Intrinsic and Extrinsic Factors that Influence Consumers' Intention and Purchase Behavior: The Case of Eco-labeled Dairy Products

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Abstract

This research aims to undersatnd how intrinsic and extrinsic factors can influence consumers' buying decision on shopping eco-labeled dairy products in order to close the gap between intention and purchase. This research is a quantitative study and uses the theory of reasoned action (TRA) of Ajzen & Fishbein (1980). Data were collected through surveys applied to consumers buying dairy products from a recognised dairy supermarket in Bogotá-Colombia. This work uses logistic regression as a statistical method to subsequently complement the analysis and enhance the results. It also uses exploratory factor analysis, confirmatory analysis, and a structural equation model. Findings show that ecological labels do not generate a positive influence to close the gap between intention and purchase. Manufacturers should strengthen environmental damage knowledge and awareness on dairy products consumption while keeping positive private benefits so that eco-labels really work and the gap between intention and purchase can be reduced.

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Chapter 1. Introduction

Consumers could reduce the impact on the environment and make a positive difference while purchasing products. According to Grumert and Juhl (1995) household consumption accounts for 40 % of environmental damage. Researchers have sought to examine factors that influence purchasing decisions and have developed ethical consumer behavior models.

Different manuscripts suggest that consumers are increasingly aware about the impact of daily food products over the environment (Carrington, Neville & Whitwell, 2010; Chan & Lau, 2000; Rowlands, Parker, & Scott, 2002; Hartmann & Ibáñez, 2006; D'Souza, Taghian, & Khosla, 2007; Finisterra do Paço, Barata Raposo, & Filho, 2009); as a consequence, the demand for eco-labeled products has rapidly increased (Nasir & Karakaya, 2014). However, there is still a gap between eco-label purchasing intention and the actual purchasing decision; that is to say, people may express their willingness to buy environmentally friendly products although, in the market, they might make a different decision (Cleveland, Kalamas & Laroche, 2005; Carrington et al., 2010; Devinney, Auger, & Eckhardt, 2010; Papaoikonomou, Ryan & Ginieis, 2011; Englis & Phillips, 2003; Grimmer & Miles, 2016). Thus, an alternative to close this gap and to influence a more conscious and intelligent purchase may be related to the location of the eco-label in the package meaning that the product is produced with less polluting processes and materials. Bernard, Bertrandias & Gambier (2015) state that the purchasing decision process includes several stages such as the intention and the actual decision to buy products, and therefore, when facing an eco-labeled product, a consumer may suffer a total disconnection and may not purchase the product even if he/she has previously said he/she would.

Unfortunately, most findings come out from researches carried out in European, Asian, and North American countries. Nevertheless, there is not much done in developing countries of South America such as Colombia. Therefore, this study aims to identify the correlation between intrinsic and extrinsic factors that influence consumers' intention and purchase behavior when facing eco-labeled dairy products. Nassivera and Sillani (2017, p.37) define intrinsic attributes as "the links among the triggers that make the buyer not changing the attitude toward the eco-labeled product". As an outcome, in this research, the author classified factors to be analyzed as intrinsic and extrinsic. Intrinsic factors as those variables in the consumer's mind that influence the intention and buying decision on shopping eco-labeled dairy products. On the other hand, extrinsic factors as those external and physical variables.

Background to the Problem

Food industry has a large share in the emission of greenhouse gases in the world throughout its production, distribution, consumption and disposal chains (Garnett, 2013). Therefore, at a global level, climate change awareness and concern has increased due to the growth of negative impacts in the environment (Raziudddin, Siwar, Talib, Sarah & Chamburi, 2014). The fact that there are consumers concerned about the environment and have a green buying behavior is essential to find solutions for environmental damage in the world (Mainieri, Barnett, Valdero, Unipan & Oskamp, 1997). As a matter of fact, the way consumers buy, transport, and locate products in their homes, prepare the food and then dispose of the waste is not sustainable with the environment (Grunter, 2011).

To achieve consumers' understanding of products and their impact on the environment, eco-labels have been created around the world to influence consumers'

buying decisions through environmental care awareness. Indeed, consumers have the power to reduce negative impact over the environment by making appropriate purchasing choices. The European Commission (2008) shows that 75 % of consumers state that they are willing to buy environmentally friendly products. However, consumers still consider information difficult to understand due to the increased proliferation of eco-labels (D'Souza, Taghian & Lamb, 2006). An eco-label could transform some characteristics of belief (environmentally harmful) within a search attribute that could mark purchasing decision behavior (Sammer & Wustenhagen, 2006). Unfortunately, research findings also show that even if consumers have an attitude towards green-labeled products they do not always translate this intention into actual product buying.

As Thogersen (2002) mentions "decision making about eco-labels is a gradual process and one that consumers go through at an uneven pace" (p. 96). In other words, consumers manifest a positive attitude towards a specific labeled product that does not always translate this attitude into a real buying action. In order to match the intention and actual purchasing behavior of environmentally friendly products, manufacturers have designed eco-labels to communicate consumers that the product they are purchasing has a positive impact on the environment. Whether a product has been designed and subsequently manufactured with an ecology conscience, this development must be disseminated through a tag that allows the consumer to understand the responsibility of the product with environmental impact (Erskine & Collins, 1997). Therefore, consumers may go through a series of decisions that encourage their eco-labeled products buying resolution.

The importance between consciousness and credibility regarding intention and final decision is illustrated in Figure 1. It illustrates the process that the consumer experiences

when deciding to chose the eco-label, this process is rooted in the theory of adoption of new products (Thogersen, Haugaard, & Olesen, 2010).

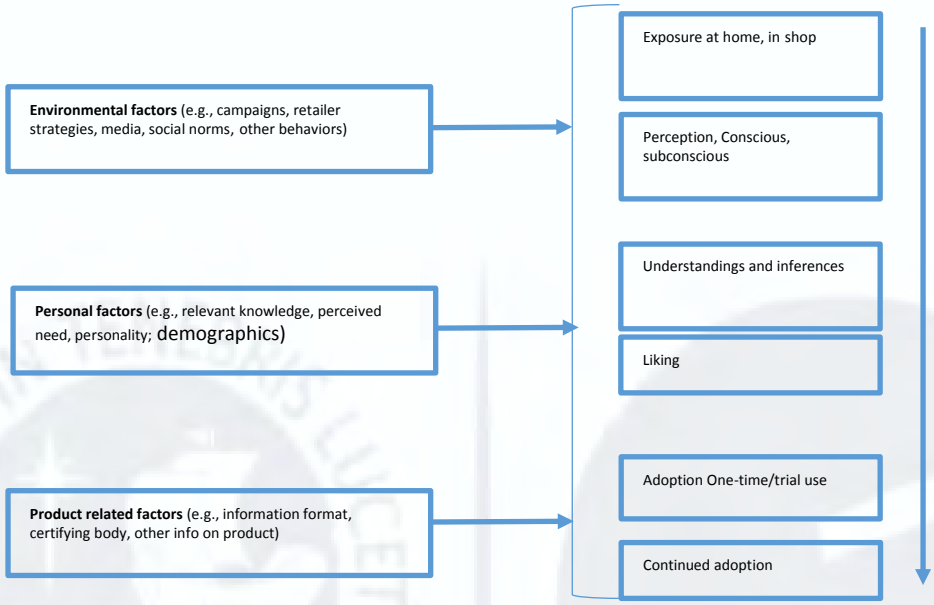

Figure 1. Individual eco-label adoption process. (Thogersen et al, 2010; p. 1790)

Finally, it is necessary to review the relationship between intention and purchase behavior versus ecological labels, as stated by Choo, Chung & Pysarchik (2004, p. 610) who found that "consumers' intention to buy new processed foods was an accurate predictor of actual purchase behavior only for highly innovative consumers".

Statement of the Problem

In a recent study (*60 million consommateurs*, 2013) 62% of French consumers recognize they are ignoring eco-labels, the 89% say that brands are using eco-labels to improve their image, but that trend could change radically if the products in the warehouses were labeled according to their environmental impact (Bernard, Bertrandias & Gambier,

2015). Other scholars increase the debate about the absence of a link between attitude and behavior and emphasize the strength of consumers' attitudes and skills when buying (Fazio, Powell, & Williams, 1989). To understand the phenomenon happening in consumers' minds between intention and decision when buying completely opposite, it is essential to determine in this research the relationship among intrinsic and extrinsic factors that could help reducing the gap between intention and purchase behavior of eco-labeled food products. These findings expand the knowledge frontier for companies in the food sector in developing countries. To know the causes that change consumers' purchasing decision with a previous intention to acquire an eco-labeled product could make companies generate more effective strategies to seek for a match between environmentally friendly products and actual buying behavior; as a result, companies and consumers would be protecting the environment through eco-labeled food products consumption.

Purpose of the Study

The purpose of this correlation research was to know the influence of intrinsic and extrinsic factors over the gap between the intention and purchase behavior on shopping eco-labeled dairy products. The main objective is to accurately understand the information that companies in the dairy sector must reinforce so that the ecological attribute transformed into labels is an important factor in the purchase decision process. The revision of the world literature demonstrates that there is a disconnection or gap in consumers minds to understand what happens between the intention and the real action of acquiring eco-labeled food products. In this disconnection, there is a relation between dependent variables that include buying o not buying an eco-labeled product and independent variables that include environmental knowledge, environmental awareness, private benefits, and ecolabel. The independent factors can be classified as intrinsic and extrinsic.

As previously described, this research followed a cross-sectional study design and a hypothetic-deductive approach methodology, thus, its structure was mostly presented in a correlational way. The independent variables were classified in factors according to the factorial analysis so that later it is confirmed with the process of confirmatory analysis. In addition, structural equations modeling (SEM) was an important stage in the analysis process because they focus their attention on the estimation and statistical validation of relations between latent variables and constructs (Chion & Charles, 2016). The validated instrument has been already developed in other researches (surveys) and was adapted for this investigation. This study is relevant because it focuses on the study of the gap between purchase intention and purchase behavior on shopping eco-labeled dairy products in developing countries. Findings are expected to be useful for food industries because the reasons for the disconnection between intention and behavior in purchasing eco-products are unknown for them due to the lack of applied research in the country.

Significance of the Problem

The use of eco-labels is a way to educate consumers about green products, likewise, these labels can address asymmetry information between manufacturers and consumers. Manufacturers know what the real impact on the environment is but the consumer does not have the same information, as a result, eco-labels can synchronize information between stakeholders. In this sense, Joshi & Rahmna (2015) point out that consumers can prevent or decrease environmental damage through green product purchasing behavior. Nevertheless, there is still a long journey understanding factors that consumers experience when facing an eco-label (Galarraga Gallastegui, 2002; Thogersen, 2002). Leire and Thidell (2005) argue that a precise understanding of buyers mind should be generated when they see an eco-label on the product. One probable reason for this lack of correspondence between

attitude and behavior is a “low perceived self-efficacy of eco-label, meaning that people think it will be difficult or even impossible to implement the behavior towards which they have a positive attitude” (Bagozz, 1992, p. 185; De Vries, Dijkstra & Kuhlman, 1988, p. 278).

Therefore, it is fundamental to design and carry out studies with academic rigor to identify the variables that make behavior inconsistent between attitude and purchase (Gallastegui, 2002; Bengu, 2017), especially, in countries like Colombia where there is no knowledge about the factors that make intention into a real purchase action regarding an ecological product.

Nature of the Study

This study followed the hypothetical-deductive reasoning, a method in which the researcher defines a theory and, through observation such theory is verified or rejected (Pereyra Lopez, 2008). Additionally, the significance level of relationships between variables that are in the theory is verified. In other words, the hypothetic-deductive method consists of going from the hypothesis to the deduction to determine the truth or falsehood of the facts processes or knowledge through the falsification principle stated by Karl Popper. According to Popper his theory of falsification consists of four steps: (a) observation of the problem, (b) hypothesis (Ha), (c) deduction of consequences that are contrasted (Hb), and (d) observation and verification (Naupas, Mejia, Novoa & Villagomez, 2013, p.137). As commented by Naupas et al, (2013, p.48) Popper has a position in epistemological debates, where he defends that scientific statements are verifiable. Popper points out that one can not prove the truth of universal statements by reason. As a result, Popper's proposal is known as a hypothetico-deductive method. As has been pointed out, the method starts with the formulation of some hypotheses from which

main predictions are extracted deductively (Ynous, 2015, p. 53). Due to the stated reasons, this research follows Popper's hypothetico-deductive method as an epistemological logic.

An investigation is a set of strict steps that must be in a specific research plan that describes the method, data collection and analysis of the information (Burns & Bush, 2010). Singleton (2003) believes that a good research design is the first golden rule to achieve good research. In fact, an appropriate research design is necessary for the researcher to achieve the objectives set out in the project.

Following the above mentioned, this research aims to correlate and use a quantitative method to solve the research problem in a suitable way and generate useful results for dairy companies selling eco-labeled products in developing countries. Correlational research consists of describing relations between two or more categories, concepts or variables at a specific moment, therefore, as stated by Sampieri, Collado & Lucio (2007, p.157) "causal correlational designs can be limited to establishing relationships between variables without specifying a sense of causality or pretending to analyze causal relationships ". In other words, when the variables are limited to non-causal relationships, they are based on correlational approaches and hypotheses. For certain studies, the researcher tries to correlate categories, variables, objects or concepts, but in other studies, the researcher seeks to establish causal relationships. It is important to specify that causality implies correlation, but correlation does not mean causality (Sampiere et al, 2007). This causality is established by each researcher according to the objectives of the study and the literature review. In the investigations, the person who designs the study is the one who determines its direction and establishes what is the cause and the effect. As pointed out by Sampieri *et al,* (2007, p. 158), independent variables must precede dependents at the same time. As mentioned by Sampieri *et al* (2007, p. 65) "correlational

research has to some extent, an explanatory value, although partial, knowing that two concepts or variables are related, provide some explanatory information." Additionally, in quantitative terms, “the greater number of variables are correlated or associated in the study and the greater the strength of the relationships, the more complete the explanation will be” (Sampieri *et al*, 2007, p.65). Also, Ho (2014, p. 218) states out that “correlational studies attempt to find the extent to which two or more variables are related”. In this research scope, the variables were not manipulated as in an experiment. The researcher measures the event, behaviors or other features of the object of investigation in order to determine the significance of the relationship between variables. As a consequence, those interactions are statistically analyzed to determine if any relationship exists among them with the level of dependence (Ho, 2014).

This research was a cross-sectional design because it helped to describe variables and analyze their incidence and interrelation at a point of time; it is like taking a picture of something that happens over time (Hernández, Fernández & Baptista, 2010). As also explained by Hernández, Fernández & Baptista, (2010) cross-sectional study aims to investigate the effects of one or more variables in a population.

The focus of the research was a quantitative method. The quantitative approach uses structured questions where response options have been previously designed and many respondents are involved (Burns & Bush, 2010). To achieve a quantitative study, it is necessary to design internal and external validity. For both cases, Venkatesh, Brown & Bala (2013), define each one as follows:

> *Internal validity:* The validity of the inference about whether the observed covariation between independent and dependent variables reflects a causal relationship (e.g., the ability to rule out alternative explanations). (p. 13)

> *External validity:* The validity of the inference about whether the cause-effect relationship holds over variation in persons, settings, treatment variables, and measurement variables. (p. 25)

Continuing with Venkatesh, Brown & Bala (2013) two topics should be analyzed to measure validity:

a) Reliability: In the academic literature the term reliability means consistency or repeatability. The result of measuring reliability is when results produce the same results over time. As Venkatesh, Brown & Bala (2013) state, there are several types of reliability, such as "inter-rater or inter-observer reliability, test-retest reliability, parallel-forms reliability, and internal consistency reliability." (p. 34)
b) Construct validity: The level at which inferences can legitimize operationalization in research is when the construct truly reflects the theoretical meaning of a concept. As Venkatesh, Brown & Bala (2013) state, there are several types of construct validity, such as "face, content, criterion-related, predictive, concurrent, convergent, discriminant, and factorial". (p.34)

Finally, validity, in the quantitative methods, according to Venkatesh Brown & Bala (2013), becomes vital to analyze the inferential validity which refers to "the validity of inferences about the correlation (covariation) between independent and dependent variables" (p. 13).

