UNIVERSIDADE CATÓLICA PORTUGUESA

Packaging Sustainability in Organic Food Purchase Behavior

A comparative analysis between Portugal and Colombia

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Abstract

Given the current gap and lack of literature understanding the relationship between a consumer purchase behavior focusing on environment (sustainable packaging) and a consumer purchase behavior focusing on health (organic food), both having important impacts on current socio-economic trends and the ecosystem, this dissertation´s objective is to determine the relevance of packaging sustainability for organic food consumers in retail.

Taking into consideration that the investigation was seeking to explain a relationship between two variables, a quantitative method through a survey strategy was chosen, selecting a questionnaire as the collection method. Then, the investigation premises were tested through Structural Equation Modeling, performing a factor Confirmatory Factor Analysis, followed by the assessment of the final structural model.

After a thoughtful analysis performed on the collected data, it was possible to demonstrate that packaging sustainability satisfaction substantially impacts Attitude and Perceived Behavioral Control, variables of the consumer purchasing organic food, following the Reasoned Action Approach (RAA) model. Finally, a comparative analysis was performed between Portugal and Colombia with no major differences encountered among the two countries' perceptions on packaging sustainability for organic food.

Keywords: Organic Food, Packaging, Sustainable Consumption, Consumer Behavior, Retail

Resumo

Dada a lacuna atual e a sua falta de compreensão da literatura sobre a relação entre o comportamento de compra do consumidor com foco no meio ambiente (embalagens sustentáveis) e o comportamento de compra do consumidor com foco na saúde (alimentos orgânicos), ambos com impactos importantes nas tendências socioeconômicas atuais e no ecossistema, o objetivo desta dissertação é determinar a relevância da sustentabilidade das embalagens para os consumidores de alimentos orgânicos no retalho.

Levando em consideração que a investigação procura explicar uma relação entre duas variáveis, foi escolhido o método quantitativo com estratégia de *survey*, selecionando um inquérito como método de recolha. As premissas de investigação foram testadas por meio da Modelagem de Equações Estruturais, realizando-se inicialmente uma Análise Fatorial Confirmatório, seguida da avaliação do modelo estrutural final.

Após uma análise criteriosa dos dados coletados, foi possível demonstrar que a satisfação com a sustentabilidade das embalagens impacta substancialmente a Atitude e o Controle Comportamental Percebido, variáveis no comportamento do consumidor, seguindo o modelo da *Reasoned Action Approach* (RAA). Finalmente, uma análise comparativa foi realizada entre Portugal e Colômbia, sem diferenças substanciais encontradas entre as perceções de ambos os países sobre a sustentabilidade das embalagens de alimentos orgânicos.

Palavras-chave: alimentos orgânicos, embalagem, consumo sustentável, comportamento do consumidor, Retalho.

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Chapter 1
Introduction

1.1 Research Topic

The following research aims to determine the relevance of packaging sustainability for organic food consumers in retail. Being packaging one of the most significant attributes of a product, besides its content, the purpose is to examine and identify, if packaging sustainability attributes influence the purchase intention and behavior for organic food consumers in retail, which attitude towards consumption has been found to be highly induced by health and environmental concerns. Adding a degree of complexity into the investigation, and an advantage for future conclusions and research, the research aims to compare two different countries.

1.2 Research Questions

The research topic interest for this dissertation came to life due to a preliminary study of the literature, observed market trends in the retail sector, and a personal concern from the author of this dissertation. Consequently, two research questions are expected to be answered:

RQ1. To what extent the packaging sustainability perception of an organic food product influences consumer purchase intention?

RQ2. How does the packaging sustainability perception might differ between consumers from different countries?

1.3 Methodology

Following the preliminary study of the literature and interest of the topic, which led to the two research questions mentioned above, there was a more thorough investigation of the literature, which made it possible to develop four hypotheses that led to a conceptual framework based on solid behavioral theories, like the Reasoned Action Approach, by Fishbein & Ajzen (2011), the considerations from conscious consumerism, extracted from the Integrated Model for Mindful Consumption by Lim (2017), and previous related work from the perspective of labeling by Aitken, et al., (2020).

Following a positivism research philosophy with a quantitative method, the collection of data was performed autonomously by the author of the dissertation through an online questionnaire, which was targeted to persons with higher education attendance and a medium to high income in Portugal and Colombia.

The obtained data were analyzed through structural equational modeling, using confirmatory factor analysis and a structural model with the help of statistical software. This analysis was finally contrasted with the hypothesis to be able to get answers to the research questions.

Chapter 2
Literature Review & Conceptual Framework

2.1 Organic Food

According to The Codex Alimentarius Commission, the joint program determining food internationally harmonized food standards and guidelines, constituted by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO), "Foods should only refer to organic production methods if they come from an organic farm system employing management practices which seek to nurture ecosystems which achieve sustainable productivity…"(FAO/WHO, 1999).

From barely any market representation in the '90s, the global organic food market already reached 100 billion USD worth by 2018 (Sahota, 2019; Willer, et al. 2020). In terms of global market distribution, by region, North America (Bermuda, Canada, Greenland, Saint Pierre, and Miquelon, USA) has the retail market lead and the highest per capita consumption (conjunctively), while the highest per capita consumption by country (individually) are found in the European territories (Willer, et al. 2020).

Although organic food still survives in diverse cultures across continents as a way to live from and to the earth (Rana & Paul, 2017), it has been slowly, but steadily converging back, in the past three decades, with the industrialized world, as an important part of several modern lifestyles and social movements. According to one of the leading organizations in organic agriculture, this type of food production is based on, and well known to portrait the principles of health,

ecology, fairness, and care (IFOAM - Organics International, 2020). Is therefore that the organic certified food label has, and is still been considered, the top eco-label, over other 300 *eco-labels* spread across the food industry, representing diverse ethical and environmentally committed attributes from the producers, targeting the consumers (Sahota, 2019; Willer, et al. 2020).

Such consumer habits and lifestyles have been the major drivers for the market growth for organic food, over conventional food, therefore the importance to determine the behavioral triggers behind its purchase. An extensive and methodical literature review, from a span of 30 years, determined health **consciousness** as the most relevant **attitude** when considering purchasing organic food, just closely followed by environmental friendliness, and quality considerations (Rana & Paul, 2017), see Figure 1.

As Hansmann et al. (2020) suggest, one of the possible reasons for the supremacy of health considerations by the organic food consumer, over other considerations like environmental effects, could be the perception of a more personal and shorter-term benefit versus a more vague advantage.

However, the attitude might not be the best predictor for buying behavior, instead, **motivations** procuring ethical, health, or social **benefits** are found to have a higher influence when purchasing organic food (Tandon et al. 2020). Motivation, together with values and identity translates into **consumers' intentional (purchasing) behavior**, as even present or past behavior might solely be a market factor's consequence, for instance, the product availability (Hansen, Sørensen, & Eriksen, 2018).

