MASTER'S DISSERTATION

PACKAGING: THE ANTECEDENTS OF PURCHASE INTENTION AND BEHAVIOUR WHEN COMPARING GENERATIONS Y AND Z

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ABSTRACT

Brands are increasingly concerned with sustainable and environmentally friendly packaging. In addition, the younger generations, which is an important target are increasingly aware of sustainable issues.

This study aims to identify the relations between the environmental knowledge and environmental concern with green purchase intention and green purchase behaviour in the generations Y and Z in Portugal. Specifically, this study aimed to identify any moderating effect of the generations in these relations regarding bottled water with sustainable packaging.

To achieve this aim, a quantitative research was conducted surveying a sample of 173 Portuguese between generation Y and Z (88 and 85 people respectively). Data was further analysed through factorial analysis and regression modelling.

The results showed that environmental knowledge and environmental concern influences green purchase intention, and the latter also influences green purchase behaviour. However, generation is not shown to be a moderating factor in any of the above relationships.

RESUMO

As marcas estão cada vez mais preocupadas com as embalagens sustentáveis e amigas do ambiente. Além disso, as gerações mais jovens, que é são um alvo importante, estão cada vez mais conscientes das questões ambientais.

Este estudo visa identificar as relações entre o conhecimento ecologico e a preocupação ecologica com a intenção de compra verde e o comportamento de compra verde nas gerações Y e Z em Portugal. Especificamente, este estudo têm como objetivo identificar qualquer efeito moderador das gerações nestas relações no que toca à água engarrafada com embalagens sustentáveis.

Para atingir este objectivo, foi realizada uma investigação quantitativa, onde se obteve uma amostra de 173 portugueses entre as gerações Y e Z (88 e 85 pessoas, respectivamente). Os dados foram ainda analisados através de análise factorial e modelação de regressão.

Os resultados mostraram que o conhecimento ecológico e a preocupação ecológica influenciam a intenção de compra verde, e esta última também influencia o comportamento de compra verde. No entanto, não se demonstra que a geração seja um factor moderador. de qualquer uma das relações acima referidas.

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INTRODUCTION

Since the commercial development, in years 1930s and 1940s, the use of plastics has become increasingly common in the consumer market (Jambeck et al., 2015). Plastics are considered to be the dominant materials of the modern economy as they are cheap, flexible and few quantities of plastic are needed to develop the final product. It is predicted that over the next two decades its use will double (Rossi et al., 2020). Consequently, one of the biggest uses of plastics is in the production of packaging. To illustrate it, is estimated that half of the products on the market in western industrialised countries are packaging using this material. For this reason and for many countries the packaging waste has become a major concern (Rossi et al., 2020). For instance, in 2015 the packaging was the largest industry in Europe, with a 39,9% share, followed by the construction sector with a share of 19,7% (Dahlbo et al., 2018).

One of the big problems with plastic packaging is that most of it is single-use (Dias, 2020). Therefore only 14% of plastic packaging is recovered after use, with the other large percentage remaining into the environment. As a result plastic packaging waste is a fast-growing stream, representing in many nations between 15% and 20% of existing solid waste (Tencati et al., 2016). This suggests that plastic that gets lost in the environment is also a major threat to the oceans. It is estimated that in the year 2010, in 192 coastal areas of planet Earth, about 275 million metric tons (MT) of plastic waste was generated. In

addition to this high number, a study conducted by Jambeck et al. (2015) revealed that between 4.8 and 12.7 million MT had entered into the oceans. As a result, if this trend continues, by the year 2050 the oceans could contain more plastic than fish by weight (Ellen MacArthur Foundation, 2017).

A study conducted by Feber et al. (2020) revealed that more than half of the American population is very concerned about the problems that the waste from the plastic packaging industry brings to the environment, and they are even more concerned about the risks it causes to aquatic life. Further research by Ipsos (2022) with individuals from 28 different countries indicated that the vast majority of people want to see single-use plastics banned and for this to happen they hope governments will make a treaty to that effect. Consumers prefer products with a lower plastic content, although they feel that the responsibility to reduce plastics lies with producers. In the Portuguese scenario, the environmental association Quercus concluded that ninety-six percent of the Portuguese population is aware of the dangers of plastic for the environment. On the other hand, despite this awareness, few individuals actually make an effort to reduce the use of plastic in their daily lives (Quercus, 2018).

One of the products that uses the most plastic in its packaging are bottled water. In the year 2016 worldwide over 480 billion water bottles were consumed, and this is a growing number over the years (Laville & Taylor, 2017). Further, in 2020 there were positive trends for the water market in Portugal, even though this was a year marked by the Covid-19 Pandemic. Non-gas waters

represented a market volume of 883.5 million litres, corresponding to a market value of 169.7 million euros, with an increase of 1% compared to the previous year. The market for sparkling water also saw an increase of around 2% in volume (39.6 million litres) and 3% in value (49.1 million euros) (Benckiser, 2020).

Considering the size of the bottled water market in Portugal and the fact that most of these bottles are made of plastic, the main objective of this research is to understand how environmental knowledge and environmental concern influence green purchasing intention and behaviour, comparing individuals from Y and Z generation.

In order to reach the main objective, the secondary objectives proposed are:

- To analyse the impact of environmental knowledge on the intention to purchase green bottled water;
- To analyse the impact of environmental concern on the intention to purchase green bottled water;
- To analyse the impact of green purchase intention on green purchase behaviour;
- To compare the above relations between Y and Z generations.

This study was divided into four chapters based on the established objectives: literature review; methodology and data collecting; data analysis and interpretation; and lastly, findings, limits, and future research contributions.

1. LITERATURE REVIEW

1.1. PACKAGING

Packaging provides the consumer with a better identification of the product and differentiates it from the competition, besides the technical functions of preservation, protection, and transportation (Klevas, 2005). For this reason, packaging is one of the tools that companies use to communicate with consumers, so it must be as attractive as possible to the customer at the moment of purchase (Vilnai-Yavetz, 2013).

Thus, according to Lindon (2009), the packaging functions can be divided into two categories. On one hand, the technological functions include product preservation and conservation, and make it easy for transportation, use and disposal. On the other hand, the communication functions include the alert, recognition, identification, provide helpful information to the buyer and are a factor that increases the purchase intention.

In packaging, consumers can identify aesthetic elements and informative elements. Visual elements are the size and shape of the packaging as well as the illustrations. The informative elements are those which indicate information about the product. As well as informative elements, visual elements such as illustrations also inform the consumer (Silayoi & Speece, 2007).

In Marketing, the aesthetics of fast-moving consumer goods (FMCG) are often highlighted due to their importance in stimulating and increasing the intention to purchase a particular item. Packaging is the fifth P in the Marketing Mix, in addition to Price, Product, Place and Promotion (Correia, 2012). Further, the purchase intention is strongly stimulated and increased by the packaging, especially its aesthetics, since the more appealing its appearance, the more consumers will be attracted (Silayoi & Speece, 2007). In addition, packaging plays a very important role with regard to product differentiation, particularly in the case of products with the same function and visually identical (Ampuero & Vila, 2006).

There are three types of packaging, of which only the primary and secondary is relevant to this study. Primary packaging is the one in direct contact with the product (e.g., a yoghurt pot). Secondary packaging combines several units of a product into one (e.g. cardboard box containing the four yoghurts). Tertiary packaging is used to transport large quantity of products from factory to point of sale (Lindon, Levendrevie , Lévy , Dionísio & Rodrigues, 2009)

In recent years there has been a growth in the study of materials and design strategies to achieve a more environmentally friendly packaging. (Salwa et al., 2019) This kind of packaging can be referred as “green”, “eco-green”, “eco-friendly”, “sustainable” or “recyclable” (Wandosell et al., 2021). The main advantage to adopting eco-friendly packaging are improved brand image, compliance with the law, and environmental friendliness and cost savings, since less raw materials will be used and others reused (Xin et al., 2019).

Many products allege to have sustainable packaging, although they are not manufactured entirely from natural renewable resources (Salwa et al., 2019). This is because there are several definitions of the concept of ecological packaging. For example, for Srinivasan & Lu (2014), an ecological packaging should be made of sustainable materials but at the same time it should maintain all the functions expected of a packaging. Yet, according to Dominic et al (2015), an ecological packaging is one that uses materials that can be reused and therefore reduces waste. This reuse of packaging material is called circularity, and a product made from materials that can be reused will contribute to a circular economy (Pauer et al., 2019). According to Pauer et al. (2019) the ecological packaging goes beyond the material it is made of, because at the same time it must be effective in the protection it gives to the product inside, it must be efficient in the use of resources, not using more than necessary and without compromising the environment and human health.

Contrary to other authors, Gürlich (2020) doesn't discuss the role of packaging on the advertising of the brand, but states the three dimensions of packaging are: protection of the product, circularity and environment. With regard to product protection the packaging must be able to protect the product from mechanical impacts, such as shocks and knocks. As well as from non-mechanical impacts, it should not allow oxygen and humidity to enter its interior. Also, the packaging should only leave a minimum number of residues inside. Finally, packaging should be resealable after opening, thus achieving additional protection for its content. As second dimension, circularity is also an important factor for sustainable packaging, so the participation of consumers is very important for this process since they have a fundamental role for correct recycling for example. Finally, packaging must also allow the reduction of direct and indirect environmental impacts. The use of certified materials is an ally to reduce them. It should be made up of as few separate parts as possible in order to reduce the amount of waste caused at the end of its cycle.