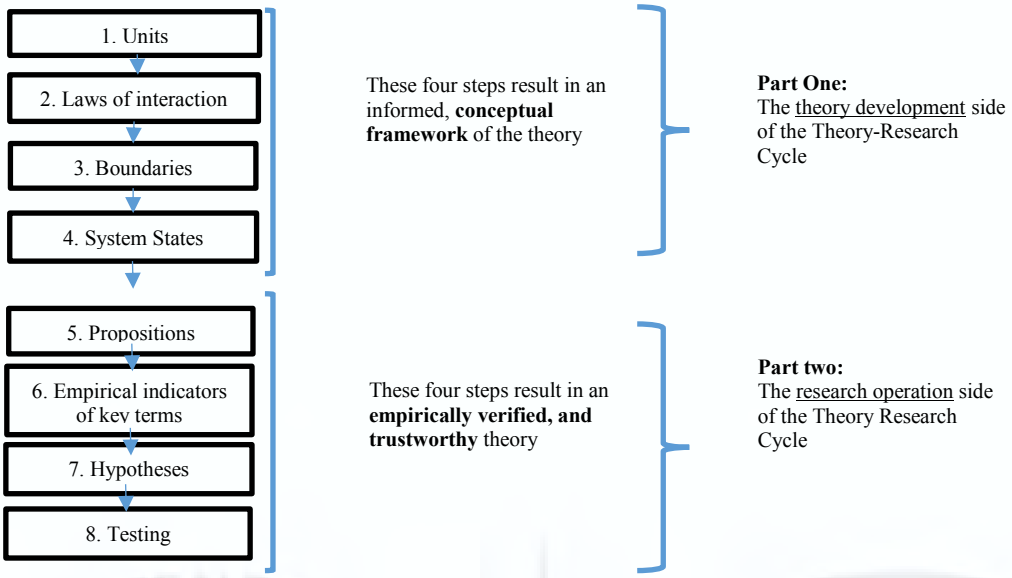

Figure 2. Dubin´s Method of Theory-Building as an Eight-Step Theory Research Cycle. Lynham, (2002, p. 243).

Several strategies and methods can be used by theorists to develop applied theory. Dubin's method of theory-building is one of these strategies. The procedure to show a continuous cycle of theoretical research is divided into two phases: the first one from the theoretical side of the cycle and the other one from the operation of the research (Lynham, 2002). At the same time, this theory includes eight-steps, in a sequential form, to develop valid and trustworthy applied theory is revealed in Figure 2.

As it is mentioned by Lynham (2002) in Dubin´s theory-building system:

> "The notion of the hypothetic-deductive method implies a predisposition to a particular perspective of what makes a theory and, therefore, an appropriate method of theory construction and verification: A theory in science is a general statement (or hypotheses) from which particular inferences may be deduced and wherein observations can then be seen as confirming or falsifying hypotheses". (p. 243)

The outcomes of theory building using Dubin´s method should lead to an accurate understanding and an explanation of the behavior of the phenomenon in the existing world.

Additionally, as quantitative research, Dubin's method results appropriate for the present work; instruments used in this research include surveys. It is important to mention the relevance of using surveys in marketing research processes when compared to other primary data collection methods. According to Burns & Bush (2010) there are five advantages of survey methods: "(a) standardization, (b) ease of administration, (c) ability to tap the "unseen", (d) suitability to tabulation and statistical analysis, and (e) sensitivity to subgroup differences" (p. 142).

The sample must be carefully evaluated in a research of this level. Under this fact, the process of determining sample size was based on Alpina[1] supermarket total population. More specifically, a probability sample, which involves financial, statistical, and administrative aspects (McDaniel & Gates, 2005).

Data were collected using an interviewer-administered survey technique in which the interviewer asks questions to consumers and record their answers. All answers were recorded in a small computer to avoid mistakes during data collection, this also allowed interviewers to collect data rapidly and get it ready to be analyzed. Interviewer-administered surveys have four unique advantages, they offer feedback, good relationship, quality control, and adaptability (Burns & Bush, 2010). The surveys were applied mainly in an Alpina supermarket in Bogota-Colombia.

Finally, collected data were analyzed using the statistical package for social sciences (SPSS). SPSS generated reports with descriptive statistics, statistics comparison, logistics regressions, test validation, and other analysis that will lead to achieving the objectives of the research.

[1] Alpina is the largest company in the manufacture and marketing of dairy products in Colombia. Webiste: www.alpina.com

Research Question

Some research in North America and Europe are demonstrating how consumers are creating a more aware environmental mindset (Dagnoli, 1991). Labels are tools that legitimize business practices and protect companies from public regulations regarding the environment and thereby gain a competitive advantage (Porter & Var der Linde, 1995). The ecological labels are in the capacity to diminish to the uncertainty about the impact of a product in the environment becoming consumers into agents of change at the moment of consuming and disposal alimentary products. As a result, even though consumers recognize eco-labels and rely on information, they would be willing to pay a higher price for certified products (Karipidis & Sartzetakis, 2013). However, the growth of environmental awareness in eco products does not guarantee that consumers can change their intention towards purchasing a product. Some reasons include high green product prices, refusal to change habits regarding green products purchasing, social pressure to generate changes, among others. Due to these and other reasons, Laroche, Bergeron & Babaro-Forleo (2001) highlight the need to strengthen knowledge about the profile of the ecological consumer who claims to be one but, in reality, is not a responsible consumer when buying products. Studies carried out by Delmas, Nairn-Brich & Balzarova (2013) propose a framework to evaluate eco-labels and how they fit into the profile of ecological consumers, these aspects are: (a) consumer understanding and awareness, (b) consumer confidence, and (c) willingness to pay for eco-labeled products. Consumers' understanding and awareness should move them to choose eco-labels with a clear message. To gain consumers' confidence, manufacturers may certify product integrity by using eco-labels and, at the same time, to gain consumers' willingness to pay for a product, companies must emphasize health, welfare and quality benefits. While eco-labels deliver the appropriate information to

consumers, the price could compensate the effort. For these and many other reasons it is essential, for this work, to find an answer for the following main question: To what extent understanding the influence of intrinsic and extrinsic factors in the intention and purchase behavior for eco-labeled dairy products in Bogota-Colombia could help to close the gap between intention and purchase decision? Additionally, this research will also answer the following specific questions: a) To what extent eco-label could help to close the gap between intention and purchase decision? b) To what extent privates' benefits could help to close the gap between intention and purchase decision? c) To what extent environmental knowledge could help to close the gap between intention and purchase behavior? and d) To what extent environmental awareness could help to close the gap between intention and purchase decision?. To answer these questions and to learn about Ajzen and Fishbein`s TRA (1980) will conclude this research as it is the path to help closing the gap between intention and purchase decision on shopping eco-labeled products.

Hypothesis

Akehurst, Afonso & Martins (2012) point out that there is a marked space between intention and behavior or a space between values and action against ecological products. These authors also claim that although 30% of consumers say they are very worried about the impact of their purchases on the environment, in reality, these concerns do not translate into environmentally friendly purchasing habits. This inconsistency between environmental concern and actual buying behavior has been explored by several authors in developed countries and has become a barrier for marketing to know how companies can increase eco-label products consumption (Mintel, 1995; Wong, Turner & Stoneman, 1996; Crane, 2000). Ecological consumers' behavior and factors that affect behavior against green products are identical across the world (Raziudddin, Siwar, Talib, Sarah & Chamburi, 2014). Other

authors such as Laroche, Bergeron & Babaro-Forleo (2001) claim it would be fundamental to know in depth the feature of an ecological consumer. These hypotheses support this work's research question and make it a fundamental part of this doctoral research. To find out the determining factors that change consumers' intention and purchase behavior towards eco-labeled food products, the following dependent variable, which includes several independent variables were worked as well as the subsequent hypotheses were tested or rejected by statistical models and will be detailed in chapter 3.

Dependent variable: Intention and purchase behavior

Independent variables: (a) Eco label, (b) Environmental awareness, (c) Environmental knowledge, and (d) private benefits.

The definition of these terms is on pages 22-24.

Hypotheses tested in this doctoral research were*:*

Ho: The ecological label does not influence the reduction of the gap between intention and purchase behavior regarding eco-labeled dairy products.

H1: The ecological label influence the reduction of the gap between intention and purchase behavior regarding eco-labeled dairy products.

Ho: Private benefits do not influence the reduction of the the gap between intention and purchase behavior of eco-labeled dairy products.

H1: Private benefits influence the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

Ho: Environmental awareness does not influence the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

H1: Environmental awareness influence the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

Ho: Environmental knowledge does not influence the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

H1: Environmental knowledge influences the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

Theoretical Framework

The environmental concern of people living in developed countries is so important for them, as pointed out by Potiane & Mokhethi (2014). Two hypotheses have arisen due to this fact: (a) environmental concern would positively influence green product purchasing intention, and (b) environmental concern would positively influence attitudes towards eco-labeled products.

As argued by Potiane and Mokhethi (2014), environmental concerns can help to shape specific attitudes in consumers. As a result, green product consumption can be positively impacted. This study also detected that consumers would feel better paying for products with ecological attributes. On the contrary, consumers may not be also willing to pay higher prices for environmentally friendly products (Potiane & Mokhethi, 2014). Environmental awareness can also influence the creation of communities and groups sharing the same caring values. In conclusion, this study states that consumers do not always act according to what they say when confronted with a green product or with an environmental label making it very difficult to predict their behavior (Potiane & Mokhethi, 2014).

Paco & Raposo (2010) have found in their research that individuals who care about the environment will present a proactive behavior if they feel that their individual actions could effectively solve environmental problems. People working in the marketing areas need to know that customers have high or low awareness of environmental problems to

analyze how this can influence each stage of eco-labeled product purchasing process to favor the environment. Thes authors also state that this leads to more environmentally friendly purchasing behavior and that the first factor that reflects a trend in consumers is to become them more careful when purchasing, choosing products that are energy-efficient, less polluting, environmentally friendly, recyclable products and biodegradable products, at the same time, consumers also evaluate less environmentally damaging packaging. Another factor, according to Paco & Raposo (2010), appears as environmental activism where there are individuals who look for more information about the products and the way they are produced. They are also people who collaborate with environmental groups and actively participate in protests to defend the causes that help to solve the problems in the world in terms of pollution and climate change. Paco & Raposo (2010) segmented consumers as (a) "non-engaged" (36%) who are young people, very skeptical of environmental issues, (b) "green activists" (35%) who are characterized by high levels of education and working in high positions, they find environmental issues interesting and have a certain commitment to pro-environmental causes, they change their buying behaviors toward green products, and (c) "the indefinite" (29%) are characterized by low levels of education, has negative positions towards environmental issues, but are activists in environmental problems. On the other hand, the creation and growth of social networks are helping with an important speed to expand the information of those companies that are committed to the solution to environmental problems.

Arseculeratne & Yazdanifard (2013) point out that the new green market is currently having a high impact on the transformation of many companies since green marketing appears in the 80s. Companies have realized the importance of inserting green strategies and the eco-label is a good vehicle to create consensus in the consumer and look

for unique positions in the marketplace with a high impact on the bottom-line. In addition to winning over their competitors, they are experiencing support from stakeholders and especially from consumer groups because they are becoming more aware of the world's ecological problems. Arseculeratne & Yazdanifard (2013) also state that companies have recognized the value of transforming their businesses into green businesses where they are best evaluated by consumers. This fact is actually helping to reach and retain customers as they may identify themselves with ecological issues and therefore support companies offering solutions for the environment.

The Minister of Agriculture and Agri-Food of Canada (2012) describes in its report "Trends in the Socially Responsible Consumer" how socially responsible consumption has grown in the Canadian market. This form of behavior is an increasingly important trend in food and beverage stores in the northern country. Many companies are committed to incorporate social responsibility to be agents of change in the marketing of their products. These companies have achieved differentiation and preference on the part of customers because responsible consumption has increased and buying behaviors are joining to resolved environmental issues.

Belz & Peattie (2009) describe in their book “Sustainability Marketing” how consumers are increasing their exposure to information on environmental issues such as climate change, pollution, waste rise through various sources such as reports and websites aiming to support companies that are doing something positive to help solving these environmental issues. Connections between products and solutions to environmental problems are being communicated to consumers through advertising, eco-labels, corporate websites or environmentally friendly buying guides. The problem is the overexposure of information that consumers have, and often fail, to understand environmental problems

which end up creating a barrier to purchase products or discrediting companies and their communication strategies. As a consequence, eco-marketing strategies using eco-labels should be clear and consistent so that consumers continue trusting in them supporting those brands involved in solving environmental difficulties by purchasing their products.

In order to understand the eco-labeled food product purchasing behavior, it is important to analyze consumers' intentions. In fact, altough the intention is weak the behavior will not be relevant when selecting an eco-labeled product. Consumers who are more concerned about the environment are more inclined to look for green products and are proud to have an environmentally friendly lifestyle (Wind, 2004). Figure 3 summarizes the theory of reasoned action (TRA) by Ajzen & Fishbein (1980), that will be used during this research work as the main theory to be applied to the subject of the study.

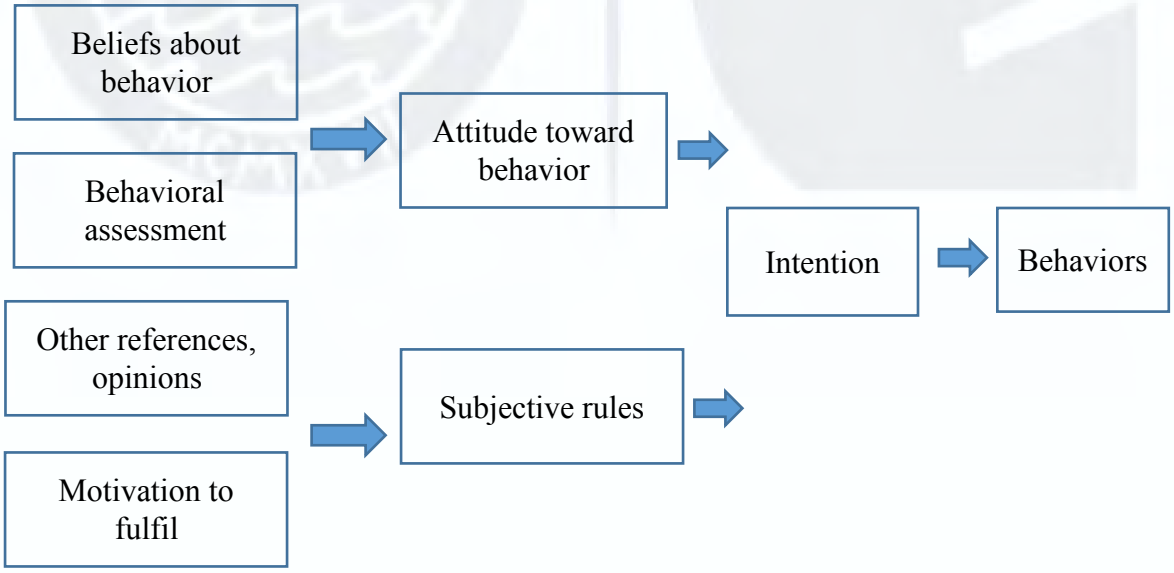

Figure 3. Theory of Reasoned Action, (Ajzen & Fishbein, 1980).

According to Ajzen & Fishbein (1980), the expected result of TRA is "to predict behavior only if the intention has not changed prior to performance of the behavior" (Kulh & Beckmann, 1985, p. 13). Therefore, in order to reduce the gap is fundamental to reinforce the intention because the correlation between intention and action (purchase) is very significant following TRA.

Although eco-labels on food products represent an innovation (Thogersen et al, 2010), the study will use the theory of innovation diffusion created by Professor Everett Rogers in 1962 (see figure 4). Professor Rogers argues that diffusion is the process through which an innovation is communicated in time to the interested parties. The following figure outlines the theory of diffusion of innovation.

Figure 4. Diffusion of innovation theory. Rogers (1971)

Consumers who are familiar with environmental information on product categories should be more willing to buy environmentally friendly products. For this reason, this doctoral research was also relying on information processing theory supported by Professor George A. Miller. Professor Miller was one of the most important and influential

psychologists of the 20th century. His theory of information processing discusses the mechanisms through which learning occurs. When the consumer understands that the innovation of the ecological label is functional for the environment, their behavior could be very different when processing the information that this new attribute gives them (Bettman & Park, 1980; Jhonson & Russo, 1984; Park & Stoel, 2005; Bernard, Bertrandias & Gambier 2015). As a result, Bernard et al., (2015) state that the link with the environmental message of the label should influence the perception of the benefit of the products and redirect a better selection in the purchase of food products.