Figure 1. Most important factors influencing consumer attitude buying organic food (Adapted from Rana & Paul, 2017).

This might be a reason why benefit arguments, addressed in sustainable advertisement have a more considerable impact on the credibility of the product's message. Although, regardless of the message, results might differ if a more reliable source is used, as reduces the impact of consumer's skepticism, the most critical barrier for sustainable consumption (Jäger & Weber, 2020).

What diverse authors agree is that environmental concern is a key predictor of organic food consumption behavior, which helps to translate an individual expecting an unfavorable outcome into an optimistic one (Sadiq, Paul, & Bharti, 2020).

2.2 Labelling

A label is a graphic piece intended to categorize and describe the product's attributes such as, who made it, where was made, value, appropriate consumption, warnings, among others. Labelling helps to enhance the brand and attract customers to purchase the product, by positioning the brand in a distinctive way among other products (Kotler & Armstrong, 2018, P. 252).

While the Codex General Standard for the Labelling of Prepackaged Foods has set an intended internationally harmonized guideline for organic food labelling (FAO/WHO, 1999), organic food is also or being labelled following the correspondent governmental or private authorities ruling the country where is produced or intended to be distributed (Cheftel, 2005).

For instance, in the European Union, the European Commission implemented the EU regulation 889/2008 on rules governing organic production, labelling and control of organic products, while in The United States, is the USDA (U.S. Department of Agriculture), and in Australia together with New Zealand, the Food Standards Australia New Zealand (FSANZ), setting the standards and requirements for their jurisdictions, not without the cooperation of several private organizations acting most of the times as certifiers.

Particularly, the organic food label offers a differentiation advantage for producers, as it is associated with high quality for consumers; although brand equity is proportionally inverse to the organic food label effectiveness, it has been continually found to increase the descriptive belief of sustainability and the inferential belief of good taste (Larceneux et al. 2012). Not only that, but organic food labelling has been found to have a direct impact on behavioral intention - where the intention is the best predictor of behavior- as the more consumers conceal that labelling is actionable, the more positive their attitude is, and therefore an enhanced sense of control, and conscious behavior (Aitken et al., 2020).

2.3 Packaging

Consumer-perceived food product quality and brand preference are directly influenced by attitudes on the packaging. (Wang, 2013). Since the developments of flexible packaging materials and its mass success and commercialization after WWII (Robertson, 2019), among other food manufacturing developments, the increased competition in the retail market place meant that packages should perform beyond essential protection purposes, to perform sales activities, such as, communicate the product's benefits and position the brand, to be able to close the sale at the point of contact, in other words, package embodied not only a protective cover but prime marketing space (Kotler & Armstrong, 2018, P. 251).

While in the positive side packaging promotes shelf life, reducing food damage in transportation and handling mistreatment, decreasing food waste, to be accounted to be the heaviest environmental impact of food, the packaging is also accounted for about 70% of whole packaging waste (Schmidt Rivera et al., 2014, p.308; Beitzen-Heineke et al., 2017). One-third of all food packaging is produced exclusively for short or single-use, being plastic its main primary source, a substance with a wide range of categories with an uncertain degradation rate into the environment (Beitzen-Heineke, Balta-Ozkan, & Reefke, 2017).

A recent content analysis by Chrysochou & Festila (2019) has found organic food packaging designs meaningfully differ from those of conventional food products, as evidence depicts the higher usage of paper material and less plastic while exhibiting graphics and pictures evoking natural sets, with plenty of white and green hues. According to the authors, "the elements have the power to

implicitly communicate and enhance the positioning of the product as organic, as they are associated with environment (by the consumers)".

Regarding health-related taste evaluation, the package design and its color hue dimension suitability only has an important influence on organic buyer's depending on the commercial context; those healthy perceptions solely have an accountable impact in non-specialized stores, such as discount retailers (van Rompay, Deterink, & Fenko, 2016).

According to Hidalgo-Baz et al. (2017) advertising claims made on organic food packaging have diverse effects on the consumer perception; single claims have been found to be more powerful and with greater influence, especially those related to the environment, while multiple claims usually rule out each other. This might be due to general skepticism, as sustainable advertisement is usually perceived a less credible on food products (Jäger & Weber, 2020).

2.4 Sustainable Consumption

As consumers become more aware of their consumption-related impacts, environmental conservation has become a primary concern that has been positively significant for consumer's attitude, the strongest predictor of intention to purchase sustainable products, just followed by perceived behavioral control and subjective norm (Paul, Modi, & Patel, 2016). Likewise, Kumar et al. (2017) relate that environmental knowledge and purchase intention is mediated by the attitude towards environmentally sustainable products.

In order to nurture greater sustainability consumption practices, Lim (2017) articulated a combined application of the major theoretical perspectives from the vast literature on sustainable consumption: responsible consumption, anti-consumption, and mindful consumption, which converged into an integrated conceptual model with practical implications for academia and marketers, and which has been adapted by the author of this dissertation towards the research questions on the following figure.

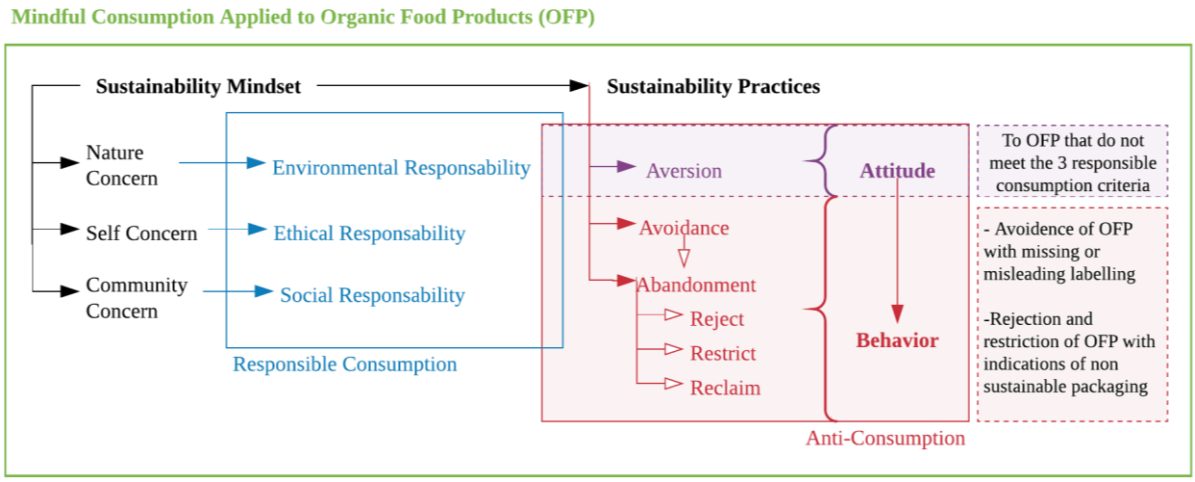


Figure 2. Integrated model for mindful consumption. Adapted from Lim (2017).