1.2. GREEN MARKETING

It is sustainability that develops the conditions that allow the future generations to live in social and economic balance. Nowadays, consumers pay special attention to sustainability issues when shopping. This growing consumer demand for environmentally friendly products has led organisations to rethink their offer, offering to the customer products of this kind. The term sustainability

is nowadays very generalized and can have several different interpretations. Therefore, it is important to know how to distinguish the concept of sustainability from the concept of green marketing (Solomon, 2020).

Green marketing is an area that has been evolving for many years and its main function is to demonstrate to customers the ecological concern of companies. When a company uses this type of marketing strategy, the objective is to highlight the ecological characteristics of the product. With the growth of environmental concern on the part of consumers, by applying this type of communication companies are attracting customers with these concerns (Solomon, 2020). Green marketing is also a term that refers to any marketing actions that aim to encourage and sustain consumers' environmental attitudes and behaviours (Chang, 2013).

According to Ottman (2014) the growing popularity of green marketing is a proof that consumers evaluate the companies present in the market, not only by the quality of their products or services, but also by their social and environmental responsibility. According to this author, if companies do not give due importance to these two issues, they are likely to lose connection with consumers, being surpassed by those that take the green perspective into account.

According to the same author, the characteristics of green marketing differ from the rules of traditional marketing. With the new rules of green

marketing, products that were expensive in the past are being replaced by innovative sustainable ones, using new types of design and disruptive technologies. However, some products are being replaced by services, which represent new types of sustainable business, allowing companies to be profitable in the future, socially and ecologically, thus increasing the value and convenience for their customers. The table 1, shows a comparison between conventional marketing and green marketing, based on the following dimensions: consumer; product; communication and company.

	Conventional Marketing	Green Marketing
Consumers	Consumers with lifestyles	People with lives
Products	Products "for all life" Marketed Worldwide One size fits all	Services "for all life" Marketed locally Suited to the region
Communications	Products of benefits Selling One way communication Paid ads	Values Educating and Empowering Building a community Mouth-to-mouth
Corporate	Discreet Reactive Independent and autonomous Competitive Departmentalized Focus on short-term and profit maximization	Transparent Pro Active Interdependent allied with the stakeholders Cooperative Holistic Focus on the long term Profit maximisation, sustainability, and employee well-being (triple result)

Table 1 - The new green marketing paradigm. Source: Ottman (2014, p.80)

1.3. ECOLOGICAL AWARENESS

Environmental concern is defined as ”the degree to which people are aware of problems regarding the environment and support the efforts to solve them or indicate the willingness to contribute personally to their solution” (Dunlap & Jones, 2002, p.485).

Schultz states that environmental concerns are divided into three values: egoistic values, which refer to the importance that each individual places on himself; socio-altruistic values, which are the importance placed on other people; and finally biosphere values, which as the name indicates is the importance placed on the elements of the environment (Schultz, 2001).

For Dunlap and Jones 2002, environmental concern is a combination of cognitive and affective attitudes towards the environment. Environmental concern is a concept that can be measured and for this measurement, the researchers use the evaluation of individuals' awareness regarding themes such as climate change and personal rules associated with feelings of ethical obligation to defend nature. Environmental concern is also associated with the new environmental paradigm (NEP) which is characterised by people's favourable orientation towards the environment and, in turn, their willingness to pay a higher price for a product that does not harm it (Dunlap & Jones, 2002).

Attitudes refer to the way an individual thinks or feels about something, which is directly related to the actions he or she will take at certain times (Solomon, 2020). On the other hand, behaviour is the way an individual actually acts when faced with certain situations. In general, human beings have three types of attitudes, those in which they believe the most, those they hold strongly and those in which they have only a basic opinion. Making a distinction between these degrees of attitudes is important because individuals tend to behave in ways that favour their strongest (Solomon, 2020). It is important to refer that the consumer can assume a different behaviour from his intention, since there can be a change in factors such as the amendment of the motivation level for the purchase, the alteration of his needs, the alteration of the alternatives that exist for that purchase or the gain of new information that changes the existing decision process, conditioning it (Engel; Miniard; Blackwell, 2008).

Regarding attitudes and behaviour linked to sustainable issues, individuals who have stronger feelings about the environment show greater harmony between attitudes and behaviour, demonstrating it by recycling, for example (Solomon, 2020).

According Goriparthi and Tallapally (2017), the relationship between ecological attitude and behaviour can be strengthened by the increase of several factors, among which: the increase of the consumer's ecological awareness; the willingness to pay a higher price for the product; the benefits it brings to personal health and to the community; the increase of the organisations'

communication; and the consumer's availability to search for products of this nature.

Consumers with environmental knowledge are those who tend to behave in favour of environment. These individuals, who have higher environmental knowledge, are willing to pay a higher price for green products (Laroche et al., 2001).

Consumers are increasingly aware of the effect they have on the environment and how much their attitudes today can positively or negatively influence the future of the next generations (Monnot et al., 2019).

Therefore, consumers nowadays recognise their ecological responsibility, being more concerned about environmental protection and preservation. Consequently their purchasing intentions have become more eco-friendly, and they look for brands with sustainable attitudes (Paiva, 2011). Consumers with this type of concern for the protection of the environment are called green consumers. The green consumer is the one who combines the act of consuming products with the opportunity to act in a way that protects the environment. Thus, the green consumer seeks to consume products which are not harmful to the environment, avoiding those which present risks to it, and consequently discouraging their production (Hailes, 2007). As a result, Hailes argues that the

green consumer present consumption patterns related to the avoidance of the following kind of products:

- Present a risk to personal and community health;
- Harmful to the environment during their production, use or final disposal;
- Whose production uses excessive energy;
- Have excessive packaging or that are disposable;
- Contain ingredients from endangered animal species;
- Animals are mistreated during their production;
- Negatively affect other people or countries;

According to Goleman (2009), green consumers are those who pay more attention to the details of each product, so that in the end they can have a healthier life and still protect the environment. The same author indicates that it is the younger generations who are predisposed to make changes in their behaviour, because they have grown up in an environment where concerns about the future of the planet have been much discussed.

For a better characterization of the green consumer profile, Afonso (2010) divided it into five possible levels:

- Truly green consumers: These are the consumers who represent a more active and committed role when it comes to environmental

protection. These are generally people who dedicate their time and efforts in the fight for environmental protection. They are usually environmental activists or leaders and believe that their actions can make a big difference in solving this type of problem.

- Conscious Consumers: Although these consumers are not very active in the fight for the environment, they like to express their concern for it through their consumption habits and are willing to pay 22% more for products that do not cause damage to the environment.

- Moderately green consumers: This type of consumer is characterised by engaging in environmental activities with some regularity, although they are not willing to pay more for green products unless they meet their main needs. Unlike conscious consumers, this group is only willing to pay 4% more for these products. Their main activity is recycling, and they pay attention to packaging labelling.

- Conventional consumers: Although these consumers are more concerned about the environment, they do not believe that individually they can make a difference to solve existing environmental problems. They are less informed about environmental problems and rationalise excuses for their choices of non-green products.

- Apathetic consumers: consumers who have no interest in environmental issues and take no action as consumers to protect their interests.

The purchase intention can be defined as the relation between the consumer's interest in purchasing a certain product or service, and the possibility of this purchase actually happening (Wu et al., 2015). In addition Esmaeilpour (2017) states that green product purchase intention is the inclination of customers to choose items with the best environmental characteristics. The green purchase intention is summarized in the consumer's willingness to purchase green products, thus demonstrating their support for the environment. The green purchase intention comes from the evaluation that the individual makes in relation to the repercussions that his purchase would have on the environment (Akehurst et al., 2012).

Over the years, consumers have developed more concerns about the environment, becoming increasingly worried about its degradation, pollution and global warming. These issues have made consumers understand that their purchasing behaviour can have a very high impact on the environment and on society. (Abdul Wahid et al., 2011) According to Mostafa (2006) green purchasing behaviour can be defined as the consumption of products that are beneficial to the environment.

Green consumers are acting on their principles through their product selections at the point of sale, not just by purchasing green items but also by leaving 'non-green' products on store shelves (Ottman, 2014). In addition, consumers perceive sustainable packaging to be a significant factor in their purchasing decisions, and for at least one-third of them, it is the most important factor (Dias, 2020). Finally, the package label may have a significant impact on how much money a customer is prepared to pay on a product (Yang et al., 2013).

1.4. GENERATION Y AND GENERATION Z

The generational approach can be a significant factor for companies to offer products and services to its customers, based on their year of birth (Schewe & Meredith, 2004). There may be some crossover between younger Generation Y members and elder Generations Z members, depending on what criteria are chosen for the start and the end years of each generational category, since there is a lot of discordance between researchers on this subject (Skinner et al., 2018).

Solomon (2020) defines the individuals from Generation Y as the ones who born between the years of 1986 and 2002. On the other hand, the Generation Z represents the youngest of the generations, being the first generation of the 21 century, including those born in the early 2000s (Solomon, 2020). Another

author indicates that the Generation Y individuals are those who were born between 1981 and 1996. And those who belong to Generation Z are those who were born after 1996. For the study in question, the latter dates will be used as reference (Parker & Igielnik, 2020).