Definition of Terms

Terms mostly used in this first chapter are:

Ecological marketing: refers to the marketing that, as part of a total corporate strategy, is geared towards the care of the environment in all its operations (Christodoulides, Fotiadis, Katsikeas, Leonidou & Spyropoulou, 2015).

Intention-purchase: is when a consumer declares the preference of a product or service over other options as a result of marketing strategies (Martin & Schouten, 2012).

Eco-label: The ecological label claims are based on self-declarations by manufacturers or an external entity. Also, it is a visual communication tool that indicates if the product or service is environmentally friendly (Greener Products Glossary, 2013). As a result, product labeling also has the benefit that consumers are exposed to a clear message in the point-of-purchase (Garvey & Bolton, 2017). However, it is important the good use of the eco-label and the generation of trust because the consumers could develop a deeper uncertainty in environmental performance data if the eco-labeling system used to connect that performance create a

negative effect (Hille, et al. 2018). In addition, the eco-label has the function of communicating the benefits of the product with the environment, this could positively influence the consumption of sustainable products due to compliance with environmental standards (Chen et al. 2019).

Environmental awareness: The conscience of the environmental consumer is based on the knowledge of the real impacts of a product or service on the environment. In addition, Garvey & Bolton, (2017) point out that "individuals high in environmental consciousness will be more likely to interpret their behavior as prosocial and consistent with their personal beliefs and motivations" (p. 10). Also, this new environmental awareness shows if the consumer recognizes the environmental label and supports with his purchase (Raziuddin et al., 2014, p. 2183). As part of consumer awareness with environmental challenges "the consumer could purchase and use fewer resources, products, and services; choose more eco-efficient resources, products, and services; and produce less waste" (Kropfeld, et al. 2018, P. 248). Hulman & Corvellec (as cited in Guillard, 2018) point out that growing awareness of the environmental crisis, public policy has deployed resources for waste management throughout the waste: disposal, recovery, recycling, waste prevention, and reuse. Perhaps, consumers could gradually become more aware of the waste caused by their consumption. In summary, eco-labeling is one way to create awareness from manufacturers, they could be encouraged or required to include repurposing ideas, similar to how some manufacturers include product use ideas on labels and packages (Scott & Weaver, 2018).

Environmental knowledge: It is defined as the complex process that people experience when they acquire, analyze and understand the information that comes

from their environment (Alba & Hutchinson, 1987; Jacoby, Troutman, Kuss & Mazursky, 2013). In fact, "when the environmentally friendly attribute of the green product has a high environmental impact, the green consumption effect persists" (Tezer & Onur Bodur, 2019, p.33). Kropfeld, et al. (2018) state out that "environmental knowledge, and subjective norms turn out to be major drivers for green purchasing behavior, whereas high prices, low availability, and lack of consumer trust in green products emerge as barriers" (p. 249). In other words, consumers would have to have the right knowledge about the ecological impact of specific products to change their choices. As was mentioned by Kropfeld et al. (2018), the degree to which environmental knowledge translates into environmentally friendly consumer behavior will reduce consumers' ecological impact. Also, the label could define repurposing as an application of an object (Scott & Weaver, 2018), in this case, dairy product, to a disposal purpose friendly with the environmental creating knowledge of reducing the impact of a package and its right location for the waste management.

Private benefits: The private benefits of a product are the real promise of the product to the consumer to meet needs and wishes (Raziuddin et al., 2014, p. 2188). In fact, Newman, Gorlin & Dhar (2014) observed that the effect on purchase intention was mediated by inferences about quality when the benefit was inherent to the product (green benefit) but not when the benefit was separated from the product. In other words, when the benefit is inherent to the product (eco-label) as an unintended improvement the purchase intention is favorably impacted (Newman et al., 2014). However, it is critical to understand the trade-offs consumers make between their public and private interests when they are choosing a specific eco-product (Chen et

al., 2019) because to boost the ecolabel impact is a necessary increase or keep the private benefits of the product more than ecolabel.

Eco-friendly product: A product friendly to the environment is intended to help mitigating the problems that the planet is experiencing. This product is elaborated, marketed, consumed and disposed of with sustainable practices, in other words, the whole life cycle of the products is tender with the world (Hindle, White & Minion, 1993).

Consumer behavior: Responsible purchasing behavior is understood as the process of evaluating in a profound way the environmental impacts that the product has on the planet (Moisander, 2007).

Assumptions

The following assumptions were made for this research work:

a) Consumers have a very basic knowledge about the real threats of the environment in aspects of environmental deterioration.
b) In Colombia, there is no high awareness of consumers regarding food products and environmental impacts when purchasing them.

Limitations

This study is limited for Colombian consumers who buy a dairy product, live in Bogota and had agreed to participate in this research. In addition, this study is limited by the reliability of the instruments developed and applied. The research analyzes how intrinsic and extrinsic factors influence the intention and purchase behavior gap on shopping eco-labeled dairy food products in Bogota-Colombia. To analyze such behaviors, the study used the following variables: (a) eco-label, (b) environmental awareness, (c) environmental knowledge, and (d) private benefits. Other variables such as excessive

confidence, social desirability, and so on, were not taken into account due to the length limits this study has. The variables that were studied in this research were based on seminal articles. As a limitation, answers may include or not honest and transparent responses.

Delimitations

This research was also directed to dairy products consumers in Bogota-Colombia, which allowed to provide relevant information for other subsequent studies in other cities of the country. Likewise, the help of the leading biggest dairy company in the Colombian market in the dairy sector was requested so that it allowed the investigators to enter its supermarkets for the collection of the information.

Summary

At the present time, negative consequences are being experienced in the environment as a result of products and services consumption with no ecological awareness. Mass consumption and, in particular, food consumption, represent a high proportion of waste and pollution, from its creation to its final use. These products use and consume non-renewable resources throughout their useful life which generates damage to the world. These natural resources can not regenerate, as a result, the world is going through an ecological crisis. Fortunately, in recent years, companies have become aware of the importance of preserving the natural resources and are committed to managing ecological marketing strategies using eco-labels in food products to be part of the solutions the planet demands. Unfortunately, there is no academic research in developing countries especially in Latin America with specific results regarding dairy food that can be useful for companies to analyze if eco-labels are really motivating intention and purchase decisions or are just an attractive package label. In other words, companies need to understand that consumers have a positive attitude towards eco-labeled products but actual buying is based on other attributes

of the product and not on the eco-label aspect. Having this in mind, it is necessary to analyze those factors that influence intention and purchase behavior when purchasing eco-labeled food products, leading, as a consequence, to re-address marketing strategies of eco-friendly products.

Chapter 2. Review of Literature

Currently, academic evidence related to environmental issues present in societies around the world has increased, as a result, people and societies seem more interested in environmental problems. According to Hessami & Yousefi (2013) "international research has shown that customers are more concerned about environmental changes than in the past and have changed their behaviors." (p. 1). On the other hand, Kumar & Ghodeswar (2015) argue that "knowledge of the destruction of natural resources as a result of human activities has raised the issue of environmental protection and environmental awareness in the behavior of consumer" (p. 1). Therefore, in customers' minds, there is a growing concern about environmental issues, affecting their buying behavior toward products and services that are more environmentally friendly. However, there is a gap of environmental values and behaviors known as Environmental Values-Behavior Gap (EVB gap) that, according to Kennedy, Beckley McFarlane & Nadeau (2009), refers to the incompatibility between pro-environmental values and the actual purchase behavior of products and/or services that support the solution of environmental problems. Furthermore, Vitell & Muncy (1992) point out that some customers may justify behaviors that are not consistent with their thoughts. The authors declare that these behaviors will deny the responsibility to buy products with these sustainable attributes (Vitell & Muncy, 1992). In this chapter, a review of the world literature on the independent and dependent variables that increase the EVB gap on consumers who are trying to become ecological buyers will be carried out.

Documentation

The literature review has been exhaustive and deep to understand the knowledge gaps between consumers' intention and their actual purchase action regarding eco-labeled

products. Mufidah et al, (2018, p.1) define an eco-labeled product as “an environmentally friendly substance that can be selected to maintain environmental sustainability”. For this research, academic articles published in the main journals worldwide have been reviewed. They have been searched through the most complete databases such as Scopus, Science Direct, EBSCO, Proquest, JSTOR, Journal of Marketing Research, Journal of Public Policy and Marketing among others. Articles were carefully selected from universities around the world including Asia-Oceania, Europe, Canada, and North America. Most information has only been found in developed countries. In fact, this is the reason why the present doctoral research has a significant value and impact in the academic and business community; it will be the first academic rigorous work applied in a developing country like Colombia.

Literature Review

To analyze information obtained from literature review regarding variables that are affecting eco-labeled food products buying behavior, it is essential to understand that the perception of the added value of eco-labeled products and the consumer confidence in environmentally friendly products directly influences individual's values and environmental behavioral gap (Izagirre, Fernández & Vicente, 2013). Other recent studies point out that the understanding of the eco-label effect as it arises in contexts other than with food and consumables, and show some of the potentially important psychological consequences of “green” labeling in the built environment (Hagá, 2018). Then, consumer buying behavior can be influenced by personal, psychological, and social factors. The first one related to demographic factors such as gender, race, and age. Consumer buying behavior can be influenced by personal, psychological, and social factors. The first one related to demographic factors such as gender, race, and age. The second one includes motives, perception, decision-making, knowledge, attitudes, personality, and lifestyles. The third

one is external and can come from opinion leaders, family roles, and influences of reference groups, social class, culture, and subculture (Donikini, 2013). Also, ethical judgments at the time of purchase could be useful to understand them because they would provide fundamental information to create more persuasive strategies towards the sustainable consumer (Vitell & Muncy, 1992). Mufidah et al. (2018) research findings revealed that attitude (AT) is the key factor to determine the behavioral intention (BI) in both Taiwan and Indonesia. Those findings can be considered as input for the governments and related agencies to persuade manufacturing companies to produce more eco-label products. As a result, Struwig & Adendorff (2018, p.175) affirm that: "businesses should therefore aim to increase the awareness of eco-labels and educate consumers about the potential use and benefits that eco-labels could provide to consumer".

Variables that affect the intention and purchase behavior

This exploration includes aspects of cognitive psychology, like attitudes, beliefs norms, and internal ethics already mentioned in the Theory of Planned Behaviour (TPB) (Ajzen, 1985) and in the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1980). Other authors point out the influence that exerts the following variables in the success of eco-label certifications; for instance:

(a) environmental messages advertising (Grimmer & Woolley, 2014; Global Eco-Labeling Network, 2013; Raziuddin, Siwar, Talib, Sarah & Chamburi, 2014; Laroche, Bergeron & Babaro-Forleo2001; Pedersen & Neergaard, 2006; D'Souza, Taghian & Khosla, 2007; Nassivera & Sillani, 2017; Joshi & Rahman, 2015).

(b) label persuasion (Grunert, Hieke & Wills, 2014; Bi, Gao, House & Hausmann, 2015; Raziuddin et al., 2014; Chase & Smith, 1992; Bengu, 2017; Tang, Fryxell & Cow, 2014; Raziuddin, Vocino & Polonsky, 2016).

(c) emotions and feelings (Grimmer & Woolley, 2014; Nuttavuthisit & Thogersen, 2015; Nasir & Karakaya, 2014; Johnstone & Tan, 2015; Gutierrez & Seva, 2016).

(d) environmental awareness (Grimmer & Woolley, 2014; Schubert, Kandampully, Solnet & Kralj, 2010; Yan & Xu, 2010; Ramayah, Lee & Mohamad, 2010; Royne, Levy & Martinez, 2011; Nasir & Karakaya, 2014; Kalafatis, Pollard, East & Tsogas, 1999; Raziuddin et al., 2014; Bengu, 2017; Sandoval, Alfaro, Mejia-Villa & Ormazabal, 2016; Joshi & Rahman, 2015; Raziuddin, Vocino & Polonsky, 2016; Gutierrez & Seva, 2016; Grimmer & Woolley, 2014; Nuttavuthisit & Thogersen, 2015; Johnstone & Tan, 2015).

(e) environmental knowledge (Bruschi, Shershneva, Dolgopolova, Canavari & Teuber, 2015; Kalafatis, Pollard, East & Tsogas, 1999; Raziuddin et al., 2014; Celsi & Oslo, 1988; Verbeke, 2008; Pedersen & Neergaard, 2006; Bengu, 2017; Topolansky, Gonzalez & Hensel, 2013; Joshi & Rahman, 2015; Raziuddin, Vocino & Polonsky ,2016; Bernard, Bertrandias & Gambier, 2015; Thogersen et al., 2012; Zaichkowsky, 1985; Blonch & Richins, 1983, Engel et al., 1995; Houston et al., 1978; Atkinson & Rosenthal, 2014; Montague & Muherjee, 2010; Grunert et al., 2014)).

(f) the consumer involvement level (Thøgersen, Jørgensen & Sandager, 2012; Celsi & Oslo, 1988; Zaichkowsky, 1985; Bloch & Richins, 1983, Engel, Blackwell & Miniard, 1995; Houston & Rothschild, 1978; Joshi & Rahman, 2015; Atkinson & Rosenthal, 2014; Montague & Mukherjee, 2010; Grunert, Hieke & Wills, 2014).

(g) consumer confidence in eco-labelling (Chen, Lobo & Rajendran, 2014; Nuttavuthisit & Thogersen, 2015; Johnstone & Tan, 2015; Albersmeier, Schulze & Spiller, 2010; Jan, Schramm & Spiller, 2005; Thogersen, 2002).

(h) eco-label (Raziuddin et al., 2014; Llyon, 2006; Teisl & Roe, 2005; Morris, Hastak & Maziz, 1995; Maronick & Andrews, 1999; Docekalova & Strakova, 2011; Horne,

2009; Sandoval et al., 2016; Hoek, Roling & Holdsworth, 2012; Topolansky, Gonzalez & Hensel, 2013; Grimmer & Woolley, 2014; Global Eco-Labelling Network, 2013; Laroche et al., 2001; Perdersen & Neergaard, 2006; D´Souza et al, 2006; Nassivera & Sillani, 2017; Joshi & Rahman, 2015; Grunert et al., 2014; Bi et al., 2015; Chase & Smith, 1992; Bengu, 2017; Tang et al., 2014; Raziuddin et al., 2016).

Finally, (i) private benefits (Barbarossa & Pelsmacker, 2014; Nasir & Karakaya, 2014; Bougherara & Combris, 2009; Nassivera & Sillani, 2017; Joshi & Rahman, 2015; Montague & Mukherjee, 2010; Chen et al., 2014; Nuttavuthisit & Thogersen, 2015; Johnstone & Tan, 2015; Albersmeier et al., 2010; Thogersen, 2002).

Intrinsic and Extrinsic Factors

Similarly, different authors have studied intrinsic and extrinsic variables influencing eco-labeled product purchasing decisions. Findings show that some variables can be directly associated with consumers' behaviors and beliefs and others can be linked to the influence of social pressure on consumers' thoughts and behaviors. Understanding the pro-environmental behavior of food consumers is particularly challenging because there is often a contradiction between eco-friendly behavioral intent and real buying due to lifestyles in different places (Ricci, 2018).

Green purchasing decisions are influenced by two factors: (a) intrinsic factors such as environment responsibility awareness, the pursuit of knowledge, self-interest and willingness to act in favor of resources conservation and reducing environment impact, and (b) extrinsic factors, which refer, for example, to social impact and its image for the consumers and the external characteristics of the product, such as "product quality, safety, performance, price, promotion and impact on human health" (Kumar & Ghodeswar, 2015). Likewise, these scholars identified, after conducting a survey of 403 people in Mumbai,

India, five large groups of factors influencing consumers' purchasing decisions regarding environmentally-friendly products: (a) support for environmental protection, (b) consumers' own awareness of their responsibility with the environment, (c) the experience and knowledge with and from the product, (d) company's commitment to the environment, and (e) the image that the consumer projects to society. In addition, Kumar & Ghodeswar (2015) noted that the results shown in their study other specific factors of great relevance (with an index of more than 90% of affirmative answers) are also identified to influence the purchase of green products, these are:

> "(a) supporting environmental protection makes me feel like an environmentally responsible person, (b) I should be responsible for protecting our environment, (c) I feel good buying brands that are less damaging to the environment, (d) I refuse to buy products from companies accused of being polluters, (e) I will be perceived by others as "outdated" if, I do not support environmental protection, and (f) supporting environmental issues makes me more socially attractive".