According to Lim (2017), sustainable consumption comprehends "an adaptive, balanced, and contextualized approach to consumption, that occur when consumers successfully translate their inner beliefs and felt responsibilities around sustainability into expressive sustainability actions".

Higher price, reduced availability, and the lack of proper communication of sustainable products have been found to be the main barriers for sustainable consumption, making conscious consumers' unaware of the positive consequences for the environment of purchasing sustainable products and diminishing the discriminating value over conventional products, (Barbarossa & Pastore, 2015).

Sustainable consumption may be achieved by encouraging sustainable products (Paul et al., 2016), overcoming barriers, and improving consumers' perception through diverse and accurate marketing strategies, like better shelf positioning, proper advertisement, among others (Barbarossa & Pastore, 2015).

2.5 Reasoned Action Approach

In order to conduct this dissertation´s conceptual framework, according to the literature review, it was important to acknowledge and make use of the "*dominant model of attitude-behavior relations*" (Armitage & Christian, 2017) up until this date, the **Reasoned Action Approach (RAA)**. The model designed by Fishbein & Ajzen (2011), provides a consolidative framework for the prediction of human social behavior, as well as methodological and conceptual tools intended to change it under certain circumstances.

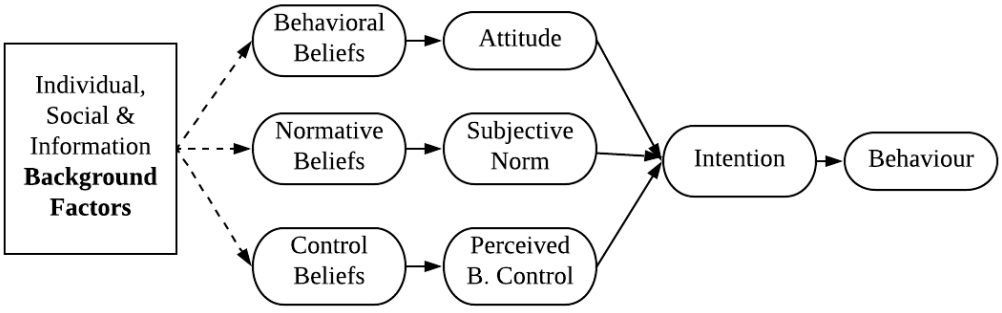


Figure 3. Simplified version of the Reasoned Action Approach (RAA) model, by Fishbein & Ajzen (2011).

According to the authors, the main model´s proposition states: "intention is the best single predictor of behavior" (Fishbein & Ajzen, 2011), and Behind intention, there are three considerations; A**ttitude (AT)**, which is the positive belief the person has to perform the behavior, then **Subjective Norm (SN)**, the

perception of having social pressure and lastly, but not least, **Perceived Behavioral Control (PBC)**, that as it might indicate is the sense of control over the action to perform.

Perceived behavioral control, has been a particularly important addition to the **RAA** model (also called the Theory of Planned Behavior at some instances) on one of its latest updates. Armitage & Christian (2011) explains that control can be considered the key determinant behind intention and behavior, because "*holding intention constant, greater perceived control will increase the likelihood that enactment of the behavior will be successful*", meaning that perceived behavioral control acts as a measure of two notions, control over the behavior itself, and the ability of the person.

Overall, the three predictors for intention; Attitude, Subjective Norm, and Perceived Behavioral Control have variable importance each, depending on the personal and environmental factors of the person and the intended behavior, such as personality or the culture of the country where the person belongs. It is because of that reason, which was important by the authors to include the next level of deepness to the model, the level of beliefs, "*at this level we learn about the substantive considerations that guide people's decisions to perform or not the behavior of interest*" (Fishbein & Ajzen, 2011).

It is then, that identifying those predictors and beliefs, that we can analyze "how human thought translates into action"(Armitage & Christian, 2017), and how can we target them to design interventions to mold or change the expected behavior; it is useful to analyze groups of persons with different beliefs, translating into different behavioral outcomes, as this comparisons help to design proper mechanisms (Fishbein & Ajzen, 2011).

2.6 Hypothesis

According to a significant number of authors, health consciousness, just followed by environmental consciousness and quality, are some of the most relevant attitude triggers when considering purchasing organic food (Rana & Paul, 2017). One of the most probable explanations for this order might be due to the perception of a more personal and shorter-term benefit gained (health), from the organic food product, versus a longer-term benefit (environment) (Hansmann et al. 2020), nevertheless, the real-time impact of the packaging of the OFP has not been taken into consideration. Environmental conservation is positively significant for consumer's attitude, the strongest predictor of intention to purchase sustainable products (Paul et al., 2016), and environmental knowledge and purchase intention is mediated by the attitude towards environmentally sustainable products (Kumar et al. 2017)

H1: Satisfaction with the packaging sustainability of the OFP would have a positive impact on its attitude.

H2: Consumer satisfaction with the current perceived sustainability of the organic food packaging would positively impact PBC.

Organic food packaging designs meaningfully differ from those of conventional food products, exhibiting graphics and pictures evoking natural sets, as an attempt to reinforce the product with a healthy environment (Chrysochou & Festila 2019). It only has an influence on health-related taste when exhibited in non-specialized stores, such as discount retailers (van Rompay et al., 2016). The organic food label offers a differentiation advantage, which has been found to increase the descriptive belief of sustainability and the inferential belief

of good taste (Larceneux et al. 2012), explaining how it has a direct impact on behavioral intention (Aitken et al., 2020).

H3: Consumer appeal for more sustainability on organic food packaging will negatively impact PBC.

H4: Purchase intention for organic food products is positively motivated by PBC after packaging sustainability considerations.

2.7 Conceptual Framework

Given prior hypothesis, this research develops the following model, based on the Reasoned Action Approach (RAA) and the concepts of mindful consumption as presented in figure 3. It is important to notice, that the relations with no explicit hypothesis, are due to the acknowledgment of the already proven functionality of the RAA model in academia, i.e., attitude towards purchase intention.