The Generation Y can be described using terms such as: Millenials, Echo Boomers, Why Generations, Net Generation, Gen Wired and Nexters. On the other hand, when referring to generation Z designations such as Tweens, and Generation 9/11 are all used terms (Williams et al., 2010)

The millennial generation can be defined by a wide range of features. They are regarded as open-minded, independent, self-expressive, enthusiastic, and receptive. However, they are also viewed in the negative way for being egocentric, lazy and prone to job opening (Boon et al., 2020). They also have high levels of school education but often they find themselves unable to enter the labour market. Due to their high unemployment rate, they are forced to come up with strategies to save money, such as sharing accommodation with other people and using discount coupons in shops (Solomon, 2020).

The members of Generation Y are characterised by a high curiosity to get to know other cultures. To satisfy this desire, individuals who have the possibility of not being so tied to their jobs take every opportunity to travel to a foreign country. While those who have a job where they cannot move around so easily, choose to satisfy this desire by going to restaurants with concepts dedicated to

food from foreign countries (Solomon, 2020). Millennials tend to believe in a globalised world without borders, since they don't consider themselves citizens of their own country, but rather citizens of the world. This generation is always looking for better opportunities and experiences in places where they can make the most of their talent. (Brack & Kelly, 2012).

Millennials are concerned about environmental issues and believe that individual has the power to change the world for the better. They believe in labelling and certification systems as a method of communicating information about different forms of production, and expect that innovation will decrease the environmental effect (Bollani et al., 2019). However, critics of the millennial generation argue that they value first their comfort and convenience and only afterwards sustainability issues (Naderi & Van Steenburg, 2018).

There are several reasons why millennials behave in a green way (Naderi & Van Steenburg, 2018). Even though the millennial generation has more of a green attitude than a green behaviour. This difference between attitude and behaviour exists because although millennials are aware of pro-environmental thinking, most of them do not engage in environmentally friendly activities (Diamantopoulos et al., 2003). Economic issues also explain the discrepancy between attitude and green behaviour, as generation Y feel that if green products were cheaper, they would recommend their use to their peers (Smith, 2010).

Members of Generation Z were born at a time when technology is very important in daily life. They have witnessed the great advances that online communications have brought and also the advances that social media has made in the way people and organisations communicate (Dabija et al., 2020). Given the importance of technology since early in their lives, they have become known as “digital natives". Therefore, members of this generation expect brands and organisations to communicate (explain what this type of communication has to do with environmental awarness) with them online, although they expect it to be a communication that allows them to also engage and communicate with the brand in this space (Solomon, 2020).

Generation Z individuals cherish values such as respect, trust, and prudence. They also place a high value on organisation, are methodical in order to carry out tasks in a structured and logical manner and are self-confident in their abilities (Williams, Page, Petrosky & Hernandez, 2010). Also, this generation is considered to be the most goal-oriented of the generations. The ones with the highest academic qualifications and the most financially stable then other generations (Barna Group, 2018). Their self-confidence is influenced in part by the group to which they belong (Williams et al, 2010). For them it is normal to socialise and have friends who belong to racial and ethnic cultures different from their own. Also, they argue that this inclusion is essential nowadays. In relation to domestic responsibilities, they already have a more open point of view, not dividing what are the tasks of a woman and a man (Solomon, 2020).

Generation Z is a generation that is very much connected to environmental concerns. Several researchers link this generation's consumer attitudes and behaviours towards the environment with the growth in the use of social media to communicate (Mitchell, 2019). Generation Z, which is known for its social responsibility, is expected to increasingly seek changes in consumer habits, making them more sustainable (Abrar et al., 2021). In order to significantly change consumption habits and also encourage companies to adopt new, more sustainable production habits, this generation can have a very significant impact on the debate between stakeholders to achieve this goal (Bollani et al., 2019).

2. CONCEPTUAL MODEL AND HYPOTHESIS

The main objective of this research is to understand how environmental knowledge and environmental concern influence green purchasing intention and behaviour, comparing individuals from Y and Z generation.

In order to reach the main objective, the secondary objectives proposed are:

- To analyse the impact of environmental knowledge on the intention to purchase green bottled water;
- To analyse the impact of environmental concern on the intention to purchase green bottled water;

- To analyse the impact of green purchase intention on green purchase behaviour;
- To compare the above relations between Y and Z generations.

A higher level of green knowledge drives the purchase intention of these same products (Mostafa, 2006). Chan (2001) found that there is a positive relationship between environmental knowledge and values and the green purchase intention. According to that finding a first hypothesis is proposed to this study.

H1: Environmental Knowledge positively impacts Green Purchase Intention

Environmental concern has a direct and significant impact on attitude towards green products which further influence on purchase intention for such products. The notion is that consumers having high environmental concern directly associates with their positive attitude toward green products which in turn their high level of purchasing intention for such products.

Environmental concern is directly related to consumers' attitude towards green purchase intention, influencing it to higher levels. Thus, consumers who represent a higher environmental concern, tend to have a positive attitude towards green purchase intention (Yadav & Pathak, 2016). That leads to the second hypothesis of this study.

H2: Environmental Concern positively impacts Green Purchase Intention

The factor that most influences behaviour is intention, where various studies (same as above) that have already been conducted on this relationship prove the existence of very high correlation indices between the two variables (Hill et al., 1977). Thus, a third hypothesis is presented to this study, as follow:

H3: Green Purchase Intention positively impacts Green Purchase Behaviour

Macky et al (2008) point out that different generations are defined by different life experiences, which ultimately have a major impact on the development of their personality, values and expectations. By being defined by the life experiences they are subjected to, it is normal that generations are different from each other in relation to their values, beliefs and behaviours, as they have experienced quite different historical events over time. The following hypotheses were formulated to find out whether generation has a moderating effect on the relationship of other variables.

H1A: Generation moderates the relationship between environmental knowledge and green purchase intention.

H2A: Generation moderates the relationship between environmental concern and green purchase intention.

H3A: Generation moderates the relationship between green Purchase intention and green purchase behaviour.

The Figure 1 presents the conceptual model that was created with the intention of summarising the above formulated hypotheses.

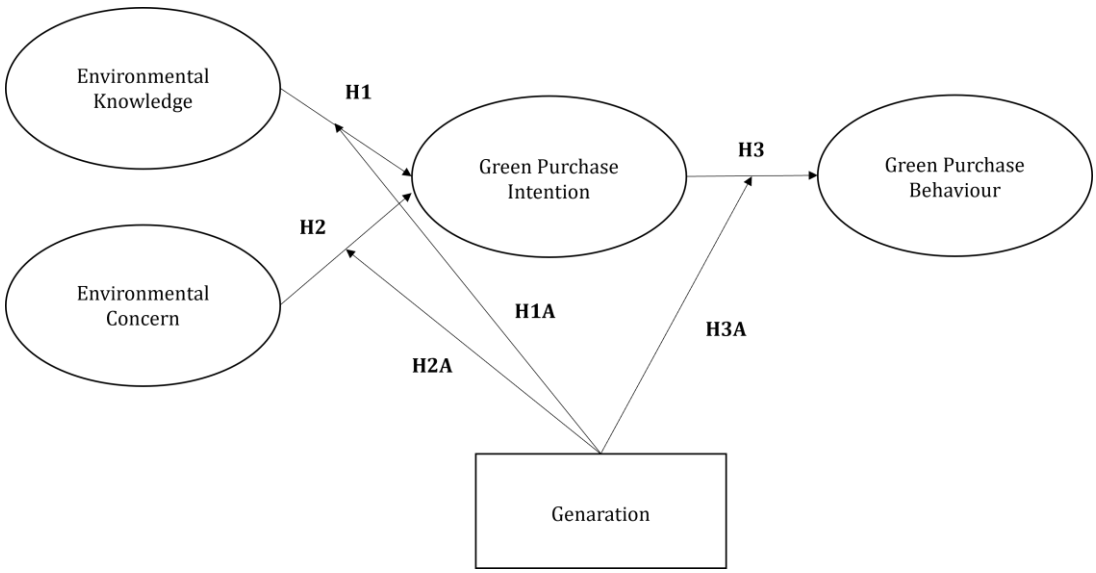

Figure 1 - Conceptual model of analysis

3.METHODOLOGY

3.1. APPROACH

The hypotheses that are summarised in the conceptual model above was tested in order to achieve the research objectives. Since it is intended to test the impact of some variables on another's, the quantitative approach seems the most appropriate, since this type of methodology aims to quantify the data by applying a certain form of statistical analysis (Malhotra, 2006). However, it is necessary to collect information from real consumers, the method of gathering data was a quantitative survey.

3.2. POPULATION AND SAMPLE

The universe of this study is the Portuguese consumers of both genders who regularly buy bottled water, belonging to generations Y and Z and that are over 18-year-old.

A convenience sample was used in this research. Convenience sampling is a technique that aims to reach a certain number of convenient respondents, and this method provides some advantages and disadvantages (Malhotra, 2006). The advantage is due to the fact that it is a technique with few inherent costs and

fast in terms of obtaining results. A disadvantage is that there is a risk of obtaining responses from respondents who are not relevant to the study in question.

3.3. DATA COLLECTION

In order to collect the data necessary for this research, a questionnaire was delivered using the Google Forms platform, which allowed for the collection of all answers in a single database, in online format. The decision to deliver an online questionnaire took into account the lower cost associated with its creation and distribution and because its application, coding, data analysis and interpretation are relatively simple and the data obtained is reliable, since the answers are limited to the alternatives that are mentioned (Malhotra, 2006).

In order to obtain the highest number of answers to the questionnaire, it was distributed in some WhatsApp groups, where each person was asked to share it with other people after completing the questionnaire. The questionnaire was also shared on the social media, Instagram, Facebook and LinkedIn. This method is called "snowball sampling".