Intention and Purchase Behavior Gap

In 1996, a study in France found that 54% of households would be willing to pay up to 10% more for products that were environmentally friendly (Grolleau & Ibanez, 2007). However, it is important to mention that this is called the "attitude-behavior gap" or "values-action gap" that appears in many academic studies as the result between intentions and actions in many buyers around the world without knowing the reasons for this phenomenon. Evidence of this gap is illustrated by Topolansky et al., (2013) who have shown that there is a cognitive dissonance between environmental awareness and the purchase of products with ecological labels. To achieve the objectives of this research, the

statistics were used as the most efficient means of summarizing the characteristics of larger sets of data (McDaniel & Gates, 2005).

Furthermore, in ethical terms, according to Vitell and Muncy (1992), ethical beliefs are different in each culture, but by understanding their meaning in each environment insights they could be implemented. Also, several investigations have talked about a gap between what consumers say about the importance of ethical issues and what they do at the checkout counter (Auger & Devinney, 2007). As a result, the appearance of ethical consumption has been a growing phenomenon in several countries where consumers are becoming increasingly critical of the companies that produce and sell food products (i.e. eco-label attribute) (Auger & Devinney, 2007).

Another study, developed by Hessami & Yousefi (2013), identifies several factors such as those with the greatest influence on consumer buying decisions in order of importance: (a) environmental factors, (b) personal environmental awareness (environment concern, behavior towards the environment, serious perception of the environmental issue, perception about efficiency, perception of environmental responsibility), and (c) consumption values (functional, conditional, social, emotional, and cognitive values). Based on the factors identified by Hessami & Yousefi (2013), it is inferred that the authors find out that consumers do not disconnect from their buying decisions the traditional purchasing factors such as functionality or social status that a product can offer. Additionally, Hosseinpour, Nezakati, Sidin & Yee (2016) point out that belief, knowledge, attitude, sustainable corporate responsibility, confidence and quality perception factors are influential in consumers' buying intentions of green products. Hosseinpour, Nezakati, Sidin & Yee (2016) argue that if a person believes and knows that a particular attitude or behavior will lead to a benefit or a negative impact on the environment, this belief will

constitute a reason for acquiring or not a product. Likewise, another factor is to trust in people or organizations, in other words, it is about the credibility that the company or brand can show in terms of their commitment to the environment as purchase motivators.

In a study carried out by Lu, Bock & Mathew (2013) authors identified that "although the cost of green products is important to millennials, their relationship to the purchase intention is limited compared to other attributes of the product". On the other hand, authors also identified that recyclability is the strongest feature that motivates intention-purchase, in this sense, attributes that buyer groups like millennials take into account are (a) promotion, (b) product availability, (c) non-toxic ingredients or materials, (d) recyclability or reusability, (e) biodegradability, (f) no animals testing, (g) eco-friendly production methods, (h) having a responsibility with the environmental causes and their activities, and (i) providing health-friendly effects.

Environmental Values-Behavior (EVB) gap considers Environmentally-Supportive Behavior (ESB), which refers to those actions carried out with the intention of benefiting or reducing human negative environmental impact (Stern, 2000). In this sense, the EVB gap refers to the space between environmental awareness and real actions towards the environment. As a consequence, empirical evidence uniformly reveals important and increasing levels of commitment to the environment in many countries of the world. However, participation in environmentally friendly actions and activities rarely grows in proportion to intentions (Izagirre, Fernández & Vicente, 2013).

In this way, authors also show that, although the individual is aware or shows concern for the environment and an impulse to act in favor, there are other factors, as mentioned above, that play an important role and influence the ecological purchasing. People with strong ethical behavior and a clear conscience about environmental damage

could be engaged in world-friendly shopping. Therefore, own beliefs can change the likelihood of making a green purchase (Kim, 2011). According to the previous literature review, this doctoral research will investigate how different factors classified in extrinsic and intrinsic could influence the gap between intention-purchase behavior for eco-labeled dairy food products. It is important to remember that this research uses the TRA (Ajzen & Fishbein, 1980) where this theory showed that the intention has a high correlation with the behavior in this case of purchase. Figure 5 shows the structural model to be analyzed in this research. Also, Ajzen (1985) in TPB theory demonstrates that:

> "a) pro-environmental attitudes have been central to the understanding of environmentally friendly behavior, b) Subjective social norms may therefore serve as a reference point for environmental decision-making because consumers are likely to seek support from others whose opinions are important to them, c) in personal norms: pro-environmental behavior often involves principles, and d) self-identity refers to how an individual perceives him/herself the labels used to describe him/herself." (Nguyen, 2018, p. 587).

Structural Model

The findings can produce a more precise knowledge of this phenomenon (intention and purchase behavior gap), in other words, the present investigation aims to generate information about the way in which those variables showed in the model (see Figure 5) can help to reduce and close the gap between intention and purchase behavior regarding eco-labels.

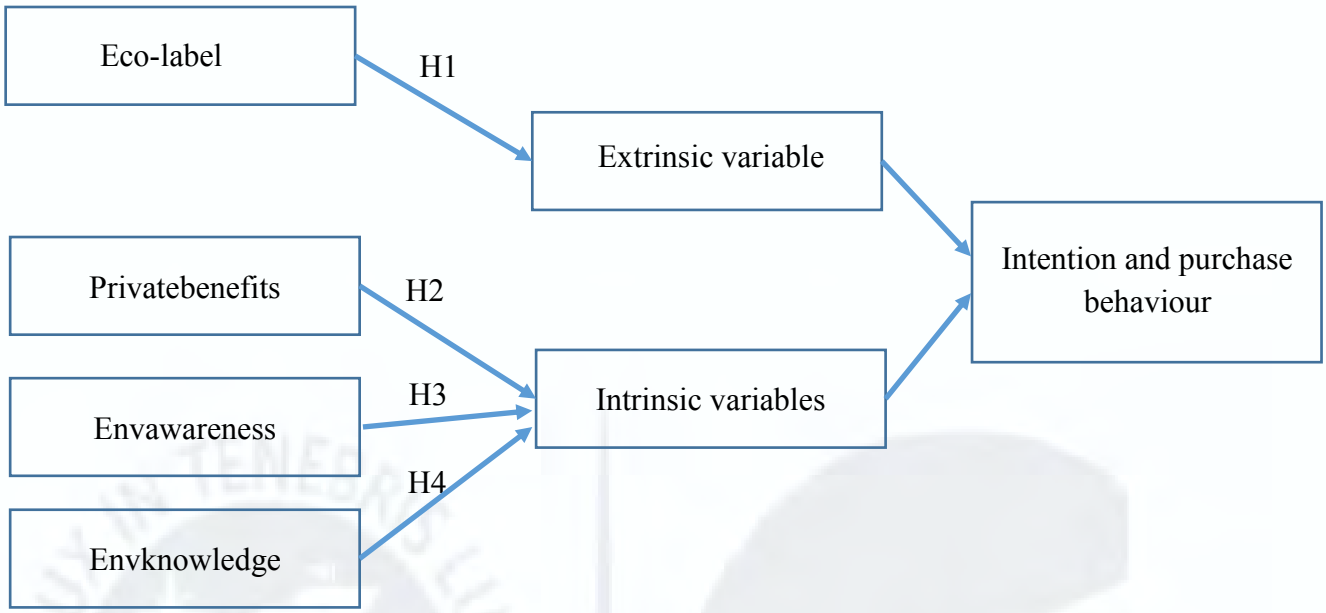

Figure 5. Structural Model

Summary

To sum up, Izagirre, Fernández & Vicente (2013) explain that common consumers are not willing to leave products general attributes for their own benefit. Authors specifically state that "it should be pointed out in particular that the inclusion of environmental attributes in the offered commercial formula cannot mean sacrificing in return the basic attributes that satisfy the consumer's need" (p. 122). Additionally, Manaktola & Jauhari (2009) state that:

> “From a customer’s perspective, the hospitality product consists of core attributes, which include its functional performance and non-essential attributes that deliver secondary benefits, which includes its environmental performance. Environmental performance may relate to the product itself or an aspect of it [...] and may provide an

opportunity for product differentiation". (p. 365)

From the literature review, there are factors that affect ecological purchasing behavior: a) consumers' awareness of their responsibility with the environment, b) credibility, and real companies' commitment to the environment, c) ecological characteristics of the product, and d) the influence of society on consumers' behavior. These factors can be considered as general factors that influence the decision to purchase eco-labeled products, however, as previously indicated, there are much more specific insights rooted in consumers' minds such as the feelings for green products purchase and those related to the recyclability of the product.

Conclusion

Finally, it has been evidenced that there is a significant gap between the intention of purchase of ecological products and the actual purchasing action, as well as the existence of an important difference between the presence of environmental awareness and eco-labeled products purchase. One factor, among others, is the way consumers perceive that the change in their individual behavior will not make a difference. Another factor is that consumers are not willing to give up some fundamental attributes of the product, this, accompanied by a belief that ecological products behave worse than conventional products. The last factor corresponds to the lack of confidence consumers have with respect to the real contribution of ecological products. On the other hand, it is important to note that there are other factors that have also been shown to be important in eco-labeled products purchasing, these are knowledge, consumer habits, and product availability, social and situational values, among others. Indeed, Li, Kecinski & Messer (2018) state that there is

strong support in the economic literature for labels such as ‘green’ and ‘local’ on foods generating price premiums but little research on the reference points consumers use when making their purchasing decisions. Also, Li et al. (2018) conclude that “eco-labels have gained much attention from both commodity markets and economists”. A number of studies have investigated how current forms of eco-labelling affect consumer purchase behavior.

Chapter 3. Method

This research has a dependent variable: intention and purchase behavior. In addition, the independent variables are (a) eco-label, (b) environmental awareness, (c) environmental knowledge, and (d) private benefits. In order to respond to the objectives of this investigation, the correlation between independent and dependent variables will be analyzed by the statistical methods mentioned below.

Therefore, this research applied quantitative methodology besides evaluating the relationship between variables and the intention purchase behavior gap.

The study used a logistics regression taking data from the buyer in order to measure independent variables. The logistics regression is the appropriate method for the study because this analysis is conducted when the dependent variable is dichotomous (binary) as for buying or not buying eco-labeled products. Huck (2012) pointed out that "logistic regression is used to describe data and to explain the relationship between one dependent binary variable and one or more nominal, ordinal, interval or ratio-level independent variables" (p. 392). Therefore, logistic regression continues to be very popular in research methods because it generates very acceptable results for researchers (Huck, 2012, p.391). "The logistic regression works relations between independent variables (explanatory) and dependent variables (i.e., outcome or response)" (Huck, 2012, p.392). As it is mentioned by Peng, Lee & Ingersoll (2002) "logistic regression is well suited for describing and testing hypotheses about relationships between a categorical outcome variable and one or more categorical or continuous predictor variables". As a result, this study is very appropriate due to the model that is going to be demonstrated. Huck (2012, p.392) affirms that "the purpose of logistic regression can be prediction or explanation. In other words, the use of logistic regression is increasing because the wide availability of statistical software

packages that includes the procedure" (p. 392). Hosmer & Lemeshow (2000) report that the use of logistics regression has "exploded during the past decade", having its origins in biomedical research to fields such as business and finance.

The effects and influences of the factors within the research work were evaluated by Structural Equation Modeling (SEM) that focuses on the estimation and statistical validation of relationships between latent variables or constructs (Chion & Charles, 2016). Thompson et al. (2005) explain that "SEM incorporates factor (or measurement) models, building on the factor analytic methods proposed by Spearman (1904), and a structural model linking these latent constructs, building on the path analytic methods proposed by Wright (1921, 1934)". For internal and external validity of each construct, this study used a confirmatory factor analysis method, which refers to an instrument of recognized application in the definition of measurement scales of latent variables or constructs The information was obtained through surveys which were validated statistically in order to obtain the necessary reliability and, at the end, approve or reject the set-out hypotheses.

Research Design

This is a correlational research. This kind of correlational investigation has the purpose of evaluating "the relation that exists between two or more concepts, categories or variables" (Sampierie et al, 2007, p.63). Correlational studies are quantitative and multisubject designs in which participants have not been randomly assigned to treatment conditions (Thompson, et al. 2005). Another definition by Crede (2010) is "the correlation research observed between scores on measures of two constructs can be influenced by a wide variety of artifacts relating to the measurement of variables or the design of the individual study" (p. 596). Sometimes only the relationship between two variables is analyzed, which is represented as X-Y. Correlation studies measure or evaluate the degree

of relationship between two or more variables. For this study, the dependent variable (intention and purchase behavior) was evaluated in the intention and purchase moment for dairy products in relation to the different independent factors classified in intrinsic and intrinsic factors. Additionally, as Sampieri et al., mentions (2017, p.63) this method measure each presumably related variable and among variables also measure and analyze the correlation. Besides, the correlations are expressed in hypotheses that are tested. This scope provides a very natural view of the research question because the investigator is not influencing what happens and the measures of the variables are not biased by the researcher (Field, 2005).

The research has a cross-sectional focus study, therefore, it includes one-time measurements, in other words, following these authors, it contains "snapshots" of the population. This statistics focus take into account the use of data to make predictions, forecasts and estimations to make better decisions (Newbold, Carlson & Thorne, 2013). According to Levin (2006) cross-sectional studies are sometimes carried out to investigate associations between risk factors and the outcome of interest being this focus appropriate for research.

Quantitative research is the process of numerical data collection and analysis using software such as SPSS (Domínguez, 2017), this author also states that “the product of quantitative research is a report that shows a series of classified data, without any additional information that gives an explanation, beyond that in themselves”. Additionally, it is important to say that quantitative investigations study the associations between the variables that are quantified so that in the end they help in the interpretation of the findings. Following Domínguez (2017) it is a numerical method that is based on statistical techniques to measure the correspondence between one variable and the other. This method

is central in the research process because it provides the connection between the empirical observation and the mathematical part. The researcher intends to obtain results that can later be generalized to the population. To sum up, Domínguez (2017) states that quantitative methods are very powerful with respect to external validity because data have been taken from a representative sample of the population. In the end, the researcher could make inferences about the results in the population with a high degree of precision.

The epistemological approach used the hypothetical-deductive that is applied through quantitative strategies and methods of data colletion through surveys. Pereyra Lopez (2008) affirm that:

> "The deductive approach presupposes understanding the phenomenon as a preexisting reality to the researcher and subject to being observed from the outside, in which the researcher assumes the role of non-interference with the object observed and it is limited to observe it by means of the lifting of data that are converted into numerical scales" (p. 90).

At the same time, within the research design, the demographic variables of the sample were considered to make an appropriate analysis. Demographic variables that were taken into account are age, gender, educational level, social status and city of residence. Grunert et al. (2014) state that the effects of gender, age, and place of residence significantly influence action in favor or against eco-labels. For example, in the study "Sustainability labels on food products", Grunert, Hieke, & Wills (2014). show how women are more worried than men, and their concern grows with age. For instance, Brough et al. (2016) point out that "green consumers are more feminine than nongreen consumers, a stereotype that may encourage men to avoid eco-friendly behaviors" (p. 570).

Finally, the application of this study was designed for the largest dairy products company in Colombia. This company is very aligned with environmental issues and has developed clear strategies that help the planet through improving product production, marketing, and disposal impact.

Appropriateness of Study Design

In their study, Grunert, Hieke & Wills (2014) used data from six countries. Each construct used (motivation, understanding, and use) was based on the descriptive statistics method and analyzed how the moderating or demographic variables had an impact on the results. In fact, the country of residence was considered a demographic variable to observe the differences between nations.