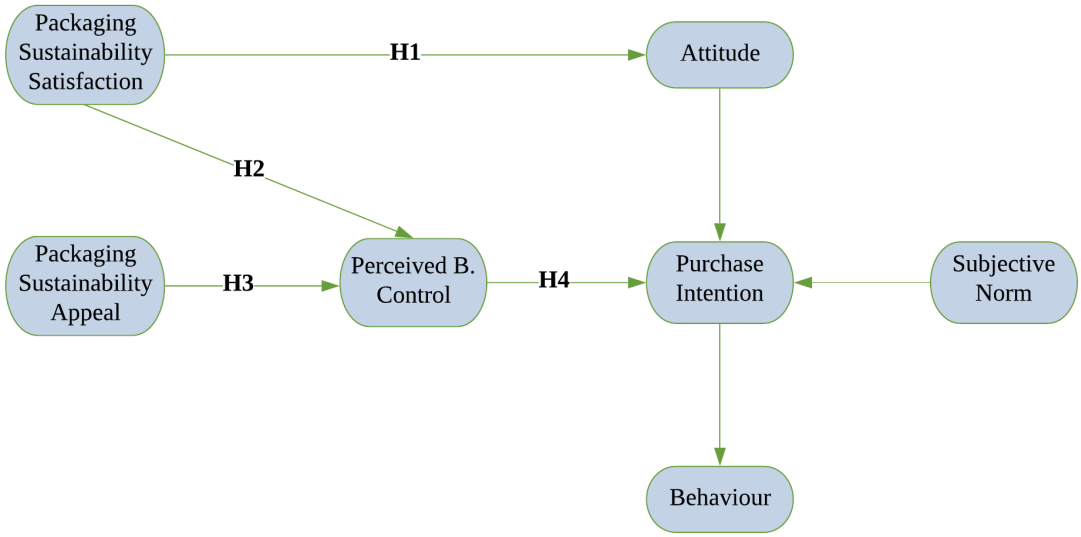


Figure 4. Conceptual framework (own source) based on the RAA.

Chapter 3
Research Methodology

3.1 Overview

Described upon the concepts of the Research Onion by Saunders et al. (2019), this investigation was based on a positive research philosophy, complemented with a deduction approach, which was based on two research questions and four hypotheses, which were developed by the previous literature on the topic.

The collection of data was achieved by a mono-method quantitative approach through a survey strategy, using a questionnaire. This data collection method was delivered on a longitudinally time horizon, to a simple random sampling of consumers from Portugal and Colombia, respectively. After the collection of data was completed, a thorough analysis has been performed to answer the proposed research questions, and which will be discussed in Chapter Four.

3.2 Methodology Definition

As the hypotheses were intended to give an objective description of the relationship between organic food purchase behavior and its packaging perception, a quantitative approach was selected and performed. This research design and strategy was inspired and adapted from previous peer-reviewed academic research, consistently used in organic food and sustainable product purchase behavior topics.

As this investigation was seeking to explain the mentioned relationship between organic food and its packaging, a **survey strategy** was chosen. Then, according to this strategy, and to accomplish the objective to gather evidence of a representative sample of what the consumers describe, a questionnaire was selected as the collection method.

3.3 Target Population and Sample

As it has been demonstrated, individuals with higher income and education are more likely to buy organic food products; middle to upper-class groups constitutes the target market for organic food, as the current pricing strategy is still being placed on the premium side (Rana & Paul, 2017) (McFadden & Huffman, 2017). Simultaneously, a higher level of education increases the likelihood to understand the topic and the increase in positive attitudes towards the products, resulting in more frequent consumption in countries like Portugal (Marreiros, et al., 2021).

Taking into consideration the above premises and the objective of the research, there was an analysis on one of the target populations for the organic food products, the active labour individuals with tertiary education in both countries. In the year 2018, Portugal had reported having 10.276.617 inhabitants, with an approximate 5.232.600 active labour population. From those, around a 23,7% average, among the seven regions of Portugal, have been estimated to have completed tertiary education, meaning around 1.240.874 persons (INE I.P., 2019).

For the same year 2018, Colombia had a census estimation of 48.258.494 inhabitants (DANE, 2021), with an approximate active labour population of

24.697.000, in which 23.3% was informed to have completed tertiary education, representing an estimation of 5.754.401 persons (DANE, 2019).

With the intent to get a random representative sample of both countries with the mentioned considerations, there was an expectation of at least 240 questionnaire respondents for Portugal and 720 respondents in Colombia, nevertheless, it was only possible to get 110 participants in Portugal and 204 participants in Colombia.

3.4 Questionnaire Design

Along with the survey strategy chosen for this research, the questionnaire was the data collection method selected to gather the evidence. Because of the target population, which was intended to be reached, the questionnaire was designed as a self-completed internet questionnaire type, using Google forms.

The form was designed to be completed over three comprehensive sections; the first section offered a brief introduction of the academic nature of the questionnaire, as well as a description of its purpose to gather information about purchase behavior about organic food and its packaging. Following, with the aim to familiarize the contestant with the questionnaire, as well as to be able to draw a profile of the participants, there were four general demographic questions, including age, gender, academic background, and gross income. It has been demonstrated that these simple and common questions, serve to relate the participant with the topic and the interviewer (Saris & Gallhofer, 2014).

After this introduction, the second part was dedicated to control questions regarding organic food, measuring attitudes, perceived behavioral control, subjective norm, intention, and actual behaviors. These parameters were chosen following one of the most recognized and well-tested models to explain and predict behavior, the Reasoned Action Approach by Fishbein & Ajzen, (2011).

Each of the above five considerations had three statements, for a total of fifteen items. It was requested from the interviewee their level of agreement or disagreement with the proposed statements, using a five-point Likert scale; where one (1) represented total disagreement and five (5) total agreement, leaving discretion to the interviewee to choose any level in between.

According to Saris & Gallhofer (2014), the most complex questions should be placed at the latest part, as the more familiarized the respondents have been with the subject it would elicit better answers; therefore, the most important questions were left for the end. This third and last section of the questionnaire was intended to measure satisfaction with five questions, and an appeal for organic food packaging sustainability with another five questions: resulting in a total of ten questions. According to the framework strategy, along with consistency with the first section, the interviewees were asked to justify these affirmations through a five-point Likert scale as well.

In total, the questionnaire consisted of twenty-five affirmations, as shown in table 1, required to be justified by the consumer through a five-point Likert scale each. It was intended to be as concise as possible without losing the effectiveness to gather the desired information, in order to persuade the participant to give out their time to answer the survey (Singh, 2020).

The questionnaire was designed in English from the mentioned sources described in Table 1 below, and then translated to Portuguese and Spanish. Both translations were self-sourced as the author is a native Spanish-speaker and proficient in Portuguese. Nevertheless, taking the precaution that the author is a non-native Portuguese speaker, proofreading and corrections were requested from two different native European Portuguese speakers.