3.4. COLLECTION INSTRUMENT

To collect the data, a questionnaire was developed, which is available in Appendix 1. A questionnaire is a research technique consisting of a certain number of questions that are presented in writing to a certain number of people (Malhotra, 2006). The questionnaire aims to acquire knowledge and analyse the opinions of those who answer it.

In particular, the preparation of this questionnaire considered several aspects, such as: A very brief presentation of the topic under study and some instructions for its proper completion. The respondents were also informed about the confidentiality of their answers and personal data, as well as the average time for fulfilling the questionnaire.

The questionnaire was composed entirely of closed-ended questions, where the respondents just had to reveal their level of agreement with the statements presented. By using closed-ended questions, it is possible to reduce response time and make it easier for respondents to complete the questionnaire, as well as simplifying data processing, coding, and response processing.

The preparation of the questionnaire took into consideration the literature review of the dissertation and the questions were framed in such a way that there was a link between it and the conceptual model of the research.

The questionnaire was composed of 30 questions grouped by theme (as show in Table 2), with each set aiming at the analysis of a given construct. Thus, the questionnaire was divided into five parts: I - Questions to characterize the respondents' sociodemographic profile; II - Questions about the Green Purchasing Behaviour (GPB, with 6 questions); III - Questions about the Green Purchasing Intention (GPI, with 4 questions); IV - Questions about Environmental Concern (EnCO, with 12 questions); V - Questions about Environmental Knowledge (EnK, with 5 questions);

The questionnaire was composed of two filter questions, namely the year in which the respondent was born, so that only those who belong to the generations under study could proceed with the completion of the questionnaire, and the question "Have you bought bottled water in the last month?" to ensure that only consumers of this type of product responded.

In order to measure the degree of intensity of the responses, a 5 and 7-point Likert scales were used, which allowed respondents to answer their degree of agreement in relation to a certain number of statements. The decision made to use these two measures of intensity was due to the fact that the scales developed by the authors were maintained.

The constructs were measured using scales obtained in the existent literature. Each scale had several items, and all were originally written in English, so they had to be translated into Portuguese.

Construct	AUTHOR	# ITEMS	SCALE
Environmental Concern	(Yoon & Chen, 2017)	12	7 points Likert Scale
Environmental Knowledge	(Yoon & Chen, 2017)	5	7 points Likert Scale
Green Purchase Intention	(Kong et al., 2014)	4	5 points Likert Scale
Green Purchase Behaviour	(Khare, 2015)	6	5 points Likert Scale

Table 2 – Theoretical background for the adopted scales

Environmental Concern:

The scale to measure environmental concern was adapted from Yoon & Chen (Yoon & Chen, 2017) and has 12 questions. A 7-point Likert scale was used to measure them: "Strongly Disagree" (1) "Strongly Agree" (7). In the table 3 are presented the questions that were included in the questionnaire.

EnCO01	We are approaching the limit number of people the earth can support.
EnCO02	The earth is like a spaceship with Only limited room and resources.
EnCO03	Humans have the right to modify the natural environment to suit their needs. (Reverse scale)
EnCO04	Plants and animals have as much right as humans to exist.
EnCO05	Humans were meant to rule over the rest of the nature. (Reverse scale)
EnCO06	When humans interfere with the nature, it often produces disastrous consequences.
EnCO07	The balance of nature is strong enough to cope with the impacts of modern industrial nations. (Reverse scale)
EnCO08	The balance of nature is very delicate and easily upset.
EnCO09	Human ingenuity will ensure that we do not make the earth unliveable. (Reverse scale)
EnCO10	Humans are severely abusing the environment.
EnCO11	The so-called ecological crisis facing humankind has been greatly exaggerated. (Reverse scale)
EnCO12	If things continue on their present course, we will soon experience a major ecological catastrophe.

Table 3 - Items related to environmental concern scale. Source: Yoon & Chen (2017)

Environmental Knowledge:

The scale used to measure environmental concern, was also adapted from Yoon & Chen (Yoon & Chen, 2017) and was composed of 5 questions. A 7-point Likert scale was used from: "Strongly Disagree" (1) "Strongly Agree" (7). In the table 4 below are presented the questions that were included in the questionnaire.

EnK01	I know that I buy products and packages that are environmentally safe.
EnK02	I know more about recycling than the average person.
EnK03	I know how to select products and packages that reduce the amount of waste ending up in landfills.
EnK04	I understand the environmental phrases and symbols on product package.
EnK05	I am very knowledgeable about environmental issues.

Table 4 - Items related to environmental knowledge scale. Source: Yoon & Chen (2017)

Green Purchase Intention:

The scale used to measure green purchase intention was sourced from Kong, Harun, Sulong & Lily (Kong et al., 2014). Four items were used, which were

operationalized in a 5-point Likert scale: "Strongly Disagree" (1) "Strongly Agree" (5), as per the table 5 below.

GPI01	I plan to switch to a green version of a product.
GPI02	I consider switching to other brands for ecological reasons.
GPI03	I consider buying green products because they contribute to less pollution.
GPI04	I would buy green products that are not harmful to the environment.

Table 5 - Items related to green purchase intention scale. Source: Kong Wilson, Harun Amran, Sulong Rini Suryati (2014)

Green Purchase Behaviour:

The scale used to measure green purchase behaviour was adapted from the one developed by Khare (2015). A Likert scale from "strongly disagree" (1) to "strongly agree" (5) was applied to evaluate the responses to the items in this section. In the following table 6 the questions asked to the respondents are represented.

GPB01	I do not use paper and/or plastic shopping bags in all possible ways.
GPB02	I usually prefer to Purchase reusable products.
GPB03	If i have to buy batteries, I always Purchase batteries with no Mercury or rechargeable ones.
GPB04	I try to Purchase products with little and/or no environmental harm, even though they are more expensive.
GPB05	I always Purchase bio-degradable products when they are disposed.
GPB06	I always refrain from purchasing disposable products.

Table 6 - Items related to green purchase behaviour scale. Source: Khare (2015)

4. DATA ANALYSIS

This chapter presents the analysis of the data obtained through the questionnaires. After the data collection through the research tool, they were exported from Google Forms to an Excel file, in order to proceed with database cleaning and variable coding, and then processed in SPPS STATISTICS vs. 28. This chapter presents the results obtained during the research, from the descriptive analysis of the variables per section of the questionnaire, the exploratory factor analysis and the verification of the hypotheses proposed in the conceptual model.

4.1. DESCRIPTIVE ANALYSIS:

In order to characterise the sample, the descriptive analysis below is based on the socio-demographic profile of the sample.

As shown in Table 7, the sample is composed of 173 individuals, 85 (49.1%) individuals belong to generation Z and 88 to generation Y (50.9%), showing that the sample is very balanced in terms of generations. 108 (62.4%) of whom are female and 65 (37.6%) are male. 58 (33.5%) of the female respondents belong to generation Z and 50 (28.5%) to generation Y. On the other hand, 27 (15.6%) of the male respondents belong to Generation Z and 38 (22%) to Generation Y.

		Generation		Total
		Generation Z	Generation Y	
Gender	Feminine	58 (33.5%)	50 (28.5%)	108 (100%)
	Masculine	27 (15.6%)	38 (22%)	65 (100%)
Total		85 (49.1%)	88 (50.9%)	173 (100%)

Table 7 - Gender and Generation - Distribution of the sample

Table 8 shows the descriptive statistics of the items related to the scale of the green purchasing behaviour variable. The higher score were the following: GPB02 " I usually prefer to Purchase reusable products" (m=3.62; s.d.=1.06); GPB06 " I always refrain from purchasing disposable products" (m=3.23; s.d.=1.15); GPB04 " I try to Purchase products with little and/or no

environmental harm, even though they are more expensive " (m=3.06; s.d.=1.09); GPB05 " I always Purchase bio-degradable products when they are disposed." (m=3.06; s.d.=1.13).

On the other hand, the items with the lowest scores were: GPB03 "If i have to buy batteries, I always Purchase batteries with no Mercury or rechargeable ones." (m=2.81; s.d.=1.31) and GPB01 " I do not use paper and/or plastic shopping bags in all possible ways." (m=2.95; s.d=1.22). All the averages are close to the neutral middle, and thus it seems that the respondents seek refuge at a midpoint of the scale so as not to compromise.

	Minimum	Maximum	Average	Standard Deviation
GPB01	1	5	2.95	1.22
GPB02	1	5	3.62	1.06
GPB03	1	5	2.81	1.31
GPB04	1	5	3.06	1.09
GPB05	1	5	3.06	1.13
GPB06	1	5	3.23	1.15

Table 8 - Descriptive Analysis - Green Purchase Behaviour

According to Table number 9, the items of the scale of the green purchase intention variable with higher scores were: GPI04 " I would buy green products that are not harmful to the environment " (m=4.33; s.d.=0.83); GPI03 " I consider buying green products because they contribute to less pollution. " (m=4.06; s.d.=1.06).

On the other hand, the lowest scored items: GPI02 " I consider switching to other brands for ecological reasons." (m=3.70; s.d.=1.11); GPI01 " I plan to switch to a green version of a product." (m=3.75; s.d.=1.12).

