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APPENDICES

Appendix 1: Main Survey Questionnaire

Block 1: Control Question

Did you buy any food product during the last year?

- Yes
- No

Block 2: Question related to the eco-label randomly assigned (12 different blocks, each with a different eco-label)

How familiar are you with this logo?

	Very Unfamiliar	Moderately Unfamiliar	Slightly Unfamiliar	Neither Unfamiliar nor Familiar	Slightly Familiar	Moderately Familiar	Very Familiar
	○	○	○	○	○	○	○

Please indicate your level of agreement to the following statement:

The green colour is well represented in the following logo.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree
	○	○	○	○	○	○	○

How would you rate the colour and the claim of the following logo in terms of eco-friendliness?

To answer this question, consider claim as the verbal elements of the logo (e.g. words and quotes).

	Not at all Eco-friendly	Moderatly Not Eco-friendly	Slightly Not Eco-friendly	Neither Eco-friendly nor Not Eco-friendly	Slightly Eco-friendly	Moderatly Eco-friendly	Very Eco-friendly
Colour	○	○	○	○	○	○	○
Claim	○	○	○	○	○	○	○

How would you rate the colour and the claim of the following logo in terms of warmness?

To answer this question, consider claim as the verbal elements of the logo (e.g. words and quotes).

	Cold	Moderatly Cold	Slightly Cold	Neither Warm nor Cold	Slightly Warm	Moderalty Warm	Warm
Colour	○	○	○	○	○	○	○
Claim	○	○	○	○	○	○	○

X

Do you like the colour and the claim of the following logo?

To answer this question, consider claim as the verbal elements of the logo (e.g. words and quotes).

	Dislike	Moderately Dislike	Slightly Dislike	Neither Dislike nor Like	Slightly Like	Moderately Like	Like
Colour	O	O	O	O	O	O	O
Claim	O	O	O	O	O	O	O

How would you rate the colour and the claim of the following logo in terms of pleasantness?

To answer this question, consider claim as the verbal elements of the logo (e.g. words and quotes).

	Not Very Pleasant	Moderately Not Very Pleasant	Slightly Not Very Pleasant	Neither Not Very Pleasant nor Pleasant	Slightly Pleasant	Moderately Pleasant	Pleasant
Colour	O	O	O	O	O	O	O
Claim	O	O	O	O	O	O	O

How would you rate the colour and the claim of the following logo in terms of strength?

To answer this question, consider claim as the verbal elements of the logo (e.g. words and quotes).

	Weak	Moderately Weak	Slightly Weak	Neither Weak nor Strong	Slightly Strong	Moderately Strong	Strong
Colour	O	O	O	O	O	O	O
Claim	O	O	O	O	O	O	O

How would you rate the colour and the claim of the following logo in terms of positiveness?

To answer this question, consider claim as the verbal elements of the logo (e.g. words and quotes).

	Negative	Moderately Negative	Slightly Negative	Neither Negative nor Positive	Slightly Positive	Moderately Positive	Positive
Colour	O	O	O	O	O	O	O
Claim	O	O	O	O	O	O	O

How eco-friendly do you suppose a product is if it has in its packaging the logo presented below?

	Not at all Very Eco-friendly	Moderately Not Eco-friendly	Slightly Not Eco-friendly	Neither Not Eco-friendly nor Eco-friendly	Slightly Eco-friendly	Moderately Eco-friendly	Very Eco-friendly
	○	○	○	○	○	○	○

Please, select the option that describes better the following logo.

Poorlooking	Nice-looking
○	○

Please, select the option that describes better the following logo.

Displeasing	Pleasing
○	○

Please, select the option that describes better the following logo.

Unattractive	Attractive
○	○

Please, select the option that describes better the following logo.

Ugly	Beautiful
○	○

Imagine you are standing in front of a food product shelf of a supermarket and you need to choose a food product. You find a product whose packaging displays the following logo.

Please indicate your level of agreement to the following statements regarding the situation presented.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree
I would definitely buy it.	○	○	○	○	○	○	○
I would never buy it .	○	○	○	○	○	○	○
I definitely do not intend to buy it .	○	○	○	○	○	○	○
I definitely intend to buy it.	○	○	○	○	○	○	○
I have very low purchase interest.	○	○	○	○	○	○	○
I have very high purchase interest.	○	○	○	○	○	○	○

Block 3: Common questions to all respondents

Please indicate in what extent do you agree with the following sentences.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree
I think I have heard of eco-labels.	○	○	○	○	○	○	○
I know eco-labels.	○	○	○	○	○	○	○
I am able to distinguish between products with eco-labels and without eco-labels.	○	○	○	○	○	○	○

Please answer to the following questions.

	Yes	No
Do you consider important to know the origin of the raw material used to manufacture the food product you eat?	O	O
Are you interested in certified products?	O	O
Do you know that eco-labels are used in food products?	O	O
Have you ever eat food products with eco-labels?	O	O

Block 4: Common questions to all respondents - Demographics

What is your age?

- Under 12 years old
- 13-17 years old
- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55-64 years old
- 65-74 years old
- 75 years old or older

What is your gender?

- Male
- Female

What is your nationality?

- Portuguese
- English
- French
- Italian
- Spanish
- Other

What is the highest education level you received?