Exploratory Factor Analysis (EFA) was used to re-specify the model taking into account demographic factors due to the probability of being affected by the demographic factors or the difference of consumption patterns in developing countries (Cabuk, Nakiboglu & Keles, 2008; Aracioglu & Tathdil, 2009; Bengu, 2017). EFA is used when a researcher wants to discover the number of factors influencing variables and to analyze which variables 'go together' (Yong & Pearce, 2013). As McDonald (1985) expresses "a basic hypothesis of EFA is that there are common 'latent' factors to be discovered in the dataset, and the goal is to find the smallest number of common factors that will account for the correlations".

In addition, as cited by Pedersen & Neergaard (2006) "ecological consumers' behavior is affected by different perceptions, attitudes, values or other subcultural aspects" (p. 18). The EFA focuses on the problem, considering the existence of an underlying model to explain variables variation through common factors (Chion & Charles, 2016). In this

research, common factors from the exploration of correlation patterns in the data were analyzed to deliver more efficient findings for the business sector.

Afterward, the Confirmatory Factor Analysis (CFA) was used because a factorial structure was defined in the previous step with the EFA process. The CFA aimed to estimate and validate the model through data obtained from the indicator variables (Chion & Charles, 2016). Likewise, the CFA was useful in this study because it is an important component in the structural equation models to become measurement instruments of the latent variables of the model. The two advantages of CFA, according to Chion and Charles (2016), are: (a) Goodness-of-fit tests for the models, and (b) standard errors for the parameters. CFA was created to evaluate the validity of the different constructs used in an instrument (Bengu, 2017). In addition, CFA represents a deductive approach in which the researcher employs a top-down approach by predicting an outcome from a theoretical framework (Meyers, Gamst & Guarino, 2013). The CFA method is used in research to provide a confirmatory test in the investigation. In addition, Hair, Black, Badin & Anderson (2010) said that "a measurement theory specifies a series of relationships that suggest how measured variables represent a latent construct that is not measured directly" (p. 325). For this research, CFA was used to know the validity and the investigation specifying the number of factors to analyze for all the variables, and in each factor, the load factor was visualized before continuing with the investigation process.

As a last step, this research worked with Structural Equation Modeling (SEM) to explain the relationship between multiple variables. One of the main advantages of SEM is the ability to include latent (unobserved) variables in causal models (Lowry & Gaskin, 2014).

CB-SEM was used to understand the covariance and the degree of relationship between the observable and unobservable variables (see figure 6). In addition, CB-SEM is the first-generation (1G) statistical technique that analyses complex causal models. The AMOS version used for this work research was 23. The SEM examines the structure of interrelationships expressed in a series of equations, like a series of multiple regression equations. Lowry & Gaskin (2014) affirm that "SEM can model multiple independent variables (IV) and multiple dependent variables (DV)". These equations depict all the relationships among constructs (the dependent and independent variables) involved in the analysis (Hair et al., 2010). This statistical model was very useful for this study because, following Hair et al. (2010), multivariate techniques to analyze quantitative data are very convenient because they combine factor analysis techniques and multiple regression analysis to make the results much more enriching. Likewise, Meyers et al. (2013), point out that SEM assesses how well the predicted interrelationship between the variables match the interrelationships between the observed variables. This is the main reason to use SEM in this research because the findings could help to understand consumers' intentions and behavior when consumers should buy eco-labeled products. Aditionally, Bengu (2017) explains that "the SEM model was constructed based on the measurement model validated through EFA and CFA" (p. 10). This author also affirms that "using Structural Equation Modeling, allows assessing the proposed structural model and testing the hypothesized relationships among the variables" (p. 10). In addition, SEM allows us to structure, estimate and validate relationships among the different constructs simultaneously (Chion & Charles, 2016), this is a technique of multivariate analysis. Therefore, this statistical methodology was very useful for the results. Indeed, the key limitation of not using SEM is

that it holds back communication researchers from a more complete understanding and testing of whole theoretical models (Lowry & Gaskin, 2014).

Research Question

To what extent understanding the influence of intrinsic and extrinsic factors in the intention and purchase behavior for eco-labeled dairy products in Bogota-Colombia could help to close the gap between intention and purchase decision?

H1: The ecological label influences the reduction of the gap between intention and purchase of eco-labeled dairy products.

H2: Private benefits influence the reduction of the gap between intention and purchase of eco-labeled dairy products.

H3: Environmental awareness influences the reduction of the gap between intention and purchase of eco-labeled dairy products.

H4: Environmental knowledge influences the reduction of the gap between intention and purchase of eco-labeled dairy products.

Population

Participants of the study were customers visiting an Alpina supermarket in Bogota, Colombia and approaching the shelves of the product[2] under study. The interviewers approached and asked clients if they intended to buy an eco-labeled product.

Informed Consent

Before applying the survey, the interviewer asked the customer if she/he agreed to participate in an academic doctoral research. Afterward, a consent form was showed and participants were invited to sign it. By signing such form, prticipants allow the researcher to

[2] The product under study was previously selected. Milk with the Alpina brand has an ecological label. https://www.alpina.com/productos

use the collected information for academic purposes, this consent also holds the researcher responsible for the use of participants' personal data according to the current Colombian laws[3].

Sampling Frame

The sample was obtained from a plain random sampling; this means that each member had the same selection probability among all members of the population. Burns & Bush (2010) state that "simple random sample is a subset of individuals chosen from a larger set. Each individual is chosen randomly and has the same chance to be selected".

According to this selecting formula, the accurate sample to collect data was of 375 persons to whom the survey was going to be applied but, finally, around 525 surveys were applied improving the research results.

Population (N): 15.000 visitors on Sundays according to Alpina supermarket statistics.

Confidence level: 95%

Critical value (z) = 1.96

Error margin (e): 5%

Probability (p): 50%

Applying the following formula:

$$\text{Sample} = \frac{z^2 \text{ x p (1-p)}/\ e^2}{1 + (z^2 \text{x p(1-p)}/\ e^2 \text{x N})}$$

Sample: 375

Scheaffer, Mendenhall & Lyman (2007) argue that samples that show little variability between measurements will produce small limits for estimation error. In this sense,

[3] Informed Consent Form is shown in Appendix A.

sampling methods facilitate the research process without requiring a census of an entire population.

Confidentiality

The identity of the participants and their responses were handled confidentially. This means that names, personal data, and answers were coded to protect participants' identities.

The process for data collection was carried out as follows: consumers were approached by trained interviewers who had a tablet with the questionnaire. Consumers were asked if they wished to collaborate with an academic research for EAN University in Bogota, Colombia. If the answer was "yes", the questionnaire was filled in a previously prepared website. At the end of the questionnaire, participants were requested to sign the consent letter for data use. Data was stored online or physically through the survey that only the researcher and his team could access. Each interviewer knew in advance the responsibility for the protection and optimal administration of data.

Geographic Location

This research was carried out in Bogota, Colombia. This country is ranked second at the Latin American level, and 53rd at the world level, in the *Doing Business* indicator of the World Bank, which analyses the business climate of 190 world economies (Dinero, 2016). Colombian economy is one of the strongest in the region according to forecasts by the International Monetary Fund (IMF); also, Colombian economy grew 0.5% among its partners in the Pacific Alliance: Chile, Mexico, and Peru, only the latter Andean country is likely to grow above Colombia (La Fuente, 2015).

Instruments

The questionnaire is the same instrument used as a survey form presented in the paper written by Grunert et al. (2014). Appendix B and Appendix C evidence the request to use this survey and permission that was sent to the authors.

The instrument to be used in this study was chosen after revising several surveys that could help answering the main research question.

The instrument applied includes constructs from the literature review such as environmental knowledge, environmental awareness, product benefits and eco-label. Appendix D shows the survey intended to be applied to consumers.

Data Collection

Data were obtained under the following process: (a) Alpina company is the leader in dairy products in Colombia as a manufacturer and seller, besides, they supported this doctoral research. This support consisted of allowing interviewers collect data into Alpina supermarket[4], (b) select a product[5] from a company applying environmental strategies, (c) interviewers reached consumers at the shelves where the product is exhibited, (d) the research objective was explained and the informed consent was signed, and (e) surveys were applied.

Data Analysis

This research used a multivariate design as several variables were taken to understand the influence of factors to intention and purchase behavior for dairy eco-labeled products in a developing country. The importance of multivariate designs is becoming increasingly well recognized. According to Spiegel & Stephens (2009), there are two advantages of multivariate research designs over univariate research design:

[4] Alpina supermarket: https://www.alpina.com/alpina-market/la-cabana-alpina-sopo
[5] The selected product was: Alpine brand milk. https://www.alpina.com/productos/lacteos/leche-entera-alpina

> "(a) many experimental treatments are likely to affect the study participants in more than one way, and (b) using multiple criterion measures can draw a complete and detailed description of the phenomenon under investigation".

The multivariate design followed the next process: (a) data were analyzed through exploratory factor analysis, (b) then, the results were analyzed in confirmatory factor analysis, and (c) at the end, results were subjected with Structural Equation Modeling methodology to test the hypothesis.

Validity and Reliability

According to Hair et al. (2010) measurement model validity depends on: "(1) establishing acceptable levels of Goodness-of-fit for the measurement model and (2) finding specific evidence of construct validity" (p. 382). This research analyzed Goodness-of-fit (GOF) that described how the model and the set of observations were adjusted, this is analyzed in the covariance matrix of the model for the different items. The adjusted model confronts the theory with reality by the knowledge of the similarity of an estimated covariance matrix (theory) and the observed covariance matrix (reality). One of the reasons to use CFA/SEM is to assess the construct validity of the proposed measurement theory. Hair et al. (2010) define construct validity as "the extent to which a set of measured items reflect the theoretical latent construct those items are designed to measure" (p. 382). In this convergent validity, the research focused on factor loading as an important indicator to know the strength or weakness of all constructs.

Following Hair et al. (2010) definitions, reliability is an statistical measure that provides the researcher with the degree to which latent constructs are internally consistent, supported by how the interrelation of the indicators is given to each other. This research used Cronbach´s coefficient alpha. This coefficient is an index of internal consistency,

quantifying the degree to which test-takers respond in a consistent manner to the items (Meyers et al., 2013).

Summary

The present research defined a correlational purpose because it detailed and measured the phenomenon of attitude and change between intention and purchase of dairy eco-labeled products. The main purpose of correlational studies is to know how a concept or a variable can behave by knowing the behavior of other related variables (Sampieri et al, 2007, p.63). In addition, Sampieri et al, (2007) state that "correlational research has to some extent, an explanatory value, although partial, knowing that two concepts or variables are related provide some explanatory information" (p. 65). Additionally, in quantitative terms, the greater number of variables are correlated or associated in the study and the greater the strength of the relationships, the more complete explanation will be obtained (Sampieri et al, 2007, p.65).

The correlational study was cross-sectional because it measured the population sample at one point in time. At the same time, the deductive or inferential statistics were used because the inferences were validated from the representative sample of the population (Spiegel & Stephens, 2009). The hypothetical-deductive approach was appropriate because: (a) the theories used in the present research work have been created from the positivist orientation, (b) there is empirical evidence that was obtained through the application of quantitative methods, and (c) research questions and hypotheses are suitable (Pereyra-Lopez, 2008, p.105).

Statistics focused on the use of data to make predictions, forecasts, and estimates in order to make better decisions. The research method was quantitative. The quantitative method is devoted to collect, process, and analyze numerical data on previously determined

variables. This research used the multivariate design because several variables were taken into account to understand the gap between intention and purchase behavior for eco-labeled dairy products in a developing country. In terms of interpretation of data, this study used Exploratory Factor Analysis (EFA) for information analysis. It was necessary for the model to apply in this study the use of EFA because the adopted measures were validated in a developing country such as Colombia. Afterward, the Confirmatory Factor Analysis (CFA) was used because a factorial structure was defined in the previous step with the EFA process. The CFA aimed to estimate and validate the model through data obtained from the indicator variables. As a final step, this research used the Structural Equation Modeling (SEM) that sought to explain the relationship between multiple variables. The population to be investigated were customers who visited a specific Alpina supermarket. This research's main goal was to respond the following question: To what extent understanding the influence of intrinsic and extrinsic factors in the intention and purchase behavior for eco-labeled dairy products in Bogota-Colombia could help to close the gap between intention and purchase decision?

The research findings and results after data collection and analysis are presented in chapter 4.

Chapter 4. Results

Findings

The food industry in the world has a large share in the emission of greenhouse gases throughout its production, distribution, consumption and disposal chains (Garnett, 2013). At the same time, a consumer concerned about the environment who has a green purchasing behavior is fundamental for finding solutions to environmental damage in the world (Mainieri, Barnett, Valdero, Unipan & Oskamp, 1997). In fact, the way consumers make their purchases, transport, locate the products in their homes, prepare the food, and dispose the waste is not sustainable with the environment (Grunter, 2011). As a result, an effective tool has emerged to synchronize the information of the company and the consumer, this tool is the ecological label. In fact, Thogersen (2002) proposes that "decision making about eco-labels is a gradual process and one that consumers go through at an uneven pace" (p. 96). In other words, consumers express a positive attitude towards a specific labeled product that does not always translate this attitude into a real buying action. Put differently, to achieve consumers' understanding of products and their impact on the environment, eco-labels have been created around the world to influence consumers' buying decisions through environmental care awareness. Indeed, consumers have the power to reduce negative impact over the environment by making appropriate purchasing choices. In order to understand the eco-labeled food product purchasing behavior, it is important to analyze consumers' intentions and purchase behavior in front of eco-label products. In fact, even if the intention is weak the behavior will not be relevant when selecting an eco-labeled product. However, it is important to mention that this is called the "attitude-behavior gap" or "values-action gap" that appears in many academic studies as the result

between intentions and actions in many buyers around the world without knowing the reasons for this phenomenon. Evidence of this gap is illustrated by Topolansky et al. (2013) who have shown that there is a cognitive dissonance between environmental awareness and the purchase of products with ecological labels. To analyze information obtained from literature review regarding variables that are affecting eco-labeled food products buying behavior, it is essential to understand that the perception of the added value of eco-labeled products and the consumer confidence in environmentally friendly products directly influences individual's values and environmental behavioral gap (Izagirre, Fernández & Vicente, 2013). As mentioned above, this doctoral research aimed to understand more accurately the reasons for the disconnection between intention and purchase behavior on shopping eco-labled dairy products in developing countries. Therefore, the research question was: To what extent understanding the influence of intrinsic and extrinsic factors in the intention and purchase behavior for eco-labeled dairy products in Bogota-Colombia could help to close the gap between intention and purchase decision?

To answer this question the following hypotheses were proposed and their acceptance or rejection was the central part of this chapter. These hypotheses were the result of the revision of academic literature worldwide.

Dependent variable: Intention and purchase behavior.

Independent variables: (a) Eco label, (b) Environmental awareness, (c) Environmental knowledge, and (d) private benefits.

The hypotheses that were tested in this doctoral research are*:*

Ho: The ecological label does not influence the reduction of the gap between intention and purchase behavior regarding eco-labeled dairy products.

H1: The ecological label influence the reduction of the gap between intention and purchase behavior regarding eco-labeled dairy products.

Ho: Private benefits do not influence the reduction of the the gap between intention and purchase behavior of eco-labeled dairy products.

H1: Private benefits influence the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

Ho: Environmental awareness does not influence the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

H1: Environmental awareness influence the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

Ho: Environmental knowledge does not influence the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

H1: Environmental knowledge influences the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

This research applied a quantitative methodology besides evaluating intention and purchase behavior gap. The study used a logistics regression taking data from the buyer in order to measure the independent variables. The logistics regression was the appropriate method for the study because this analysis is conducted when the dependent variable is dichotomous (binary) as for buying or not buying eco-labeled products. As mentioned by Huck (2012) the purpose of logistic regression can be prediction or explanation. Exploratory Factor Analysis (EFA) was also used to re-specify the model(Bengu, 2017). Then, there is a probability of being affected by the demographic factors or the difference in consumption patterns in developing countries (Cabuk, Nakiboglu & Keles, 2008;

Aracioglu & Tathdil, 2009; Bengu, 2017). Afterward, the Confirmatory Factor Analysis (CFA) was useful because a factorial structure allowed us to reduce the variables into factors that represent the explanation of the phenomenon. The CFA aimed to estimate and validate the model through data obtained from the indicator variables (Chion & Charles, 2016). As the last step, this research used the Structural Equation Modeling (SEM) that sought to explain the relationship between multiple variables. The SEM examined the structure of interrelationships expressed in a series of equations, like a series of multiple regression equations.