Attitude (ATT)	
1. Organic food is good for the environment. 2. Buying organic food products makes me feel good. 3. Organic food is good for my health.	Adapted from Aitken et al. (2020)
Perceived Behavioural Control (PBC)	
1. I have many opportunities to purchase organic food. 2. Organic food is generally available at the stores I frequent. 3. Most organic food has a price I can afford.	Adapted from (Paul et al., 2016)
Intention (INT)	
1. I will consider buying organic food products because is healthier. 2. I will consider spending more on organic food rather than conventional food. 3. I will consider buying organic food because of its	Adapted from (Paul et al., 2016)
Subjective Norm (SN)	
1. The people whose opinions I value, think buying organic food is a good idea. 2. Most people whose opinions I value, regularly buy organic food. 3. People who are important to me, think I should purchase organic food.	Adapted from (Paul et al., 2016)
Behavior (BV)	
1. On a typical shopping trip, I buy organic food. 2. If I could choose between conventional food and organic food, I choose organic. 3. Every time that I do my groceries, I include at least one organic food item.	Adapted from Aitken et al. (2020)

Satisfaction with Packaging Sustainability (Satisfaction)	
1. Organic food packaging is more sustainable than conventional food packaging. 2. I can trust that a product is organic because of its packaging materials. 3. Organic food uses less packaging than conventional food. 4. The packaging of organic food validates its environmental commitment. 5. I trust the positive environmental impact of organic food because of its packaging.	Adapted from Aitken et al. (2020) and Jäger & Weber (2020)
Appeal for Packaging Sustainability (Appeal)	
1. Overall, there should be less packaging for organic food products. 2. I would prefer a national standard for labelling and organic food packaging. 3. I would like organic food packaging materials to be organic as well. 4. Organic food packaging materials should be as sustainable as possible. 5. I would prefer a more sustainable packaging rather than a fashionable packaging.	Adapted from Aitken et al. (2020)

Table 1. Questionnaire items

3.5 Data Analysis Methodology

Given the research methodology chosen and the information gathered from the samples from Portugal and Colombia, the proposed hypotheses were tested through Structural Equation Modeling (SEM), performing a factor Confirmatory Factor Analysis (CFA). The variables were first tested and reduced, confirming model fit and reliability, then followed by the assessment of the structural model. The analysis was achieved using Microsoft Excel, IBM SPSS, and IBM AMOS Graphics.

Finally, a comparative analysis was executed between the two countries, using descriptive statistics, aiming to find any relevant differences between the purchase behavior and perceptions of a developed country and a developing country for organic food.

Chapter 4
Results and Data Analysis

4.1 Demographics

There were 110 responses gathered from Portugal, and 204 responses gathered from Colombia, for a total of 314 respondents from both countries, which samples were mixed for the main part of the quantitative analysis. Any of the countries exhibit null or non-responses from the questionnaire, as all the demographic aimed questions, as well as the study questions, were made mandatory with multiple-choice selection, with an exception on the income item, were a choice "preferred not to answer" was included to respect the participant´s confidentiality, see table 2.

Most of the participants were aged between the 25–34 segment for both countries, representing 44.5% In Portugal and 32.8% in Colombia, the following segment for Portugal was the 35-44 segment for Portugal and the 45-54 segment for Colombia. On both samples, the participants were mostly represented by women with a rounded 60%.

Regarding education, as the study was targeted, most of the persons have attended higher education, at the bachelor´s degree level. Lastly, from the demographic variables and representing the biggest difference between samples, the participants from Colombia had a higher percentual income than the ones from Portugal; there was no currency conversion.

Demographics Portugal Overall (n = 110)	**n**	**%**
Age		
15 - 24	21	19.1%
25 - 34	49	44.5%
35 - 44	24	21.8%
45 - 54	12	10.9%
55 - 64	3	2.7%
65+	1	0.9%
Gender		
Men	44	40.0%
Women	66	60.0%
Education		
Primary Education	1	0.9%
Secondary Education	19	17.3%
Higher Education	90	81.8%
Professional Technical Course	*Not included*	
Bachelor's Degree	*47*	*42.7%*
Postgraduate or Master	*42*	*38.2%*
PhD	*1*	*0.9%*
Annual Gross Income (EUR)		
Less than €10.000	39	35.5%
€10.000 - €15.000	37	33.6%
€15.000 - €20.000	3	2.7%
€20.000 - €25.000	7	6.4%
€25.000 - €30.000	3	2.7%
More than €30.000	7	6.4%
Preferred not to answer	14	12.7%

Demographics Colombia Overall (n = 204)	**n**	**%**
Age		
15 - 24	14	6.9%
25 - 34	67	32.8%
35 - 44	30	14.7%
45 - 54	36	17.6%
55 - 64	37	18.1%
65+	20	9.8%
Gender		
Men	83	40.7%
Women	121	59.3%
Education		
Primary Education	5	2.5%
Secondary Education	24	11.8%
Higher Education	175	85.8%
Professional Technical Course	*32*	*15.7%*
Bachelor's Degree	*83*	*40.7%*
Postgraduate or Master	*59*	*28.9%*
PhD	*1*	*0.5%*
Annual Gross Income (COP)		
Less than $14.000.000	22	10.8%
$14.000.000 - $28.000.000	32	15.7%
$28.000.000 - $42.000.000	38	18.6%
$42.000.000 - $56.000.000	26	12.7%
More than $56.000.000	42	20.6%
Preferred not to answer	44	21.6%

Table 2. Demographic characteristics of the samples

4.2 Confirmatory Factor Analysis

Factor analysis techniques are overall a way to reduce measures by placing variables that highly correlate together into one factor, and the variables that relate the less into different factors respectively, making sure each factor is measuring the same construct; this is the reason the method is heavily used to assess the internal validity of questionnaires (Keith, 2019).

Alternatively, from an Exploratory Factor Analysis (EFA), in which the factor structure is found by the pattern of data obtained through the statistical software (Hair, et al. 2019), in the Confirmatory Factor Analysis (CFA), is the researcher - on the fashion of this investigation - which determines the number of factors according to the variables defining the proposed model (Schumacker & Lomax, 2016) (Hair, et al. 2019). The statistics fit to provide an explanation on how well this model explains the reality given by the data (Keith, 2019).

Based on the CFA measurement model, the variables loading on the seven factors proposed by this dissertation were measured with the help of IBM SPSS Statistics and AMOS version 27: Attitude, Perceived Behavioural Control, Intention, Subjective Norm, Behavior, Packaging Sustainability Satisfaction, and Packaging Sustainability Appeal. The analysis configuration for the calculation was set on Maximum likelihood discrepancy, performed with the data samples from the countries running together, summing up 314 items.

4.2.1 Model Fit

Primary calculation results from the seven-factor model were not completely satisfactory to the sample; some loadings were not statistically significant or indicated redundancy. Therefore, it was opted to remove some of the variables and to explore the modification indices, as to free parameters in the model with proper caution might improve fitness in the model (Schumacker & Lomax, 2016) (Keith, 2019).