- Less than high school degree
- High school graduate or similar
- Bachelor degree
- Master degree/MBA or similar
- Doctoral degree/ PhD

Appendix 2: Regressions' Outputs

Model 1

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,553[a]	,305	,303	,97803	2,018

a. Predictors: (Constant), Color (composite measure based on the mean of the 6 items of colour)

b. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	144,283	1	144,283	150,839	,000[b]
	Residual	328,091	343	,957		
	Total	472,374	344			

a. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

b. Predictors: (Constant), Colour (composite measure based on the mean of the 6 items of colour)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	2,572	,193		13,338	,000		

	Colour (composite measure based on the mean of the 6 items of colour)	,476	,039	,553	12,282	,000	1,000	1,000

a. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

Model 2

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,257[a]	,066	,063	1,13422	1,849

a. Predictors: (Constant), Q1.2_1Please indicate your level of agreement to the following statement:The green colour is well represented in the following logo. - 1

b. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31,116	1	31,116	24,187	,000[b]
	Residual	441,257	343	1,286		
	Total	472,374	344			

a. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

b. Predictors: (Constant), Q1.2_1Please indicate your level of agreement to the following statement:The green colour is well represented in the following logo. - 1

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	3,134	,354		8,846	,000		
	Q1.2_1Please indicate your level of agreement to the following statement:The green colour is well represented in the following logo. - 1	,148	,030	,257	4,918	,000	1,000	1,000

a. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

Model 3

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,603[a]	,364	,362	,93615	2,070

a. Predictors: (Constant), Claim (composite measure based on the mean of 6 items of claim)

b. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	171,778	1	171,778	196,011	,000[b]
	Residual	300,595	343	,876		
	Total	472,374	344			

a. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

b. Predictors: (Constant), Claim (composite measure based on the mean of 6 items of claim)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2,243	,193		11,630	,000		

	Claim (composite measure based on the mean of 6 items of claim)	,538	,038	,603	14,000	,000	1,000	1,000

a. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

Model 4

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,270[a]	,073	,070	1,12980	1,960

a. Predictors: (Constant), Awareness (composite measure based on the mean of the 3 items awereness)

b. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34,549	1	34,549	27,066	,000[b]
	Residual	437,825	343	1,276		
	Total	472,374	344			

a. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

b. Predictors: (Constant), Awareness (composite measure based on the mean of the 3 items awereness)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	3,519	,263		13,375	,000		
	Awareness (composite measure based on the mean of the 3 items awereness)	,254	,049	,270	5,202	,000	1,000	1,000

a. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

Model 5

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,658[a]	,434	,429	,88583	2,191

a. Predictors: (Constant), Awareness (composite measure based on the mean of the 3 items awereness), Claim (composite measure based on the mean of 6 items of claim), Product of Green by ecofriendly colour

b. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	204,794	3	68,265	86,996	,000[b]
	Residual	267,579	341	,785		
	Total	472,374	344			

a. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

b. Predictors: (Constant), Awareness (composite measure based on the mean of the 3 items awereness), Claim (composite measure based on the mean of 6 items of claim), Product of Green by ecofriendly colour

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF

1	(Constant)	1,165	,262		4,448	,000		
	Product of Green by ecofriendly colour	,007	,002	,160	3,511	,001	,797	1,254
	Claim (composite measure based on the mean of 6 items of claim)	,461	,040	,516	11,395	,000	,809	1,236
	Awareness (composite measure based on the mean of the 3 items awereness)	,193	,039	,206	4,991	,000	,979	1,021

a. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

Model 6

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,668[a]	,447	,432	,88340	2,245

a. Predictors: (Constant), FAMILIARITY, Claim (composite measure based on the mean of 6 items of claim), under HS=0, above=1 dummy, Awareness (composite measure based on the mean of the 3 items awereness), under 24=0; above=1 Dummy, What is your sex?, Recoded variable with Portuguese=1, 0 otherwise, Product of Green by ecofriendly colour, under 30=0, above=1 dummy

b. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	210,944	9	23,438	30,034	,000[b]
	Residual	261,430	335	,780		
	Total	472,374	344			

a. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)

b. Predictors: (Constant), FAMILIARITY, Claim (composite measure based on the mean of 6 items of claim), under HS=0, above=1 dummy, Awareness (composite measure based on the mean of the 3 items awereness), under 24=0; above=1 Dummy, What is your sex?, Recoded variable with Portuguese=1, 0 otherwise, Product of Green by ecofriendly colour, under 30=0, above=1 dummy

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1,314	,346		3,792	,000		
	Product of Green by ecofriendly colour	,008	,002	,185	3,948	,000	,752	1,330

Claim (composite measure based on the mean of 6 items of claim)	,450	,041	,504	11,025	,000	,790	1,265
Awareness (composite measure based on the mean of the 3 items awereness)	,178	,040	,190	4,447	,000	,908	1,101
What is your sex?	-,140	,114	-,055	-1,232	,219	,818	1,223
Recoded variable with Portuguese=1, 0 otherwise	,078	,223	,017	,350	,727	,674	1,484
under 24=0; above=1 Dummy	,082	,100	,035	,822	,412	,901	1,110
under HS=0, above=1 dummy	-,151	,135	-,048	-1,116	,265	,898	1,113
under 30=0, above=1 dummy	,114	,177	,033	,646	,519	,626	1,597
FAMILIARITY	,282	,136	,090	2,071	,039	,874	1,144

a. Dependent Variable: Purchase Intentions (composite measure based on the mean of the 6 items Purchase Intentions)