The sample to collect data was of 554 persons to who the survey was applied with a confidence level of 0,95%, these surveys were applied to the state of intention and purchase. The surveys collected were more than the ideal sample to avoid people who did not respond adequately and in order to improve the results.

Quantitative Results for Intention and Purchase

Findings are presented through descriptive statistics, as a result of the logistic regression, factorial analysis, confirmatory analysis and of the analysis of structural equations. The results of the quantitative research are the following:

Descriptive Statistics.

Table 1 shows that 70% of participants belonged to socioeconomic strata 3 and 4, while other strata represent the remaining 30% of the sample. As it can be seen, only 2 cases are lost, which is positive for this moderating variable called socioeconomic stratum.

According to Colombian National Statistics Department (DANE):

> "Strata 1, 2 and 3 correspond to citizens with lower resources, who are beneficiaries of subsidies in public home services; strata 5 and 6 correspond to citizens with higher economic resources, who must pay cost overruns (contributions) on the value of

domiciliary public services. Stratum 4 is not a beneficiary of subsidies, nor should it pay extra costs, it pays exactly the value that the company defines as the cost of providing the public service".

Table 1
Participants' socioeconomic strata

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	1,8	1,8	1,8
	2	92	16,6	16,6	18,4
	3	252	45,5	45,5	63,9
	4	137	24,7	24,7	88,6
	5	44	7,9	7,9	96,6
	6	17	3,1	3,1	99,6
	9	2	,4	,4	100,0
	Total	554	100,0	100,0	

As shown in table 2, 81.5% of the participants are between 20 and 50 years old. In addition, there is an important segment of participants between 20 to 30 years old, which represents the 42.6%.

Table 2
Participants' age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 20	59	10,6	10,6	10,6
	between 20 and 30	236	42,6	42,6	53,2
	between 30 and 40	141	25,5	25,5	78,7
	between 40 and 50	74	13,4	13,4	92,1
	more than 50	44	7,9	7,9	100,0
	Total	554	100,0	100,0	

In terms of level of education, table 3 describes that 55.6% of participants had a university degree followed by a 22% with postgraduate diplomas and very few had only a high school degree.

Table 3

Participants' level of education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	high school	117	21,1	21,1	21,1
	academic	308	55,6	55,6	76,7
	postgraduate	122	22,0	22,0	98,7
	9	7	1,3	1,3	100,0
	Total	554	100,0	100,0	

As shown in table 4, women represent 56.3% while men reached the 43.7%.

Table 4

Particpants' sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	women	312	56,3	56,3	56,3
	men	242	43,7	43,7	100,0
	Total	554	100,0	100,0	

It can be concluded that the statistic sample is represented mostly by young people between 20 and 30 years old, most of them hold a university degree, live in socioeconomic strata 2, 3 and most of the participants were women. This demographic description is very important because literature review shows that young people with a high level of education and mostly women are more responsible for environmental issues. For instance, Brough et al, (2016) point out that "green consumers are more feminine than non-green consumers, a

stereotype that may encourage men to avoid eco-friendly behaviors" (p. 570). As an outcome, satisfactory results can be expected according to the typology of the sample.

Logistics Regression Results.

The Pearson Chi-square test was used as a statistical technique to find associations between the variables: environmental awareness, product benefits, environmental knowledge, eco-label and the intention and purchase behavior. Lawrence et al. (2013) explain the Pearson correlation as is "a general assumption underlying the interpretation of a Pearson r is that the two variables are each measured one quantitative scale" (p. 298). For this, it was necessary to evaluate each pair of variables (bivariate analysis) to determine whether there was a relationship between them or not. In other words, the interpretation of a Pearson correlation can also make sense if one of the variables has only two categories (buying or not buying), moreover, the two categories can be used to predict the other variable (Lawrence et al., 2013). The Pearson correlation is accompanied by the interpretation of the *p* value according to the following decision rule:

a) Null hypothesis (H0): the contrasted variables are independent.
b) The alternative hypothesis (H1): the contrasted variables are dependent.

Whether the *p*-value indicates a number smaller than 0.05 then the H0 must be rejected, evidencing that there is association accepting H1. On the contrary, for *p* values greater than 0.05, the H0 is accepted and the H1 rejected, concluding that there is not a relationship. In order to simplify the results of the procedure, given that the matrix of bivariate comparisons was very extensive, only those associations that were significant, that is, with *p*-value <0.05, are shown in the findings.

In the next step, after checking the Chi-square hypothesis and identifying the pairs of variables that were related, as the researcher proceeded to calculate the magnitude of these associations using the Gamma correlation coefficient for ordinal variables. This statistic is a non-parametric measure (when there is very little data) used when the variables are ordinal and the researcher wanted to know what force or magnitude the relation has; its value can vary between 1 and 1, indicating these extreme negative or positive perfect correlations, while zero would show that there is no association. It should be noted that, like the Chi-square method, in this procedure, it is also necessary to observe and interpret the *p*-value or level of significance according to the following criteria:

a) If the *p*-value is greater than 0.05 ($p > 0.05$) then it is stated that the correlation shown by the gamma is not significant and is due to chance.
b) If the *p*-value is less than 0.05 ($p < 0.05$) then it is stated that the correlation shown by the gamma is significant and not due to chance.

Therefore, only those *p* values that fulfilled the assumption (b) were taken, dismissing those that did not, all in order to reduce the amount of data and show the tables that could be understandable to the reader. The study analyzed each of the independent variables mentioned in the hypothesis and its elements that constitute each unobservable

variable. The results of the test are shown below**.**

Table 5
Consumer enviromental awareness

	Chi Square	df	p value
Environmental impact	14,397	2	0,001*
Use of pesticides in production	6,871	2	0,032*
Use of resources	14,825	2	0,001*
(Quant) Amount of energy	13,038	2	0,001*
Recyclable packaging	25,827	2	0,000*
Carbon emissions	20,118	2	0,000*
(Use) Amount of energy	15,246	2	0,000*
Quantity of packaging	17,983	2	0,000*
Responsible food	4,753	2	0,093
Food packaging	4,512	2	0,105

Note. * Significant to 95% confidence

The highlighted cells correspond to the significant associations, in this case, it can be confirmed that the consumer environmental awareness may have an influence on the intention and purchase behavior in the indicated dimensions, however, this will be confirmed later with the measurement of the coefficient of correlation and logistic regression.

Table 6
Products Benefits

	Chi Square	df	p value
Nutritional information	11,028	2	0,004*
Brand	0,852	2	0,653
List of ingredients	5,793	2	0,055
Quantity product size	2,351	2	0,309
Nutritional benefits	8,000	2	0,018*
Health benefits	9,405	2	0,009*
Symbol or logo	0,628	2	0,731
Price	4,475	2	0,107
Cooking instructions	5,670	2	0,059

In the nutritional variable information, only three dimensions were significant to the intention and purchase behavior.

Table 7
Enviromental knowledge

	Chi Square	df	p value
Environmental damage	16,551	2	0,000*
Human and environment	0,020	2	0,990
Ecological crisis	0,333	6	0,999
Ecological Catastofre	6,507	2	0,39

The damage to the environment is a factor that people take into account when they intend to buy an environmentally friendly product.

Table 8
Ecolabel type II

		Chi Square	df	p value
Container label	Chi-square	0,151	2	0,928
It means the label	Chi-square	3,162	4	0,531

Regarding the eco-label, none was significant, therefore, it is variable in the final model could be taken arguing that Chi-square tests were not significant.

Gamma correlation coefficients

In this section, tamble 9 shows the coefficients of the variables associated to purchasing behavior. The force of the correlation is detailed by means of the Gamma coefficient.

Table 9
Consumer enviromental awareness

	Gamma	p value
Enviromental impact	0,268	0,000
Use of pesticides in production	0,206	0,045
Use of resources	0,283	0,000
Amount energy (Quant)	0,261	0,000
Recyclable packaging	0,428	0,000
Carbon emission	0,345	0,000
Amount energy (USE)	0,276	0,000
Quantity of packaging	0,330	0,000

The greatest explanatory importance of the purchase intention is Recyclable packaging with G = 0.428, which indicates that it can explain the intention purchase behavior in 42.8%; then, the carbon emissions with G = 0.345 (34.5%). For the rest of the variables, the explanatory power is relatively low, since it is found at values close to 0.2 - 0.3, it means, there is a relationship but its impact on the reduction for intention and purchase behavior on shopping a product with an eco-label is small.

Table 10
Products Benefits

	Gamma	P value
Nutritional information	0,242	0,001
Nutritional benefits	0,216	0,005
Health benefits	0,242	0,001

Similar to the previous case, the strength of the correlation is small (less than 0.3), however, it can not be ruled out, given that they were significant ($p < 0.05$).

Table 11
Enviromental knowledge

	Gamma	P value
Enviromental damage	0,363	0,000

In this dimension, it was the only one important with G = 0.363 rejecting the others. It can be highlighted from this result that, compared to other categories, consumers always consider environmental damage at the moment of intention and buying decision when shopping an aco-labeled product.

As a final reflection of this first analysis step, the following should be taken into account:

- The eco-label is definitely not present in the intention and purchase behavior.
- There is some concern for customers regarding environmental damage (environmental damage, G = 0.363), a factor that is considered at the moment of intention and purchase behavior.
- The variable that could explain or contribute mostly to the intention and purchase behavior is environmental awareness, which is the one with the major variables related to it. In addition, receivable packaging is a factor that contributes to greater significance.

Binary Logistic Regression

Table 12 shows the cases worked in the procedure, dismissing the lost values. In total, there were 531 surveys included in the analysis.

Table 12
Case Processing Summary

		N	Percent
Selected cases	Included in analysis	531	95,8
	Missing Cases	23	4,2
	Total	554	100,0
Unselected Cases		0	0,0
Total		554	100,0

Other important information before starting the procedure is the coding of the dependent variable. This is a previous step the SPSS performs assigning the value 1 to the category of interest, in this case, the buying intention.

Table 13
Dependent variable encoding

Original Value	Internal Value
do not intention to buy	0
Intention to buy	1

Subsequently, the interest categories are assigned to each of the variables. In this step, taking into account that the questions are categorized survey questions, the program divides each answer option and transform it into a dummy, as shown in the following example:

As environmental damage has three response categories: 0 (unimportant), 1 (indifferent) and 2 (important), the program created three variables internally dichotomizing each option, that is:

Internal variable X1: 0 = unimportant; 1 for the rest of the options.

Internal variable X2: 0 = indifferent; 1 for the rest of the options.

Internal variable X3: 0 = important; 1 for the rest of the options.

In this way, when you have categorized survey questions answers, it is necessary to create a dummy variable for each option. Therefore, the reference options were something or very worried, sometimes or always for the Likert type variables, remembering that these are the product of the recategorization. For moderators, the last corresponding category was used.

At the end of the categorization process, the method was indicated to include the variables in the logistic regression model, which was backward from Wald. In this procedure, all the variables are taken in step 1 and, in the following stages, all those that are

not significant are discarded "backward". It is important to note that the process was made up of 19 steps to find the best solution.

The SPSS performed 19 steps. Table 14 presents the summary of the model and the obtained R square.

Table 14
Model Summary

Step	R Square de Nagelkerke
1	,184
2	,184
3	,184
4	,184
5	,183
6	,182
7	,181
8	,180
9	,178
10	,175
11	,172
12	,169
13	,165
14	,161
15	,156
16	,151
17	,135
18	,126
19	,116

It is observed that in step 1, that includes all the variables, the model explained 0.184 or 18.4% and, as it was extracting or removing variables that were not significant, this indicator remained at 11.6%. As a test of goodness-of-fit of the model, the statistician Hosmer Lemeshow indicates with $p > 0.05$ that the analysis is viable.

Table 15
Hosmer Lemeshow test

Step	Chi-square	gl	P value
1	3,785	8	,876
2	4,464	8	,813
3	4,472	8	,812
4	6,899	8	,548
5	10,551	8	,228
6	8,859	8	,354
7	5,400	8	,714
8	9,174	8	,328
9	8,797	8	,360
10	9,978	8	,267
11	9,043	8	,339
12	7,681	8	,465
13	11,659	8	,167
14	3,594	8	,892
15	4,832	8	,775
16	8,412	8	,394
17	5,840	8	,665
18	2,117	8	,977
19	4,940	8	,764

Note that as the steps progress, the *p*-value was increasing, strengthening the explanatory capacity of the model, reaching step 19 with p = 0.764. Table 16 also shows data that allows interpreting the model's fit (how optimal the model is).

Table 16
*Classification table**

				Forecast	
				Buy	
			do not buy	buy	
Step 19	Buy	do not buy	0	217	0,0
		buy	0	311	100,0
	Global percent				58,9

*The cut value is 0,5

The important information in this table is the overall percentage, which indicates that the model correctly classified 58.9% of the 531 data processed. With this information, prior to the feasibility of the procedure, the program shows the variables that were left at the end of the equation, which is shown in the following table:

Table 17
Variables in the equation in the last step (19)

	B	Standar Error	Wald	df	Sig.	Exp(B) Odds Ratio (OR)
Environmental impact			5,314	2	0,070	
Environmental impact (indifferent)	-0,016	0,267	0,003	1	0,954	0,985
Environmental impact (always)	**0,446**	**0,222**	**4,016**	**1**	**0,045**	**1,562**
Recyclable packaging			**17,497**	**2**	**0,000**	
Recyclable packaging (indifferent)	**0,063**	**0,368**	**0,029**	**1**	**0,864**	**1,065**
Recyclable packaging (always)	**0,930**	**0,262**	**12,573**	**1**	**0,000**	**2,534**
Price			6,236	2	0,044	
Price (indifferent)	0,280	0,464	0,364	1	0,546	1,324
Price (always)	**-0,455**	**0,360**	**1,592**	**1**	**0,207**	**0,635**
Age (les than 20)			9,737	4	0,045	
Age (20 - 30)	-0,060	0,312	0,038	1	0,846	0,941
Age (30 - 40)	0,259	0,334	0,605	1	0,437	1,296
Age (40 - 50)	**0,822**	**0,392**	**4,395**	**1**	**0,036**	**2,274**
Age (more than 50)	**0,500**	**0,443**	**1,272**	**1**	**0,259**	**1,649**
Constant	-0,342	0,455	0,566	1	0,452	0,710

Binary Logistic Regression Interpretation

Before starting, it is important to remember what the reference categories mean. At this point, the logistic regression that it does is to compare each option (always, indifferent) with the base, that is, *never*. The purpose is to create a dummy or dichotomous variable (0, 1) for each of the response categories.

The category of the environmental impact variable always has an Exp (b) = 1.562 that is interpreted in the following way: customers that are always taking into account the environmental impact, have an intention and purchase behavior on shopping an eco-labeled

product 1,564 times higher than what they never take into account this aspect. Also, those who are indifferent have a lower intention and purchase behavior than those who never do. Since Exp (b) is less than 1, it is convenient to perform this transformation to interpret it (1-0,985 = 0.015, equivalent to 1.5). With this data, it can be said that the trend towards the intention of purchase is 1.5% lower in clients who are indifferent.

Observing the variable recyclable packaging, those who always consider this aspect are 2,534 more likely to have an intention and purchase behavior on shopping an eco-labeled product compared to those who never show interest in this element. In addition, it is detailed that indifferent people have a lower probability of intention and purchase behavior, being barely 1,065 higher than those who never do.

Regarding the price, the behavior is something different and logical according to economic theory and consumer choice. In this sense, buyers who are always aware of the price have a lower intention and purchase behavior in relation to those who are never paying attention to the cost of the product. Whether the complement of Exp (b) is calculated, it would be: 1 - 0.635 = 0.365 equivalent to 36.5%. With this, it can be said that the intention and purchase behavior is 36.5% lower in customers who always take into account the price of the eco-labeled product, compared to those who never do.

Finally, age had an interesting behavior. Customers between 40 and 50 years old are 2,274 times more likely to buy an eco-labeled product compared to young people under 20 years old. Also, people on their 50s have 1,649 times to buy, and those from 30 to 40 years old with 1,296. As age decreases, the purchase is less. In this case, the most relevant population segment to direct market strategies that stimulate consumption should definitely be focused on 40 - 50 years.