	Minimum	Maximum	Average	Standard Deviation
GPI01	1	5	3.75	1.12
GPI02	1	5	3.70	1.11
GPI03	1	5	4.06	1.06
GPI04	1	5	4.44	0.83

Table 9 - Descriptive Analysis - Green Purchase Intention

As per table 10, the items of the scale of environmental knowledge with highest scores were: EnK01 " I know that I buy products and packages that are environmentally safe. " (m=5; s.d.=1.48) and EnK05 " I am very knowledgeable about environmental issues." (m=4.33; s.d.=1.40). In contrast the lowest scored items were: EnK03 " I know how to select products and packages that reduce the amount of waste ending up in landfills. " (m=3.92; s.d.=1.72) and EnK02 " I know more about recycling than the average person." (m=4.08; s.d.=1.46)

	Minimum	Maximum	Average	Standard Deviation
EnK01	1	7	4.24	1.50
EnK02	1	7	4.08	1.46
EnK03	1	7	3.92	1.72
EnK04	1	7	5.00	1.48
EnK05	1	7	4.33	1.40

Table 10 - Descriptive Analysis - Environmental Knowledge

As pert table 11 the items of the scale of the ecological concern variable, the items with the highest scores were: EnCO04 " Plants and animals have as much right as humans to exist. " (m=6.35; s.d.=1.17); EnC010 " Humans are severely abusing the environment." (m=6.32; s.s.=1.07) and EnCO12 " If thing continue on their present course, we will soon experience a major ecological catastrophe. " (m=6.04; s.d=1.23). On the other hand, the items that obtained a lower score were the following: EnCO09 " Human ingenuity will ensure that we do not make the earth unliveable. " (m=4.42; s.d.=1.84); EnCO11 "The so-called ecological crisis facing humankind has been greatly exaggerated. " (m=4.80; s.d.=2.00) and finally EnCO03 " Humans have the right to modify the natural environment to suit their needs. " (m=5.03; s.d.=1.90).

	Minimum	Maximum	Average	Standard Deviation
EnCO01	1	7	5.36	1,49
EnCO02	1	7	5.68	1,51
EnCO03	1	7	5.03	1.90
EnCO04	1	7	6.35	1.17
EnCO05	1	7	5.48	1.82
EnCO06	1	7	5.54	1.52
EnCO07	1	7	5.32	1.74
EnCO08	1	7	5.78	1.35
EnCO09	1	7	4.42	1.85
EnCO10	1	7	6.32	1.07
EnCO11	1	7	4.80	2.00
EnCO12	1	7	6.04	1.23

Table 11 - Descriptive Analysis - Environmental Concern

4.2. INTERNAL CONSISTENCY OF THE SCALES

An Exploratory Factor Analysis (EFA) was performed to verify the applicability of the scales used to measure the variables.

As part of the EFA, Kaiser-Merlin-Olkin (KMO) and the Bartlett's tests of sphericity were conducted to check whether the data were adequate. In addition, Cronbach's alpha was calculated for each construct.

Table 12 shows the recommended KMO test values.

KMO Value	Recommendation
]0,9; 1,0]	Excellent
]0,8; 0,9]	Good
]0,7; 0,8]	Medium
]0,6; 0,7]	Mediocre
]0,5; 0,6]	Bad (but acceptable)
≤0.50	Unacceptable

Table 12 - KMO - Reference of the obtained values. Source: Hongyu (2018)

The Bartlett's test of sphericity checked for the presence of correlations between the variables since it may identify statistically significant correlations between the variables. Sufficient statistically significant correlations ($p < 0.05$) allow proceeding with the analysis. (Hair et al., 2018).

Also, Cronbach's Alpha tests of the construct's items were performed to check the reliability of the scale. According to Landis & Koch (1977), the degree of reliability of Cronbach's Alpha test is measured as shown in Table 13:

Cronbach Alpha Value	Recommendation
0,81 to 1	Almost Perfect
0,61 to 0,80	Substantial
0,41 to 0,60	Moderate
0,21 to 0,40	Fair
0,21 to 0,40	Small

Table 13 - Cronbach's Alpha - Reference of the obtained values. Source: Landis & Koch (1977)

Finally, the communalities were analysed. The minimum acceptable value is 0.5, and all items below this value were supposed to be removed. After the first EFA, two items were removed from the database: GPB1, with a communality of 0.21 and EnC02, with a communality of 0.32. The results of the second Exploratory Factor Analysis are presented below.

Green Purchase Behaviour:

As per table 14, the KMO test value (0.83) was considered good. The Bartlett's test of sphericity demonstrated the existence of statistical significance ($p<0.001$). The value of Cronbach's alpha (0.81) was "Almost Perfect".

Regarding the communalities, the only value below 0.5 is of item GPB3 (0.48). However, since 0.48 was very close to 0,5, it was maintained, in order to

preserve the original scale as much as possible. It is remembered that GPB1 had already been removed from the analysis before.

Only one factor was extracted, explaining 57% of the variance, what assesses the unidimensionality of the construct. The item with the highest standardised factor charge was GPB4 (0.83).

	Mean	Standard Deviation	Commonalities	F1 pad.
GPB2	3.62	1.06	0.52	0.72
GPB3	2.81	1.30	0.48	0.69
GPB4	3.06	1.09	0.69	0.83
GPB5	3.06	1.13	0.67	0.82
GPB6	3.23	1.15	0.51	0.71
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.				0.83
Bartlett's Test of Sphericity			Sig.	<,001
Cronbach's Alpha				0,81

Table 14 - Validation of the measurement instrument for Green Purchase Behaviour

Green Purchase Intention

In order to validate the scale used, the KMO test and the Bartlett's test of sphericity were performed. As per table 15, the KMO test value was medium (0,79). The Bartlett's test of sphericity presented a p<0.001, thus confirming the statistical significance. Cronbach's alpha value (0,87) was almost perfect.

All communalities' values were above 0.5. Thus, it was not necessary to remove any item from the database.

Only one factor was extracted, explaining 72% of the variance, thus assessing the unidimensionality of the construct. The item with the highest standardised factor charge was GPI3 (0.92).

	Mean	Standard Deviation	Commonalities	F1 pad.
GPI1	3.75	1.12	0.73	0.86
GPI2	3.70	1.11	0.77	0.88
GPI3	4.06	1.06	0.84	0.92
GPI4	4.44	0.83	0.53	0.73
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.				0.79
Bartlett's Test of Sphericity			Sig.	<,001
Cronbach's Alpha				0.87

Table 15 - Validation of the measurement instrument for Green Purchase Intention

Environmental Knowledge:

According to table 16, the KMO test value (0.83) was good. The Bartlett's test of sphericity demonstrated the existence of statistical significance ($p<0.001$). Cronbach's alpha value (0.84) was "Almost Perfect".

All the communalities' values were above 0.5. Thus, it was not necessary to remove any item from the database.

Only one factor was extracted, explaining 61% of the variance, thus assessing the unidimensionality of the construct. The item with the highest standardised factor charge was EnK2 (0.84).

	Mean	Standard Deviation	Commonalities	F1 pad.
EnK1	4.24	1.50	0.46	0.68
EnK2	4.08	1.46	0.71	0.84
EnK3	3.92	1.72	0.66	0.82
EnK4	5.00	1.48	0.59	0.77
EnK5	4.33	1.40	0.62	0.79
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.				0.83
Bartlett's Test of Sphericity			Sig.	<,001
Cronbach's Alpha				0.84

Table 16 - Validation of the measurement instrument for Environmental Knowledge

Environmental Concern

As per table 17, the KMO test value (0.85) was good. The Bartlett's test of sphericity demonstrated the existence of statistical significance ($p<0.001$). Cronbach's alpha value (0.79) was substantial.

Regarding the communalities, the only value below 0.5 is of item EnCO09 (0.41). However, since 0.41 was very close to 0.5, it was maintained, in order to preserve the original scale as much as possible.

Unlike the original scale in which the 12 items extracted only one factor, the present EFA extracted two factors, that together explained 56.83% of the variance. For factor 1, the item with the highest standardised factor loading was EnCO12 (0.82) and for factor 2, EnCO07 (0.80).

	Mean	Standard Deviation	Commonalities	F1 pad.	F2 pad.
EnCO12	6.04	1.23	0.70	0.82	
EnCO10	6.32	1.07	0.67	0.80	
EnCO06	5.54	1.52	0.58	0.76	
EnCO08	5.78	1.35	0.56	0.75	
EnCO01	5.36	1.49	0.53	0.72	
EnCO04	6.35	1.17	0.51	0.68	
EnCO07	5.32	1.74	0.65		0.80
EnCO03	5.03	1.90	0.53		0.73
EnCO05	5.48	1.82	0.60		0.72
EnCO11	4.80	2.01	0.51		0.71
EnCO09	4.42	1.85	0.41		0.64
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.				0,85	
Bartlett's Test of Sphericity			Sig.	<0,001	
Cronbach's Alpha				0,79	

Table 17 - Validation of the measurement instrument for Environmental Concern

After this process, all scales were validated, which allows the hypotheses to be tested in the next chapter.

4.3. HYPOTHESIS TEST

The method used to test the hypotheses were the linear regression method since it calculates the relationship between independent and dependent variables of scalar nature (Malhotra, 2006).

H1: Environmental Knowledge positively impacts Green Purchase Intention

The first step to test this hypothesis was to consider two new variables "Environmental Knowledge" and "Green Purchase Intention", variables that are the result of the average of the constructs' items.

In this hypothesis, the independent variable was "Environmental Knowledge" and the dependent variable was "Green Purchase Intention".