Model fit testing was aided on the statistical software AMOS by the plugin "Model Fit Measures" by Gaskin & Lim, (2016), and then contrasted with the model fit index thresholds indicated by Keith (2019), based on previous

literature. After a couple of assessments some error covariances were added, still making sure to be aligned to the theory (see table 3), and the variables were reduced from 25 to 19, without compromising overall reliability (see table 4).

Measure	Calculation Estimate	Threshold	Interpretation
χ^2	253.831	--	--
DF	124	--	--
χ^2/DF	2.047	Between 1 and 3	Good Fit
CFI	0.955	≥ .95	Good Fit
SRMR	0.059	≤ .08	Good Fit
RMSEA	0.058	≤ .05	Good Fit
PClose	0.1	≥ 0.05	Good Fit

Table 3. Model fit

On the absolute fit indices, we found that the final calculation output indicated a Root Mean Square Error of Approximation (**RMSEA**) of 0.058, a very close stand-alone goodness of fit. Then "the average difference between the actual and the implied correlation matrices" (Keith, 2019, p.353), or the Standardized Root Mean Square Residual (**SRMR**) was only 0.059, which even with the lowest threshold suggested of ≤.06 would still indicate a good fit.

Simultaneously, on the Incremental fit indices side, the Comparative Fit Index (**CFI**), an index now commonly replacing the χ^2 and the degree of freedom (**df**) (Hair et al., 2019), the output was from 0.955, very close to the ≥.95 threshold but still quite good.

The internal consistency reliability, expressed below by Cronbach's α, indicates significate loadings ranging from 0 to 1, even though the variables were considerable reduced for some factors, with the lowest value being 0.74 for PBC

and INT and 0.85 being the highest among all other values for Satisfaction. Although this measure seems quite conservative compared to Composite Reliability (**CR**) (Hair et al., 2019), is still considered essential.

	Variables			Cronbach's α
	Proposed	Removed	**Final**	
Satisfaction	5	1	**4**	0.85
Attitude (**ATT**)	3	1	**2**	0.73
Appeal	5	2	**3**	0.82
Behavior (**BV**)	3	0	**3**	0.83
Perceived Behav. Control (**PBC**)	3	1	**2**	0.74
Intention (**INT**)	3	1	**2**	0.74
Subjective Norm (**SN**)	3	0	**3**	0.81

Table 4. Variable's purification with Cronbach's α reliability measure

4.2.2 Invariance Test

The model´s equivalence across the Portugal and Colombia group, a valuable element of this dissertation, was assessed through two invariance tests, which is the relevant measure for making cross-cultural comparisons (Hair et al., 2019).

Configural invariance: The objective of this test is to specify if the same pattern of factors holds across groups, there is no particular interest if the factor loading is the same (Keith, 2019). For this test we obtained a CFI of 0.934 and an RMSEA of 0.048 when analyzing the freely estimated model across the 2 groups, meaning that the model could be improved.

Metric invariance: With this invariance, we are testing if we get the same unstandardized factor loadings for both groups (Keith, 2019). Therefore the two models were constrained to be equal, and then the $\chi 2$ difference was found between the unconstrained and constrain model, resulting in a p-val of 0.057 from a threshold of > 0.05, according to Hair et al. (2019), suggesting that the two models are on the borderline to have no statistically significant difference, and supporting that the model fits the data.

4.2.3 Reliability and Validity

Reliability indicates an upper limit in which a set of measured variables correlates with another set of variables (Keith, 2019), representing how well they explaining the same idea (Hair et al., 2019) and it is usually computed through Cronbach's α and **Composite Reliability** (**CR**).

As a preliminary test was already performed with Cronbach's α before on the good fit test, at this stage the CR (formula: $\Sigma \lambda^2 / \Sigma \lambda^2 + \Sigma \varepsilon$) was calculated across factors, with the help of the AMOS plugin "Model Fit Measures" by Gaskin et al (2019), extracting the calculations with all factors loadings indicating good reliability measures all above the recommended minimum of 0.7, as seen on table 5, again the lowest being reported at PBC with 0.743, and the highest being reported for Satisfaction with a CR of 0.849, overall giving a good perspective of overall reliability for the model.

For the **convergent validity**, we are looking at how much the variables of a particular construct converge, which is computed getting the average of the square loading of those variables (Formula: $\Sigma \lambda^2/N$), called Average Variance Extracted (**AVE**) (Hair et al., 2019). A good AVE reports above 0.5, for this model all the seven variables were seemed to have convergent validity.

	Composite Reliability (CR)	Average Variance Extracted (AVE)	Maximum Shared Variance (MSV)	MaxR(H)
Satisfaction	0.849	0.589	0.296	0.88
Attitude (**ATT**)	0.745	0.595	0.542	0.767
Appeal	0.841	0.639	0.217	0.86
Behavior (**BV**)	0.838	0.633	0.498	0.847
Perceived Behav. Control (**PBC**)	0.743	0.592	0.291	0.76
Intention (**INT**)	0.746	0.596	0.498	0.757
Subjective Norm (**SN**)	0.806	0.583	0.542	0.819

Table 5. Reliability and validity

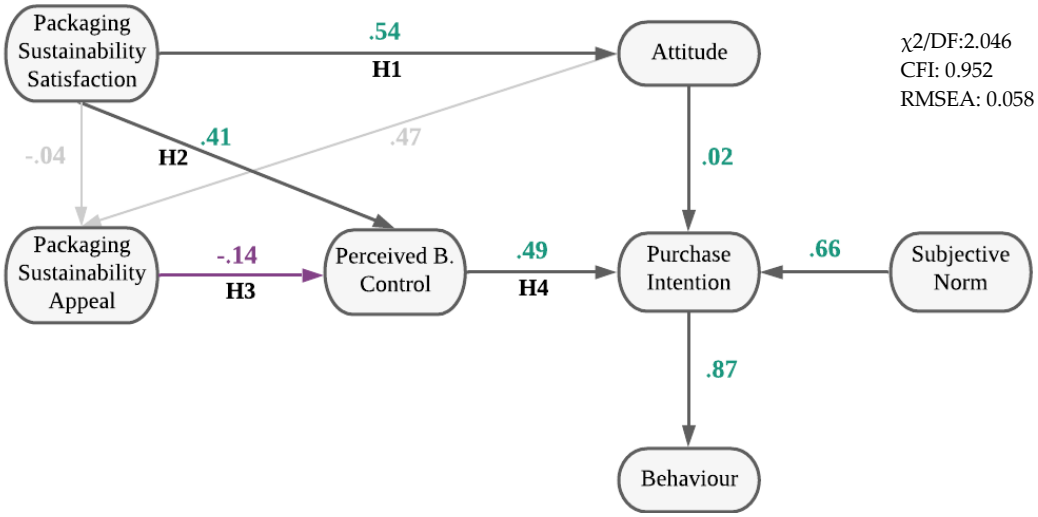
Lastly, for this subsection of the model assessment, the **discriminant validity** was assessed, which represents how much a construct differs from other constructs, a measure of uniqueness (Hair et al., 2019). It is formulated as the **square root of AVE** and should ideally exceed any inter-construct correlation on the model. Table 6 demonstrates this assessment, discriminant validity along the diagonal in bold, along with the correlation matrix above.