Analysis Factorial Exploratory

The factorial analysis is a statistical technique that aims to reduce the dimensionality of multivariate data and understand and detect patterns of association between variables (Chion & Chrales, 2016). In addition, this technique begins with the analysis from the covariance matrix of standardized attributes (Chion & Chrales, 2016, p. 146).

Table 18 shows the KMO and Bartlett tests. Bartlett's sphericity test seeks to test the null hypothesis that the correlation matrix is equal to an identity matrix. Therefore, what interests us for the purposes of looking for multicollinearity, is to reject the null hypothesis and accept the alternative hypothesis that the matrix is different from an identity matrix.

Table 18

Test of KMO and Bartlett

Kaiser-Meyer-Olkin measure of sampling adequacy		,849
Bartlett's sphericity test	Approx. Chi squared	3352,609
	Gl	91
	Sig.	,000

The *p*-value in the KMO and Bartlett test is <0.05, therefore, the Ho is rejected and the Ha is accepted. The alternative hypothesis of that the matrix is different from an identity matrix, and as a result, there is a sufficient level of multicollinearity between the variables. In other words, there is enough variance and adequate sample size to run the factorial analysis. Besides, Kaiser-Meyer-Olkin measure of sampling adequacy is 0,849, the values for KMO test between 0,8 and 0,9 are great (Verma, 2013, p.365).

Regarding communalities (see table 19), Verma (2013) states that a “higher communality of a variable indicates that the major portion of its variability is explained by all the identified factor in the analysis if extraction values are more than 4, then the

variables are useful in the model" (p.375). Hence, for this study, items included in table 19 were used for factor analysis because they contribute very well for the purpose.

Table 19
Communalities of all the variables

	Initial	Extraction
Nutritional information	1,000	,644
List of ingredients	1,000	,511
Nutritional benefits	1,000	,744
Health benefits	1,000	,639
(Quant) Amount of energy	1,000	,602
Recyclable packaging	1,000	,632
Environmental damage	1,000	,652
Carbon emissions	1,000	,761
(Use) Amount of energy	1,000	,641
Quantity of packaging	1,000	,692
Human and environment	1,000	,510
Responsible food	1,000	,628
Food packaging	1,000	,734
Ecological Catastrophe	1,000	,464

Table 20
Total variance explained

	Initial eigenvalues			Sums of removal of loads squared			Sums of rotation of squared charges		
Component	Total	% variance	% accumulated	Total	% variance	% accumulated	Total	% variance	% accumulated
1	5,003	35,739	35,739	5,003	35,739	35,739	3,905	27,890	27,890
2	2,038	14,554	50,294	2,038	14,554	50,294	2,634	18,812	46,701
3	1,810	12,930	63,223	1,810	12,930	63,223	2,313	16,522	63,223
4	,762	5,441	68,665						

5	,713	5,091	63.755
6	,628	4,485	78,241
7	,558	3,988	82,229
8	,505	3,610	85,839
9	,479	3,422	89,261
10	,397	2,834	92,095
11	,316	2,256	94.351
12	,301	2,148	96,499
13	,279	1,996	98,494
14	,211	1,506	100,000

Extraction method: analysis of main components.

Table 20 shows the factor extracted and the variance explained by these factors. Then, all these three factors together explain 63.223% of the total variance.

Table 21

Rotated component matrix[a]

	Component		
	1	2	3
Carbon emissions	,859		
Quantity of packaging	,815		
Environmental damage	,781		
(Use) Amount of energy	,778		
Recyclable packaging	,761		
(Quant) Amount of energy	,736		
Nutritional benefits		,854	
Health benefits		,785	
Nutritional information		,777	
List of ingredients		,684	
Food packaging			,835
Responsible food			,746
Human and environment			,708
Ecological Catastrophe			,668

Extraction method: analysis of main components.
Rotation method: Varimax with Kaiser. [a]
a. The rotation has converged in 5 iterations.

As a conclusion of this factor analysis, only three factors are retained according to data in table 20, where eigenvalues are 1 or more than 1 evidencing the validity of the constructs for the part of the confirmatory analysis and structural equations. At the same time, in table 21 it is possible to see the loading factors that are appropiate to start the confirmatory analysis with these three factors.

Confirmatory Analysis and Structural Equations Results

As mentioned by Chion & Charles (2016) the confirmatory analysis is used to determine if a construct is measured reliably (convergent validity), at the same time, this analysis is used to verify if two constructs are different from one another (validity discriminating). In addition, this method evaluates whether each construct is sufficiently reliable to achieve convergent validity (Chion & Charles, 2016). The structural equations are characterized by two fundamental elements, in the first place, this technique evaluates the multiple and crossed dependency relations (Batista & Coenders, 2000). In the second place by the level to represent concepts not observed in these relationships taking into account the measurement error in the estimation stage (Cea, 2002).

The confirmatory analysis is shown in Figure 6 where the path diagram specifies the relationship between three non-observable variables called latent variables and their respective items that are observable variables. These observable variables and their latent variables came out of the exploratory analysis. Then, with the variables detailed in Table 22, the model will be specified (Figure 6) where the study establishes the hypothetical relationships between latent and observable variables. As a next step, the parameters of the model, its values and the measurement error were estimated. So far, the investigation had proceeded with the confirmatory analysis to provide the adequate statistical framework to

analyze the validity and reliability of each item to help the researcher in the optimization of the construction of a measuring instrument for an adequate analysis of results.

Table 22
Observable variables and latent variables

Observables variables	Variable name in SEM	Latent variables	Variable name in SEM
Amount of energy (quantity)	enequan	Environmental knowledge	Envknowledge
Recyclable packaging	recpack		
Environmental damage	envidamage		
Quantity packaging	packquant		
Amount of energy (use)	eneruse		
Carbon emissions	caremi		
Responsible food	envproduc	Environmental awareness	Envawareness
Food packaging	packresp		
Human and environment	envabu		
Ecological catastrophe	envcatas		
Nutritional benefits	nutben	Private Benefits	Privatebenefits
Health benefits	healben		
Nutritional information	Nutinf		
List of ingredients	Ingrelist		

An important aspect of the confirmatory analysis is to observe the factorial loads to determine the correlation between the observable variables and their relation in the

unobservable variable. The closer gets to one the higher this correlation will be more significative (Escobedo Portillo, Hernández Gomez, Estebané Ortega & Martínez Moreno, 2015, p.19). Aditionally, an empirical rule in the AFC states that the charges must be greater than or equal to .07 (Escobedo et al, 2015, p.19). Moreover, convergent validity was indicated by an item factor loading ≥ .5 and $p < .05$ (Hair, Black, Babin & Anderson, 2010). As a result, in this study, all factor loading is close to one and the *p*-value is 000. In other words, the significant correlation between the observable and unobservable variables for the model is shown in Figure 6.

In order to adjust the model, this study followed the recommendations of the multivariate model literature and examined the standardized residuals matrix to find possible adjustments to the correlations between the errors of the observable variables of the same construct (Hair, Anderson, Tatham & Blanck, 1999). In other words, As mentioned by Escobedo Portillo et al. (2015) "the re-specification of the model helps the researcher to know if the first model obtained is better, for which it is necessary to look for methods to improve the adjustment of the model by adding or eliminating the estimated parameters of the original model" (p. 17). In the end, the researcher must interpret the data from the correct model adjusted to accept or reject the hypothesis to conclude the investigation.

In the process of estimating the model, it was detected that the variables do not exhibit a normal distribution behavior, an essential requirement to run the model in the AMOS software. To solve this inconvenience it was decided to estimate using the method asymptotically distribution-free. This method of estimation is used when the distribution of data is not normal and the sample is < 250 (Manzano Patiño, 2017). As Finney & DiStefano (2013) point out that "asymptotically distribution-free is one of the available

resources when dealing with categorical variables or the dependent variables do not follow the normal distribution". On the other hand, the Cronbach's alpha 0,873 was calculated in SPSS software, which measures the internal consistency, being optimal for the model. This indicator considered that internal consistency is high if it is between 0.70 and 0.90 (Cervantes, 2005). Cronbach's alpha coefficient is used to know the internal consistency of a scale, that is, the correlation between the items, and to establish homogeneity. Furthermore, the covariances between the latent variables are significant showing the effect of dependence or force of the linear relationship between these unobservable variables. As Cupani (2012) points out covariance is analogous to correlation and is defined as the non-directional relationship between independent (latent) variables. Similarly, the dependence condition is one in which two or more variables are functionally related (Bentler & Li-tze Hu, 1998). The covariance is the value that reflects in what quantity two random variables vary jointly with respect to their means. Since the covariance between the latent variables is greater than zero, it can be determined that when environmental knowledge increases, environmental awareness and private benefits also increase.

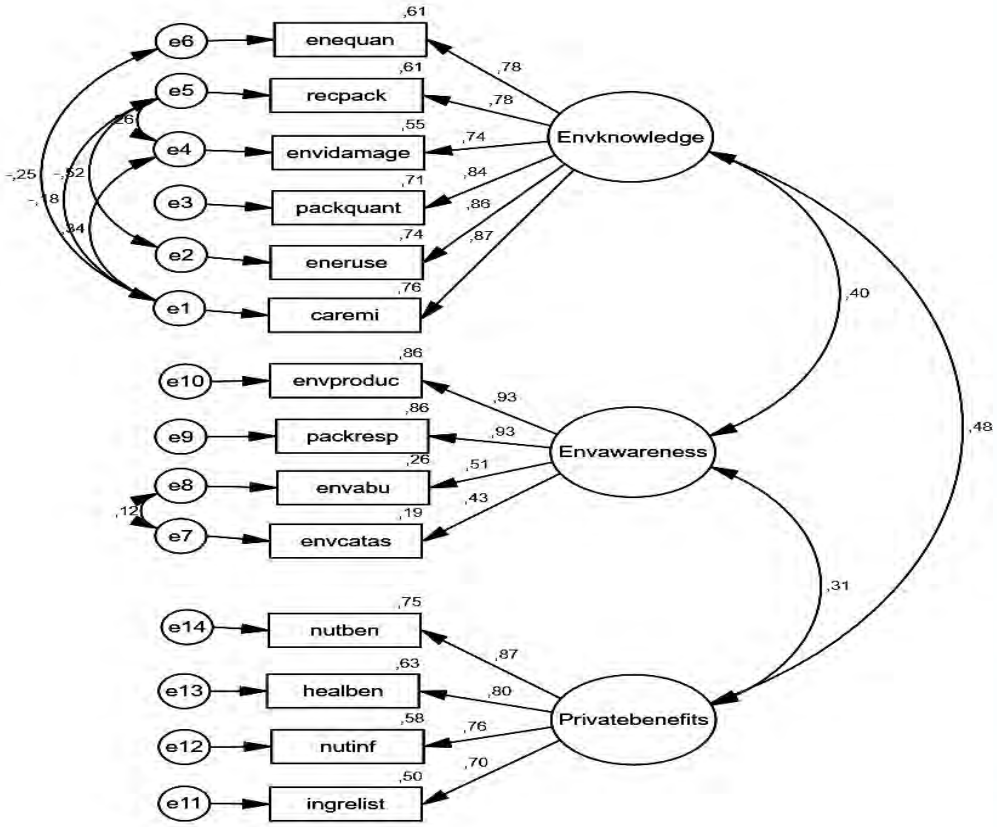

Figure 6. Measurement model

Table 23
Confirmatory factor analysis

	CMIN	DF	P	CMIN/DF	RMSEA	LO	HI	NFI	CFI	GFI
Default Model	114.22	68	.00	1.68	.036	.02	.05	.87	.94	.94

CMIN Chi Square, DF degrees of freedom, P p-value, RMSEA root square error of approximation, LO low, Hi High, NFI normed fit index, CFI comparative fit index, GFI The Goodness of Fit Index.

Several indicators are used to evaluate the structural equation model (Hu & Bentler, 1995). For example the Chi-square statistic, the chi-square ratio on the degrees of freedom (CMIN / DF), the adjustment index (CFI), the adjustment bond index (GFI) and the square error of approximation to the average roots (RMSEA). The results of the indicators of the

model in this research were: CMIN/DF= 1.68 values below 3 indicate a good fit of the model (Brussino, Godoy & Pilatti, 2012, page 15). The indices CFI = .94 and GFI = .94, these indicators move between 0 and 1, where 0 indicates an absence of adjustment and 1 optimal adjustment (Brussino, et al, 2012, p.15). Therefore, this model is optimally adjusted for the goals of the research. Also, RMSEA indicator can be interpreted as the error of average approximation by degree of freedom values below 0.05 indicate a good model adjustment, and below 0.08 indicate an appropriate fit of the model (Byrne & Campbell, 1999) for this model the RMSEA = .036, therefore, the model has a good adjustment according to the authors. Besides, NFI= 0,87 this measure of incremental adjustment normed index adjustment should be > .9 to be acceptable (Escobedo et al, 2015, p.20).

In conclusion, the alternative hypotheses H2, H3 and H4 were accepted; the null hypothesis declares that the independent variable does not influence or affect the intention and purchase behavior of eco-labeled dairy products. In other words, the alternative hypothesis accepted declares that the private benefits, environmental knowledge and environmental awareness influence or affect the intention and purchase behavior of eco-labeled dairy products. On the other hand, the only null hypothesis accepted is Ho, therefore the eco label has no significant relationship with the intention and purchase behavior gap

It is important to point out that in the logistic regression, binary logistic regression, factorial analysis, confirmatory analysis, and the structural equation modeling showed that the independent variables have a significant correlation in some dimensions of each construct in relation to the intention and purchase behavior of eco-labeled dairy products.

In the next chapter, the research analyzes in detail the important dimensions in each independent variable and how the academic findings made in the different statistical analyzes of this doctoral thesis contribute to the knowledge of marketing areas for companies that market food with an ecological attribute in their packaging as the eco-label.

Chapter 5: Conclusions and Recommendations

The purpose of this study was to identify intrinsic and extrinsic factors that influence consumers' intention and purchase behavior of eco-labeled dairy products in Bogotá Colombia. The research included surveys for all the people who entered in the market with the intention to purchase eco-labeled dairy products. Instruments used in the study had several dimensions classified into four factors: a) eco-label, b) private benefits, c) environmental awareness, and e) environmental knowledge. These factors were defined as intrinsic and extrinsic according to the review of the literature and knowledge of the researcher as shown in figure 5. The study also used the methodology of binary logistic regression, exploratory and confirmatory factorial analysis as structural equations with the AMOS software. The main limitations of the study are related with participants who were Colombian consumers who bought a dairy product from the biggest dairy company and lived in Bogota. Besides the above mentioned variables, others such as excessive confidence, social desirability, and so on were not taken into account because this study would become extensive. The organization of this chapter starts with the conclusions, theoretical contributions, practical contributions, managerial implications, and recommendations.

Conclusions

The purpose of this doctoral thesis was to answer the following research question: To what extent understanding the influence of intrinsic and extrinsic factors in the intention and purchase behavior for eco-labeled dairy products in Bogota-Colombia could help to close the gap between intention and purchase decision?.

Hypotheses tested in this doctoral research were*:*

Ho: The ecological label does not influence the reduction of the gap between intention and purchase behavior regarding eco-labeled dairy products.

H1: The ecological label influence the reduction of the gap between intention and purchase behavior regarding eco-labeled dairy products.

Ho: Private benefits do not influence the reduction of the the gap between intention and purchase behavior of eco-labeled dairy products.

H1: Private benefits influence the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

Ho: Environmental awareness does not influence the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

H1: Environmental awareness influence the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

Ho: Environmental knowledge does not influence the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

H1: Environmental knowledge influences the reduction of the gap between intention and purchase behavior of eco-labeled dairy products.

The final purpose was to determine the significant correlation between the intention and purchase behavior on shopping eco-labeled dairy products based on intrinsic and extrinsic factors in order to reduce the gap between intention and purchase decision. Intrinsic factors included private benefits, environmental knowledge and environmental awareness, while extrinsic factor included eco-labels.