As per table 18, the linear correlation coefficient found between the variables was r=0.41. The coefficient of determination R^2 squared is 0.17. This means that 16.9% of GPI variability can be explained by EK variability.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.41[a]	.17	.16	,91

Table 18 - Summary of the model H1

Since p<0.001 (as shown in Table 19), the model can be considered statistically significant, thus it is possible to conclude that H1 was supported by the collected data.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29.02	1	29,02	34,72	<,001[b]
	Residual	142.98	171	,84		
	Total	172.00	172			

Table 19 - ANOVA - H1

Regarding the impact that environmental knowledge generates on green purchase intention, as shown in table 20, we find a B1=0.41 with p<0.001.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.601E-16	.07		.000	1,000
	Environmental Knowledge	.41	.07	.41	5.89	<,001

Table 20 - Coefficients - H1

With the increase of a single value in the environmental knowledge score, the green purchase intention increases by 0.41.

H2: Environmental Concern positively impacts Green Purchase Intention

To test this hypothesis, we used a multiple linear regression that had green purchase intention as dependent variable and as independent variables each of the two factors extracted from the scale of environmental concern: environmental concern 1 and environmental concern 2.

The linear correlation coefficient found between the variables was r=0.44. The coefficient of determination R^2 was 0.20 and the model was statistically significant ($p<0.001$) (Table 21). The model that joins the two factors of environmental concern, explain 19.5% of the variation in green purchase intention.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.44[a]	.20	.19	.90

Table 21 - Summary of the model H2

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.63	2	16.81	20.66	<,001[b]
	Residual	138.38	170	.81		
	Total	172.00	172			

Table 22 - ANOVA H2

As per table 23 the unstandardized coefficient values (B) show that every one-point increase in environmental concern 1, increase the green purchase intention by 0.44. Similarly, for each one-point increase in the indicator of environmental concern 2, the green purchase intention increases by 0.08. The impact of the Environmental concern 1 is significant since p<0.001, On the other hand the impact of the environmental concern 2 is not significant since p=0.25. Therefore, the dimension of environmental concern 1 is the one that has a greater influence on green purchase intention.

P<0,001, so the model was statistically significant. It is possible then to conclude that H2 was supported by the data. (Table 22)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.407E-16	.07		.000	1,000
	Environmental Concern 1	.44	.07	.44	6.33	<,001
	Environmental Concern 2	.08	.07	.08	1.14	,25

Table 23 - Coefficients H2

H3: Green Purchase Intention positively impacts Green Purchase Behaviour

In H3, the independent variable is Green Purchase Intention, and the dependent variable is the Green Purchase Behaviour.

The linear correlation coefficient between the two variables was r=0.58 and the coefficient of determination R^2 was 0.34. This means that 33.7% of the variability in green purchasing behaviour can be explained by the variability in green purchasing intention (Table 24).

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.58[a]	.34	.34	,81

Table 24 - Summary of the model H3

Since p<0.001 (as shown in Table 25), the model can be considered statistically significant, thus it is possible to conclude that H3 was supported by the collected data.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	57.99	1	57.99	86.98	<,001[b]
	Residual	114.01	171	.67		
	Total	172.00	172			

Table 25 - ANOVA H3

The unstandardized coefficient values (B) show that every one-point increase in green purchasing intention increase the green purchase behaviour by 0.58 (p<0,001), as per table 26.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-6.440E-18	.06		,000	1,000
	Green Purchase Intention	.58	.06	.58	9.33	<,001

Table 26 - Coefficients H3

H1A: Generation moderates the relationship between environmental knowledge and green purchase intention.

An analysis was conducted to identify any moderation effect that generation can have on the relationship between environmental knowledge and green purchase intention. The results presented in Table 27 indicate that environmental knowledge was statistically significant (B=0.31; p<0.002) as opposed to generation (B=-0.05; p=0.7714). Also, the interaction between environmental knowledge and generation is not statistically significant. These results shows that the relationship between the two is not moderated by generation. Therefore, hypothesis H1A is not supported since B=0.19 (p=0.168). Although the moderation is not statistically significative it's possible to identify that for both generations there is a positive impact of the Environmental Knowledge on the green purchase intention.

	B	Sd	t	p
EnK	0.31	0.10	3.11	0.002
Generation	-0.01	0.14	-0.37	0.714
EnK x Generation	0.19	0.14	1.38	0.168

Table 27 - Summary of the model H1A

B1 unstandardized coefficients values show that every one-point increase in environmental knowledge results in an increase in green purchase intention by 0.31 for generation Z and 0.51 for generation Y. (Table 28). Although the beta coefficients for both generations are different, the moderation is not significative, which mean that they cannot be considered statistically different from each other's.

Gen Z or Gen Y	Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
Z	1	(Constant)	,02	,10		,23	,820
		Environmental Knowledge	,31	,11	,30	2,93	,004
Y	1	(Constant)	-,03	,09		-,30	,768
		Environmental Knowledge	,50	,09	,51	5,56	<,001

Table 28 - Coefficients H1A

H2A: Generation moderates the relationship between environmental concern and green purchase intention.

Table 29 indicates that ecological concern 1 was statistically significant (B=0.43; p<0.000). The data related to the generation variable were not statistically significant (B=0.01; p=0.942). Also, the interaction the EnCO 1 and generation is not statistically significant. Thus, it can be concluded that the relationship between EnC0 1 and green purchase intention is not moderated by generation. The same analysis was carried out for EnCO 2, as per Table 30. No statistical significance was found for either environmental concern 2 (B=0.18; p=0.152) or generation (B=-0.04; p=0.810). The relationship is not moderated

by generation (B=-0.16; p=0.309) so it can then be concluded that hypothesis H2B is not supported, since B=0.01 (p=0.926) for the Environmental Concern 1 and B= -0.16 (p=0.309) for Environmental Concern 2. Although the moderation is not statistically significative it's possible to identify that for both generations there is a positive impact of the Environmental Concern 1 on the Green Purchase Intention. For the Environmental Concern 2 the impact on the Green Purchase Intention is not significant for both generations.

	B	Sd	t	p
EnCO 1	0.43	0.10	4.45	0.000
Generation	0.01	0.14	0.07	0.942
EnCO 1 x Generation	0.01	0.14	0.09	0.926

Table 29 - Summary of the model H2A (ENCO1)

	B	Sd	t	p
EnCO 2	0.18	0.12	1.44	0.152
Generation	-0.04	0.15	-0.24	0.810
EnCO 1 x Generation	-0.16	0.16	-1.02	0.309

Table 30 - Summary of the model H2A (ENCO2)

As for the unstandardized coefficients (Table 31), the B values for the Z generation show that for each one-point increase in the indicator for environmental concern 1, the green purchase intention increases by 0.42. In contrast for environmental concern this value is 0.12.

For the Y generation, a one-point increase in the indicator of environmental concern 1 and environmental concern 2, result respectively in an increase of 0.50 and 0.06 in the green purchase intention. Although the beta coefficients for both generations are different, the moderation is not significative, which mean that they cannot be considered statistically different from each other's.

Gen Z or Gen Y	Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
Z	1	(Constant)	-.00	.10		-.03	,974
		Environmental Concern 1	.42	.10	.42	4.23	<,001
		Environmental Concern 2	.12	.11	.10	1.02	,313
Y	1	(Constant)	.01	.10		.05	,957
		Environmental Concern 1	.45	.10	.44	4.51	<,001
		Environmental Concern 2	.06	.09	.07	.66	,509

Table 31 - Coefficients H2A

H3A: Generation moderates the relationship between green Purchase intention and green purchase behaviour.

Table 32 indicates green purchase intention was statistically significant (B=.67; p<0.000) and generation was not (B=0.12; p=0.339). The interaction between the two was not statistically significant, thus the relationship between green purchase intention and green purchase behaviour is not moderated by generation. Therefore, hypothesis H3A is not supported since B=-0.17 (p=0.181). Although the moderation is not statistically significative it's possible to identify that for both generations there is a positive impact of the Green Purchase Intention on the Green Purchase Behaviour.

	B	Sd	t	p
GPI	0.67	0.09	7.58	0.000
Generation	0.12	0.124	0.96	0.339
GPI x Generation	-0.17	0.12	-1.34	0.181

Table 32 - Summary of the model H3A

Regarding the standardized coefficients showed in Table 33, B values show that every one-point increase in green purchase intention, results in an increase in green purchase behaviour by 0.67 for generation Z, while for generation Z the increase is 0.50. Although the beta coefficients for both generations are different,

the moderation is not significative, which mean that they cannot be considered statistically different from each other's.

Gen Z or Gen Y	Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			B	Std. Error	Beta		
Z	1	(Constant)	-.06	.08		-.80	,428
		Green Purchase Intention	.67	.08	.69	8.63	<,001
Y	1	(Constant)	.06	.10		.60	,554
		Green Purchase Intention	.50	.10	.48	5.12	<,001

Table 33 - Coefficients H3A

5. DISCUSSION OF RESULTS

The validity of the scales that measure the variables Environmental Concern (Yoon & Chen, 2017), Environmental Knowledge (Yoon & Chen, 2017), Green Purchasing Intention (Kong Wilson, Harun Amran, Sulong Rini Suryati, 2014) and Green Purchasing Behaviour (Khare, 2015) scales was confirmed. Regarding the Environmental Concern scale, the original scale (Yoon & Chen, 2017) was composed of only one dimension, but the EFA performed in this study identified two different dimensions: Environmental Concern 1 and Environmental Concern 2.