	Satisfaction	ATT	Appeal	BV	PBC	INT	SN
Satisfaction	**0.767**						
Attitude (**ATT**)	0.515	**0.771**					
Appeal	0.219	0.410	**0.799**				
Behavior (**BV**)	0.420	0.526	0.219	**0.796**			
Perceived Behavior Control (**PBC**)	0.286	0.205	-0.049	0.539	**0.769**		
Intention (**INT**)	0.544	0.396	0.181	0.705	0.539	**0.772**	
Subjective Norm (**SN**)	0.494	0.736	0.466	0.705	0.297	0.548	**0.763**

Table 6. Discriminant validity

4.3 Structural model

Equally to the CFA and based on its output, the structural model was constructed and tested with IBM SPSS AMOS 27, with the seven factors and their relations drawn according to the hypothesis. The goodness of fit shows that the model had a good representation of the data, with a $\chi 2/DF$: 2.046, within the range of 1 and 3, a CFI above 0.95, with 0.952, and an RMSEA below 0.06 with a value of 0.058, as can be seen on figure 5.



H1 Satisfaction with the packaging sustainability of the OFP would have a positive impact on its attitude.

H2 Consumer satisfaction with the current perceived sustainability of the organic food packaging would positively impact PBC.

H3 Consumer appeal for more sustainability on the organic food packaging will negatively impact PBC.

H4 Purchase intention for organic food products is positively motivated by PBC after packaging sustainability considerations.

Figure 5. Structural Model

4.4 Assessment of the Hypothesis

After the structural model goodness of fit confirmation, validity, and reliability the hypothesis could be interpreted according to its loadings; overall, the model supports the reasoned action approach as well as the hypothesis. It is demonstrated that packaging sustainability satisfactions has considerable importance on influencing attitude, supporting hypothesis 1, and which in a similarly way, but with a couple of values less, this satisfaction also positively impacts the perceived behavioral control, hypothesis 2, meaning that their sense of control over the product proportionally increases with this satisfaction.

Regarding hypothesis 3, it was determined that just as proposed packaging sustainability appeal would negatively affect perceived behavioural control, although it was not as significant as it was expected. Finally, the influence of packaging sustainability satisfaction and appeal over perceived behavioral control could have an important impact on purchase intention.

4.5 Comparative Analysis

In this final section of the analysis, both group samples from the countries were put on comparison, according to the means of the Likert scale answers to each question, below can be seen two tables, one from the mean variables from the RAA and then from the packaging sustainability hypothesis.

From above the Means country comparison between countries, as shown in table 7, we can see that there is not significate difference between both groups

among the RAA variables. The only slight recognizable difference is between the behavior variables, which can better be perceptible in the following chart.

Country		ATT1	ATT3	PBC1	PBC2	INT2	INT3	SN1	SN2	SN3	BV1	BV2	BV3
Colombia	Mean	4.54	4.61	3.10	3.17	3.29	3.52	4.30	3.94	4.38	3.00	3.70	3.36
	N	204	204	204	204	204	204	204	204	204	204	204	204
	Std. Dev.	0.856	0.745	1.101	1.192	1.178	1.277	0.986	1.081	0.915	1.254	1.245	1.289
Portugal	Mean	4.51	4.53	3.16	3.47	3.10	3.31	4.42	3.57	4.25	2.95	4.07	3.40
	N	110	110	110	110	110	110	110	110	110	110	110	110
	Std. Dev.	0.775	0.673	0.982	1.055	0.957	1.064	0.806	0.962	0.872	1.148	1.064	1.286
Total	Mean	4.53	4.58	3.12	3.27	3.22	3.45	4.34	3.81	4.33	2.98	3.83	3.38
	N	314	314	314	314	314	314	314	314	314	314	314	314
	Std. Dev.	0.827	0.721	1.060	1.153	1.108	1.209	0.927	1.054	0.901	1.216	1.196	1.286

Table 7. Countries comparison table – RAA variables.

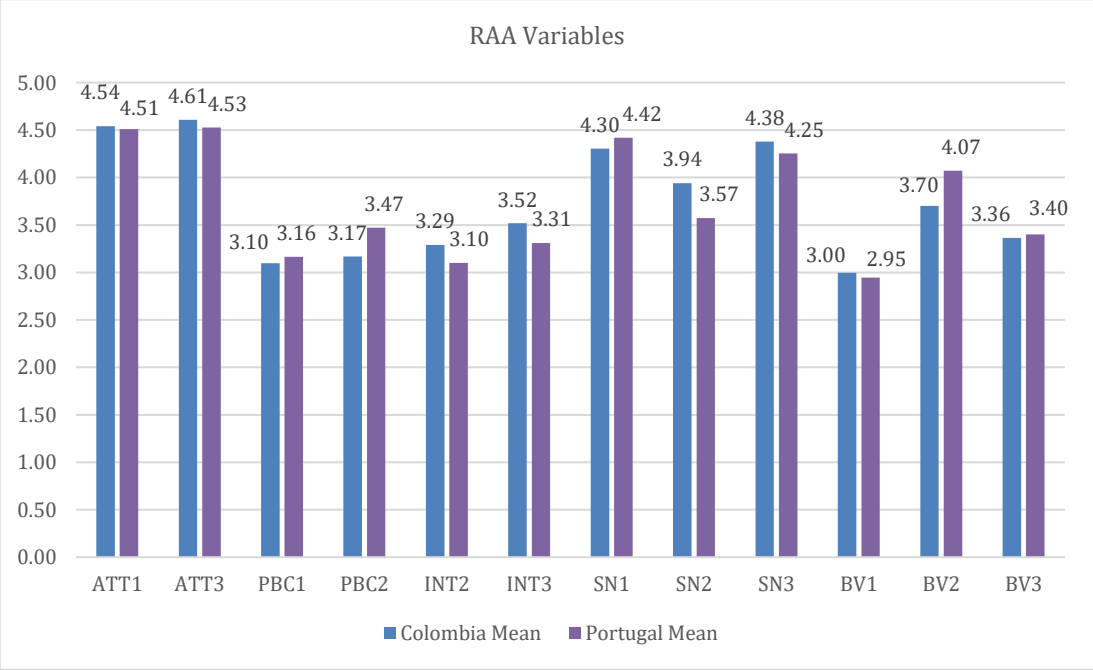


Figure 6. Country comparison bar chart – RAA variables.