The conclusions of the study are the following:

1. Chi-square test was analyzed, the null hypothesis 1 of the eco-label factor is accepted, which means it has no association with the intention and purchase behavior since the two dimensions: label ($p = 0.928$) and means label ($p = 0.531$) were not significant.
2. The null hypothesis 2 is rejected and it is concluded that only some dimensions in this independent variable have a significant correlation (p-value <0.05) with the intention and purchase behavior (table 6). These dimensions are: nutritional information ($p = 0.004$), nutritional benefits ($p = 0.018$), and health benefits ($p = 0.0019$).
3. The null hypothesis 3 is rejected, counting on the largest number of dimensions associated with the intention and purchase behavior. Eight (8) dimensions were significant (p-value <0.05). Environmental impact ($p = 0.001$), use of pesticides in production ($p = 0.032$), use of natural resources ($p = 0.001$), amount of energy in production ($p = 0.001$), recyclable packaging ($p = 0.00$), carbon emissions ($p = 0.00$), energy use ($p = 0.00$) and the amount of packaging in the products ($p = 0.00$) have a significant influence on the intention and purchase behavior (table 5).
4. The null hypothesis 4 is rejected, although only one dimension evaluated has a correlation with the intention and purchase behavior. The environmental damage dimension ($p = 0.00$) is significant in relation to the intention and purchase behavior on chopping an eco-labeled product (table 7).
5. According to the logistic regression analysis, certain dimensions were found in each independent variable that can be correlated with the intention and purchase behavior. Additionally, the measurement model in figure 6 is accepted for the

intrinsic and extrinsic factors that better explain the gap between consumers' intention and purchase behavior on shopping eco-labeled dairy products.

6. Based on the factorial analysis, within the importance of the different dimensions that explain the variability of the dependent variable with the independent variables, it is concluded that the first factor that was identified as consumer's environmental knowledge explains the 35.739% of the total variance, the dimensions can be seen in table 22. The second factor named as private benefits explains 14.554% of the total variance, and the last factor that was identified as environmental awareness explains 12.930% of the variance of the model. Additionally, the dimension of recyclable packaging in the environmental awareness factor is the most significant, explaining 42.8% of the intention and purchase behavior, followed by carbon emissions with 34.5%, then environmental damage with 36.3% and the rest of dimensions would explain between 20% and 25% of the intention and purchase behavior.
7. As predictive variables in the intention and purchase behavior, according to the binary logistic regression, are: the environmental impact influences Exp (b) = 1.56 times more the buying of an eco-labeled product according to buyers' answers. Consumers who always buy products with recyclable packaging have a probability of buying 2,534 times more compared to those who never buy recyclable packaging. People who is always concerned about the price, represent a probability of 0.635 times more to buy eco-labeled products than those who never notice the price.
8. In the exploratory analysis, the statistical package SPSS in the rotated component matrix presented three components named as environmental knowledge,

environmental awareness, and private benefits. The first component consists of six (6) items, the second one consists of four (4) items, and the last component consists of four items as well (table 22). These factors explain 63.223% of the model that was analyzed in the confirmatory analysis (table 20). The items have a significance between .668 to .859 showing that they are observable variables that appropriately explain the latent variables studied in the structural equations.

9. In the structural equation model, all the standardized load coefficients for the three constructs are greater than .70 except for two items, which shows a level of reliability of the relationship between observable and unobservable variables.
10. The model of structural equations is considered acceptable because it presents the value of chi-square divided degrees of freedom which is less than 5 (Schumacker & Lomax, 2004). The goodness-of-fit index (GFI) is greater than .9 (Byrne, 1994). The normed adjustment index (NFI) is greater than .9 (Byrne, 1994). The comparative adjustment index (CFI) is greater than .9 (Byrne, 1994; Kline, 1998) and the root value of the approximate measured squared error (RMSEA) is minus a, 08 (Browne & Cudeck, 1993).
11. As demonstrated by the model tested with the multivariate analysis of structural equations, the exogenous variables (private benefits, environmental knowledge, and environmental awareness) have significant direct relationships with the intention and purchase behavior gap. As a result, alternative hypotheses H2, H3, and H4 are accepted.
12. In the present investigation, three alternative hypotheses were accepted. Such alternative hypotheses are relevant and significant in regards to reducing the gap between intention and purchase behavior when the consumer evaluates the eco-

label. These alternatives hypotheses analyzed the relation of environmental awareness, environmental knowledge and product benefits (independent variables) with the intention and purchase behavior gap (dependent variable).

13. With the purpose of reducing the gap between intention and purchase behavior, companies must create strategies to increase knowledge and awareness of environmental issues as a result of buying and consuming food products in specific groups of consumers between the ages of 40 and over.
14. The consistency of the research is demonstrated in the different statistical methods used during the analysis stage. The independent variables and their correlation with the dependent variable are statistically demonstrated in the logistic regression and then confirmed in the factor analysis, both exploratory and confirmatory. Finally, the measurement model of structural equations confirmed the significance of the correlations and the importance to solve the research question.

Theoretical contributions

This research provides important results to understand the gap that exists between intention and purchase behavior for dairy products that belong to the food category with the eco-label. Information obtained in this academic work is very relevant and important for companies that market these products in Latin America. The main theoretical finding is that the eco-label has no influence on the reduction of the gap between intention and purchasing behavior for eco products. In other words, the location of an ecological label on dairy products does not mean the customer will buy this product to help the environment. Other findings show the significant and positive relationships with intrinsic factors to help closing the gap between intention and purchase behavior. An important contribution of this study is

the empirical validation for the food sector of Bogotá – Colombia that tries to look for a high impact of eco-labels. According to the literature review, there was no structured information before the research with academic rigor that would generate suitable information to understand the disconnection between intention and purchase behavior for eco label products.

A second contribution is a successful model created and tested by the structural equations procedure that statistically demonstrated that the nutritional benefits, awareness and environmental knowledge are directly related to the intention and purchase behavior of products with an environmental attribute. This new conceptual model (see figure 5) can be used to better understand the consumer and to reduce the gap between intention and purchase behavior for eco-labeled dairy products in developing countries. Additionally, the tests reveal that some dimensions in the independent variables can have a significant impact to reduce the gap between intention and purchase behavior. In other words, this study reveals a more probable understanding of the purchasing process of Latin American consumers buying ecological products.

Practical contributions

The results of this study strengthen the understanding of the consumer and their purchase decision process on shopping food product with ecological labels. Information contained in this research provides accurate knowledge for marketing managers working in food companies that help them to improve their strategies for eco-labeled products. Finally, these results will empower more companies focused on improving the environmental impact with the production, marketing, and disposal of their packaging showing consumers their real support when purchasing ecological products. In conclusion, if the marketing strategies are focused on environmental issues to improve competitive advantage and create

more value for customers, then, companies must start increasing knowledge and awareness on the threats to the planet so that this concern is translated into buying eco-labeled products.

Managerial implications

The managerial implications for companies that are in the food sector are very significant because the marketing area can understand the influence of intrinsic and extrinsic factors and the intention and purchase behavior gap to buy products with ecological labels. It is very likely that marketing managers do not fully understand the results of market research about eco-labels, given the fact that consumers say they would be willing to buy an ecological product, but they may change their final decision in the marketplace. However, these results help to better understand the variables and dimensions that the marketing strategy should focus on, leading the consumer to finally buy an environmentally friendly product.

1. Marketing managers should develop more understadable eco-label logos for the consumer, as appliances do in developed countries, explaining the impact of the product in energy consumption. Consumers may be more willing to purchase the products.
2. The use of color theory in environmental logos as an influential attribute should be used to improve the benefit of the ecological product.
3. It is important that eco-labels really perform their main function: to synchronize the information between company and consumer. As a result, the marketing areas must conduct research to determine how the customer is understanding the ecological logo.

4. Education campaigns and awareness of the environmental problems should be led by marketing areas aiming at reducing uncertainty and unconsciously leading to the adoption of eco-labels.

Recommendations

According to the findings of the study, the following recommendations are presented for companies in the food sector with eco-labeled products.

1. It is important that the companies and in particular the dairy company in Colombia receive this information with the responsibility to improve the marketing plans for promoting an eco-label attribute in products packaging.
2. It is recommended that other companies in Latin America review their strategies for ecological products and redesign the activities that should be communicated to consumers, this might influence the reduction of the gap between intention and purchase behavior.
3. The companies must be aware that placing eco-labeled products does not mean the consumer knows and understands the message neither of the ecological label nor its purchase.
4. The marketing areas of food sector companies must conduct research with academic rigor to understand the phenomena they face every day in intention and purchase behavior toward attributes such as the eco-label in order to boost sales and find better answers for part of the consumers.
5. Food companies should promote continuous campaigns to strengthen environmental awareness and knowledge so that eco-labels have better reception in consumers. At the same time, it is essential to create measurement indicators with consumers to

evaluate the planet damage concern making eco-labels a winning attribute. This could help to close the gap between intention and purchase behavior.

6. Products with ecological labels in developing countries such as Colombia do not have a positive effect on intention and purchase behavior, in order to seek a better impact, it is necessary to apply the findings obtained in this research.
7. The results of this research may be relevant for marketing directors who must understand in depth consumers' buying behavior, this may help to stand eco-labels out among buyers and therefore to achieve the expected results.
8. A suitable segmentation of current and potential consumers by demographic and psychographic variables for eco-label products is the best way to promote these new product innovations.
9. A recommendation for the companies that apply the results of this study is to generate similar research after a certain time to analyze the advances in the reduction of the gap between intention and purchase behavior in favour of eco-labels.
10. According to the obtained results, marketing areas should not assume that consumers have a deep knowledge of the environmental problems and that the eco-label is a strategy to encourage the purchase process, even if consumers have previously answered in an investigation that they had the intention of buying an eco-labeled product.

Limitations and suggestions for future research

This doctoral research concluded significant and interesting findings which can help to expand the frontier of knowledge regarding the gap between intention and purchase

behavior versus eco-labels. However, all research studies have limitations. This research was carried out only in Bogotá – Colombia for dairy products examining eco-labeled products. Some suggestions for future research would be:

1. To apply this research in other cities of Colombia to understand how the demographic, cultural and lifestyle variables could affect the results.
2. It is recommended to conduct similar studies in other Latin American countries to detect differences between the inhabitants of each country when they are in the process of buying eco-labeled dairy products.
3. New research collecting data between intention and purchase behavior doing experimental research in a laboratory to know other variables that impact the gap.
4. To develop this research for other attributes that help mitigate the environmental impact to compare results.
5. Future research is recommended in other product categories such as electronic or more durable products to compare the impact of the eco-label.
6. Other research could focus on the purchase of products with a green label and its previous process in the intention to analyze latent variables.
7. It is important to contribute to consumer knowledge and the trust and knowledge of ecological labels for each product category to determine their impact on the purchase.
8. Future research should analyze the trade-off behind the purchase of eco-labeled products to determine how the benefit to consumers is strengthened.
9. Finally, consumer researchers need to contribute by providing a better understanding of the reasons why consumers do not make environmental choices when they buy an eco-labeled product.

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Appendix A: Informed Consent Form for Consumer

Bogotá, junio de 2017 Sr(a). _____

Ciudad

Asunto: Participación investigación intención y acción de compra etiquetas ecológicas para tesis doctoral

Estimado participante Sr(a): _____, reciba un cordial saludo. Por medio de la presente me permito expresarle mi saludo y agradecimiento por su participación en la encuesta que pretende identificar los factores que hacen cambiar la intención y el comportamiento de compra para productos de alimentos con etiquetas ecológicas. Los resultados de las encuestas aplicadas a ustedes harán parte de la investigación que realizo para optar al grado de *Doctor in Strategic Business Administration* – DBA otorgado por CENTRUM Graduate Business School de la Pontificia Universidad Católica del Perú en doble titulación con Maastricht School of Management. El tiempo de duración aproximada de la aplicación de la encuesta es de 15 minutos. Los datos generales de las encuestas serán almacenados y con fines académicos y no podrán ser revelados sin su plena autorización.

Cordialmente, Daniel Herrera González

Email: a20147475@pucp.pe

Autorización: Firma: _____

Nombre: _____

Cedula Nro.: _____

Appendix B: Message to request consent to use the survey

Fra: DANIEL ANTONIO HERRERA GONZALEZ [mailto:daherrera@universidadean.edu.co]

Sendt: 18. juni 2017 15:09

Til: Klaus G Grunert <klg@mgmt.au.dk>

Emne: Message from Colombia South America

Good morning professor Grunert,

My name is Daniel Herrera Gonzalez Professor of management faculty in EAN University Bogota- Colombia. Currently, I am doing the PhD program and my research topic is related to your academic article: *Sustainability labels on food products: Consumer motivation, understanding, and use*. In fact, congratulations on this academic contribution, it is very interesting and for me, it has been so useful for my research proposal.

I would like to ask you a favor, I need to apply the survey you applied in your study and I need, if possible, your permission and the instrument model. As you know, creating a new research instrument takes time to validate each construct, therefore, I will be very grateful to you if you respond to my request.

Best regards,

--

Daniel Herrera González
Associate Professor
Facultad de Administración, Finanzas y Ciencias Económicas
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Appendix C: Answer to use the survey into the research

Sophie Hieke <sophie.hieke@eufic.org> 20 jun. (hace 1 día)

para Klaus, mí

Dear Daniel Herrera Gonzalez,

Please find attached the questionnaire we used for the study on sustainability labels. We're pleased to hear you want to extend our findings onto South America! I am attaching our Spanish version as well – maybe that helps 

All the best,

Klaus and Sophie

Appendix D: Survey that will be applied to consumers

A la hora de comprar bebidas y alimentos, ¿con qué frecuencia busca la siguiente información en el embalaje o empaquetado?	A LO LARGO = escala de 7 puntos 1 = Nunca a 7 = Siempre	**Variable independiente que impacta**
Información nutricional		Beneficios privados
Marca		Beneficios privados
Lista de ingredientes		Beneficios privados
Cantidad/tamaño del producto		Beneficios privados
Impacto medioambiental (por ejemplo, producción, transporte)		Conciencia ambiental
Instrucciones de cocinado		Conocimiento ambiental
Beneficios nutricionales (por ejemplo, bajo en grasa, poca sal)		Beneficios privados
Beneficios para la salud (por ejemplo, reduce el colesterol, es bueno para los huesos)		Beneficios privados
Símbolo/logotipo sanitario /como “Bueno para ti” o el logotipo del girasol “Come bien”)		Beneficios privados
Precio		Beneficios privados
¿Cuánto le preocupa personalmente cada uno de los siguientes asuntos?	Por favor, elija una respuesta en cada fila donde 1 = “Solo un poco preocupado” y 7 = “Muy preocupado	
El uso de pesticidas en la producción de alimentos		Conocimiento ambiental
El uso de demasiados recursos naturales del mundo en la producción de alimentos		Conocimiento ambiental
El daño medioambiental causado por el uso humano		Conciencia ambiental

de la tierra y el agua		
La cantidad de energía utilizada para cocinar productos alimentarios		Conciencia ambiental
Los envases que no son reciclables		Conocimiento ambiental
Emisiones de carbono causadas por la producción de alimentos		Conciencia ambiental
La cantidad de energía utilizada para transportar productos alimentarios		Conciencia ambiental
La cantidad de envases utilizados en los productos		Conciencia ambiental
Nos gustaría hacerle unas preguntas sobre las etiquetas que puede ver en los envases de los alimentos.		
Antes de esta encuesta, ¿había visto antes esta etiqueta?	Si – No – No lo se	Eco-label
¿Qué cree que significa esta etiqueta?	La etiqueta para los servicios y productos respetuosos con el medio ambiente La etiqueta para la producción orgánica La etiqueta europea para productos eficientes en el consumo de energía La etiqueta europea para productos que presentan una excelente relación calidad-precio para los consumidores No lo sé	Conocimiento ambiental
En la sección final del cuestionario nos gustaría preguntarle ciertas preguntas sobre usted y su opinión sobre asuntos éticos y medioambientales.	*Por favor, elija una respuesta por fila donde 1 = "totalmente en desacuerdo" y 7 = "totalmente de acuerdo"*	
Los humanos están abusando del medio		Conocimiento ambiental

ambiente de manera preocupante	
La denominada “crisis ecológica” a la que hace frente el género humano se ha exagerado enormemente	Conciencia ambiental
Si las cosas continúan como hasta ahora, pronto experimentaremos una catástrofe ecológica de grandes dimensiones	Conciencia ambiental
Es importante que los alimentos que como un día normal se hayan preparado de una manera respetuosa con el medio ambiente	Beneficios privados
Es importante que los alimentos que como un día normal se hayan envasado de una manera respetuosa con el medio ambiente	Conciencia ambiental