H1, "Environmental Knowledge impacts positively green purchase intention" was supported by the data, and each unit value increased in environmental knowledge increases by 0,411 the green purchase intention. This finding is in line with the study of Chan (2001). With regard to the moderating effect of the generations on this relationship (H1A), although the impact of environmental knowledge on green purchase intention looks stronger in generation Y (B=0,505) than generation Z (B=0,312), this difference is not significative, since the generation was proved not to be a moderator factor. This finding does not support the hypothesis H1A "Generation plays a moderating role in the relationship between environmental knowledge and green purchase intention.".

This finding is not in line with the study conducted by Macky et al. (2008), who says that individuals of different generations tend to behave differently from one another.

H2, “Environmental concern positively influences the green purchase intention", was supported by the data. Since unlike the original scale which only had one dimension, in this research two dimensions were determined, which makes the analysis more complex. For the total sample, for each unit value increased in the score of environmental concern 1, green purchasing intention increased by 0.435. On the contrary, for each unit value increased in the score of environmental concern 2, the green purchase intention increases only by 0.079. It is then concluded that the dimension "environmental concern 1" exerts a greater influence on green purchase intention. One of the most relevant findings of this study has to do with only one dimension of the environmental concern concept (environmental concern 1) having a significant impact on green purchase intention, since the impact of the environmental concern 2 dimension was not shown to be statistically significant. This finding is in line with what was mentioned in Yadav & Pathak (2016) study that environmental concern is an antecedent of green purchase intention.

With regard to the moderator effect of the generation on the relationship between the environmental concern and green purchase behaviour (H2A), the data don’t support the hypothesis. The dimension "environmental concern 1" is the one that has a greater influence on the green purchase intention in both

generations. Although it seems that it has a greater strength in generation Y (B=0.449) compared to in generation Z (B=0.416), this difference is not statistically significative, which mean that the results are very similar in both generations. The impact of environmental concern is equally positive in both generations, which is in line with what was described in the literature. The Y and Z generations are very concerned about environmental issues and tend to make their consumption habits more sustainable in accordance with their concerns (Abrar et al., 2021; Bollani et al., 2019; Martina, 2019).

H3, "Green purchase intention positively influences green purchase behaviour", was supported by the data, and this finding is in line with Hill et al. (1977). Comparing the data collected between the two generations under study, although this relationship seems to be a little stronger among Generation Z (B=0.665) than Generation Y (B=0.498), it is not, because the generation is not a moderator factor on this relationship and that difference is not significative. Therefore, hypotheses H3A was also rejected since the data does not support that generation plays a moderating role between green purchase intention and green purchase behaviour. This finding somewhat contradicts what was mentioned by Macky et al. (2008) since in this case the two generations behave equally. In the literature (Smith, 2010)had stated that the younger generations had a very pro-environment attitude but did not put it into practice due to monetary issues. In this study we can conclude that this paradigm may be

changing, since it was shown that these generations are transforming their intentions into purchasing behaviour.

	Hypothesis	Validate
H1	Environmental Knowledge positively impacts Green Purchase Intention	✓
H2	Environmental Concern positively impacts Green Purchase Intention	✓
H3	Green Purchase Intention positively impacts Green Purchase Behaviour	✓
H1A	Generation plays a moderating role in the relationship between environmental knowledge and green purchase intention.	X
H2A	Generation plays a moderating role in the relationship between environmental concern and green purchase intention.	X
H3A	Generation plays a moderating role in the relationship between green Purchase intention and green purchase behaviour.	X

Table 34 - Hypothesis Validation Resume

6. CONCLUSION

The objective of this study was to identify if environmental knowledge and environmental concern influence green purchase intention and green purchase behaviour in the generations Y and Z, in Portugal.

The results shows that environmental knowledge and environmental concern do influence green purchase intention, and that the latter influences green purchase behaviour. The results of both generations are quite similar. In addition, although it seems that the environmental knowledge and environmental concern have a greater impact on green purchase intention in generation Y than in generation Z, it is not true, because that difference is not significative. The same for the impact of green purchase intention on green purchase behaviour, it seems to be higher in generation Z than in generation Y, but that difference is not significative, so the impact is the same. Finally, the results shows that generation is not a moderator in any relationships studied.

Based on the results, it can be speculated that Portuguese generations Y and Z have increasing knowledge and concern about environmental problems, and reflect them through their consumption habits, increasingly valuing products that are composed of environmentally friendly packaging, especially in the bottled water sector, which was the main subject of this study.

Since there are few studies on this topic in Portugal, at an academic level, this research contributes to the literature of the field in the moment that reveals that there is a clear relation between the green knowledge and the purchase behaviour for both analysed generations, specially of bottled waters.

At a practitioner's level, this research can contribute to a green marketing strategy specially the ecological packaging. The study showed that the younger Portuguese population is increasingly concerned about the environment and thus changing their consumption habits in favour of it, consuming products that are more sustainable. This is where packaging plays an important role, becoming an essential element to make a product greener. This is the impulse for companies to start changing the packaging of their products to more sustainable versions in order to increase their sales, satisfying the new needs of younger customers.

Like all research, this study also presents its limitations. The main limitation is related to the sample size, since only 173 responses were obtained which are divided between the two generations. Thus, in future research, it is recommended to collect data over a longer period of time, which would allow a higher number of responses to be obtained.

In this research only the Y and Z generations were studied, so in future research it would be very interesting to study other generations, such as Generation X and Baby Boomers, since these generations include individuals who were born in times when there was not such a high concern with sustainability as nowadays, so the results could be different.

In this study the product chosen was the bottle of water, as it is a neutral and universal product, but it would be interesting to test the effect on products from other categories or even other drinks, such as: bottles of juice, alcoholic drinks.

Finally, this research was quantitative in nature, so it would be interesting to conduct a qualitative study to understand what lies behind these quantified results and to gain a deeper understanding of consumers' motivations.

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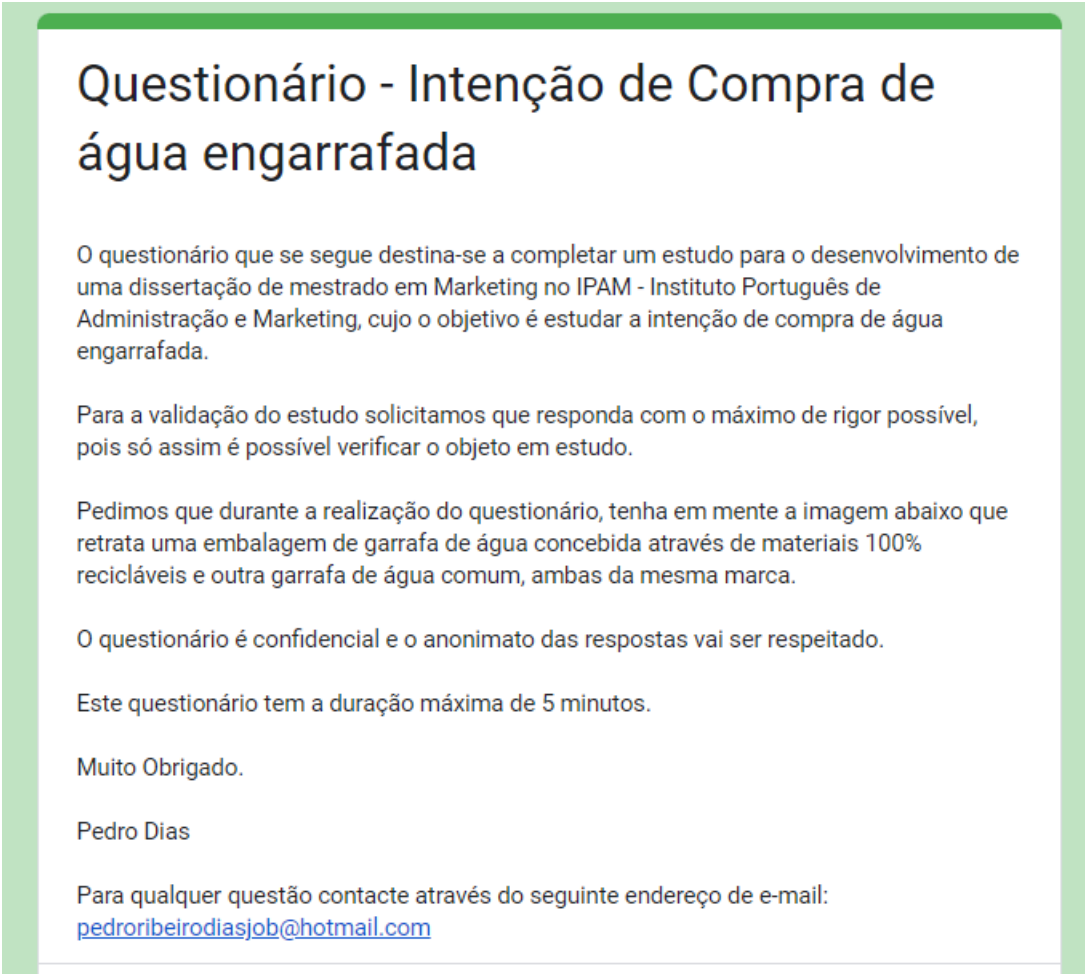
APPENDICES

Appendix 1 - Survey



Questionário - Intenção de Compra de água engarrafada

O questionário que se segue destina-se a completar um estudo para o desenvolvimento de uma dissertação de mestrado em Marketing no IPAM - Instituto Português de Administração e Marketing, cujo o objetivo é estudar a intenção de compra de água engarrafada.