From the packaging sustainability hypothesis perspective, we have similar results, there is no significant difference from the perceptions between Portugal and Colombia for organic food purchase behavior. The biggest differences can be found on the satisfaction variables, more specifically on items Satisfaction 3 "Organic food uses less packaging than conventional food." and Satisfaction 4, "The packaging of organic food validates its environmental commitment."

Country		Satisfaction1	Satisfaction2	Satisfaction4	Satisfaction5	Appeal3	Appeal4	Appeal5
Colombia	Mean	3.47	3.08	3.53	3.73	4.61	4.79	4.76
	N	204	204	204	204	204	204	204
	Std. Dev.	1.176	1.274	1.155	1.224	0.814	0.633	0.609
Portugal	Mean	3.25	2.73	3.24	3.13	4.48	4.72	4.68
	N	110	110	110	110	110	110	110
	Std. Dev.	1.102	1.211	1.075	1.174	0.763	0.561	0.620
Total	Mean	3.39	2.96	3.43	3.52	4.57	4.77	4.73
	N	314	314	314	314	314	314	314
	Std. Dev.	1.154	1.262	1.134	1.239	0.798	0.609	0.613

Table 8. Countries comparison table – Packaging Sustainability variables.

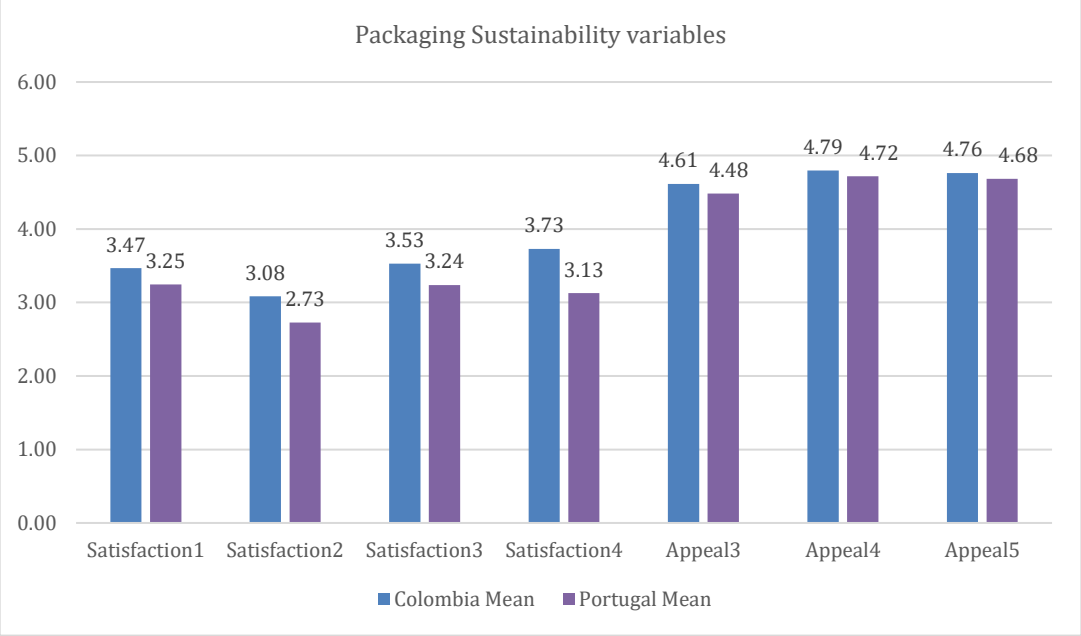


Figure 7. Country comparison bar chart – Packaging Sustainability variables.

Chapter 5
Discussion and Conclusions

5.1 Discussion

The presented analysis of the structural model, and its confirmation through SEM and descriptive statistics, allows this dissertation to answer both intended research questions; concerning *the extent in which packaging sustainability influences consumer purchase intention for organic food products*, it has been demonstrated by the collected data that packaging sustainability satisfaction substantially impacts upon the Attitude and Perceived Behavioral Control variables of the consumer purchasing organic food, following the RAA model.

It is quite important to note, that this satisfaction places on the borderline of being interpreted as unsatisfaction, with a mean around the higher tier of 3, from the Likert scale from 1 (completely disagree) to 5 (completely agree). This might give some clues on why the Packaging sustainability appeal got such low loadings on the structural model, although still support the hypothesis that the desire for more packaging sustainability on the organic food product negatively affects its Perceived Behavioral Control.

Similar research supports these behavioral records and interpretations, where perceived behavioural control plays a vital variable for organic food purchase behavior, for instance, the investigation performed by Hansmann et al. (2020), and one of the major references for this research, by Aitken et al., (2020) on the labelling perspective, because the more actionable the persons believe are the

attributes of the product, such as labelling or packaging, the more they will feel in control that they could buy the product (Fishbein & Ajzen, 2011).

Given that environmental claims have been longer in the market, and repetitive messages have more credibility overtime on the environmental-health industry (Hansmann et al., 2020), the findings on this investigation appeals that a straight forward sustainable packaging can be an effective dealbreaker, increasing the chances to get or to leave the organic food product from the store´s shelf, even though the consumer is not actively looking for it.

5.2 Conclusions

This dissertation intended to fulfill a current academic gap between mindful consumptions, from two different perfectives; a perspective focused on environment (packaging) and a perspective focused on health (organic food), which although very close within the conscious consumerism theory, still lacks visibility, and is not yet to be accomplished on the reach of our hand, on the market.

The mentioned findings can be used to plan and develop better organic food products, which can achieve a balance between needs and demands, from humans to the environment and the opposite way, completing the cycle. As the data sample suggested, the consumer will gladly accept honest, modest packaging rather than good-looking harmful packaging.

5.3 Research Limitations and Future Work

As with many other mono-method quantitative research methodologies using surveys, one of the biggest challenges is the collection of data from the respondents. Although this task has been easier from the surge of the internet and free of charge, easy-to-use tools, such as Google forms, the amount of information to which we are all exposed every day, makes it difficult to grab the attention of many users. Additionally, this dissertation cannot omit to mention some of the challenges derived from the Covid-19 pandemic, which besides the obviously related circumstance from a worldwide respiratory spread disease, explicitly forced all kind of human-to-human interactions to go online, causing many times digital exhaustion among the target population and their willingness to answer.

Mostly preventing digital exhaustion from the respondents when designing the survey, or its overall avoidance due to the length of the questionnaire, the author considered that only three variables per factor could be enough for the RAA variables and five for the packaging sustainability variables, nevertheless on the analysis stage, this later showed to be one of the biggest weakness, due to the purification that had to be performed to achieve model fit.

For future research, most variables should be included, and the usage of graphic and more tangible examples and resources should not be overlooked, in order to achieve deeper insights from the consumer should. Overall, it is expected that this topic gains attention by more academics employing the same of different approaches, and important retail stakeholders, as this an exponentially increasing trend, not only with commercial impact but for the benefit of the living beings on this planet.

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