Para a validação do estudo solicitamos que responda com o máximo de rigor possível, pois só assim é possível verificar o objeto em estudo.

Pedimos que durante a realização do questionário, tenha em mente a imagem abaixo que retrata uma embalagem de garrafa de água concebida através de materiais 100% recicláveis e outra garrafa de água comum, ambas da mesma marca.

O questionário é confidencial e o anonimato das respostas vai ser respeitado.

Este questionário tem a duração máxima de 5 minutos.

Muito Obrigado.

Pedro Dias

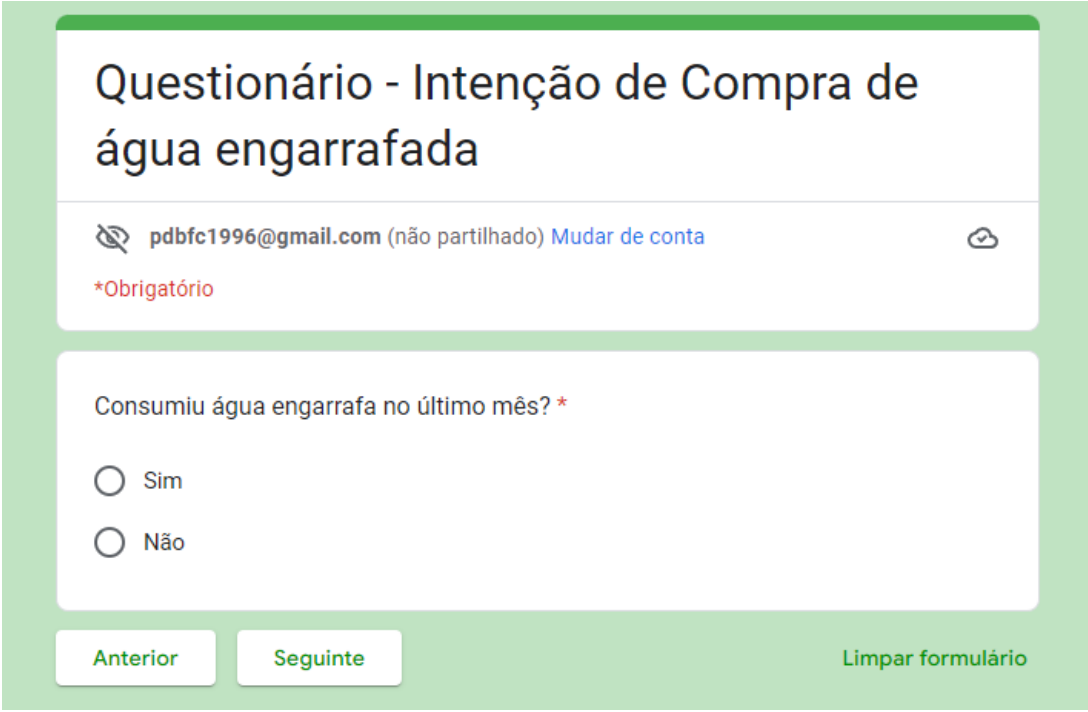
Para qualquer questão contacte através do seguinte endereço de e-mail: pedroribeirodiasjob@hotmail.com

Em que ano nasceu? *

- ◯ Antes de 1981
- ◯ Entre 1981 e 1996
- ◯ Entre 1997 e 2004
- ◯ Após 2004

Gênero *

Selecionar


Questionário - Intenção de Compra de água engarrafada
pdbfc1996@gmail.com (não partilhado) Mudar de conta
*Obrigatório
Consumiu água engarrafa no último mês? *
Sim
Não
Anterior
Seguinte
Limpar formulário

Questionário - Intenção de Compra de água engarrafada

pdbfc1996@gmail.com (não partilhado) Mudar de conta

*Obrigatório

De todas as formas possíveis, eu não utilizo sacos de compras de papel e/ou plástico *

	1	2	3	4	5	
Discordo Totalmente	◯	◯	◯	◯	◯	Concordo Totalmente

Normalmente prefiro comprar produtos reutilizáveis *

	1	2	3	4	5	
Discordo Totalmente	◯	◯	◯	◯	◯	Concordo Totalmente

Se tiver de compras pilhas, compro sempre sem mercúrio ou recarregáveis *

	1	2	3	4	5	
Discordo Totalmente	◯	◯	◯	◯	◯	Concordo Totalmente

Se tiver de compras pilhas, compro sempre sem mercúrio ou recarregáveis *

	1	2	3	4	5	
Discordo Totalmente	○	○	○	○	○	Concordo Totalmente

Tento comprar produtos com pouco e/ou nenhuns danos ambientais, ainda que sejam mais caros. *

	1	2	3	4	5	
Discordo Totalmente	○	○	○	○	○	Concordo Totalmente

Compro sempre produtos biodegradáveis quando eles estão disponíveis. *

	1	2	3	4	5	
Discordo Totalmente	○	○	○	○	○	Concordo Totalmente

Evito sempre comprar produtos descartáveis *

	1	2	3	4	5	
Discordo Totalmente	○	○	○	○	○	Concordo Totalmente

Anterior Seguinte Limpar formulário

Produtos verdes – são aqueles que assumem e respeitam o compromisso com o meio ambiente no seu processo de produção. Este é um tipo de produto desenvolvido a pensar na preservação ambiental.

Para as próximas questões, considere a definição de **produtos verdes** apresentada acima, e **considere que está a comprar água engarrafada.**

Planeio mudar para uma versão verde de um produto *

	1	2	3	4	5	
Discordo Totalmente	◯	◯	◯	◯	◯	Concordo Totalmente

Considero mudar para outras marcas por razões ecológicas *

	1	2	3	4	5	
Discordo Totalmente	◯	◯	◯	◯	◯	Concordo Totalmente

Considero comprar produtos verdes porque eles contribuem para uma poluição menor *

	1	2	3	4	5	
Discordo Totalmente	◯	◯	◯	◯	◯	Concordo Totalmente

Eu compraria produtos verdes que não sejam prejudiciais ao ambiente *

	1	2	3	4	5	
Discordo Totalmente	◯	◯	◯	◯	◯	Concordo Totalmente

Eu sei que compro produtos e embalagens que são ambientalmente seguros *

	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente

Eu sei mais sobre reciclagem do que uma pessoa comum *

	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente

Eu sei como selecionar produtos e embalagens que reduzem a quantidade de resíduos finais em aterros sanitários *

	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente

Eu compreendo as frases e símbolos ambientais na embalagem do produto *

	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente

Eu sou muito conhecedor das questões ambientais *

	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente

Anterior Seguinte Limpar formulário

Estamos a aproximar-nos do limite do número de pessoas que a Terra pode suportar *

	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente

A Terra é como uma nave espacial com apenas espaço e recursos limitados *

	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente

Os seres humanos têm o direito de modificar o ambiente natural de acordo com a suas necessidades *

	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente

As plantas e os animais têm tanto direito como os humanos a existir *

	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente

Os seres humanos foram concebidos para governar o resto da natureza *

	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente

Quando os seres humanos interferem com a natureza, esta interação produz frequentemente consequências desastrosas *

	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente

O equilíbrio da natureza é suficientemente forte para lidar com os impactos nas nações industriais modernas *

	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente

O equilíbrio da natureza é muito delicado e facilmente perturbado *

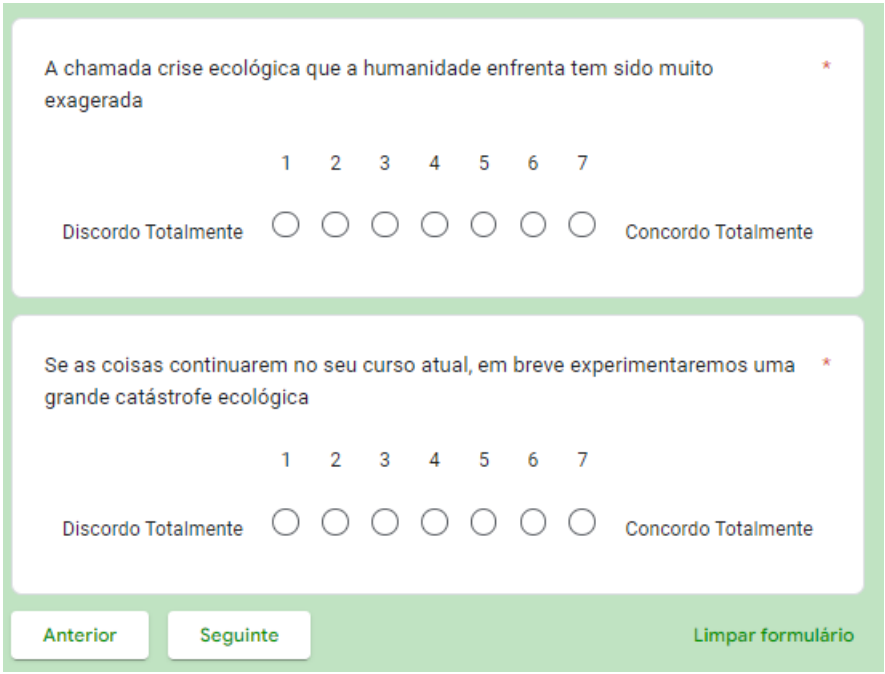
	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente

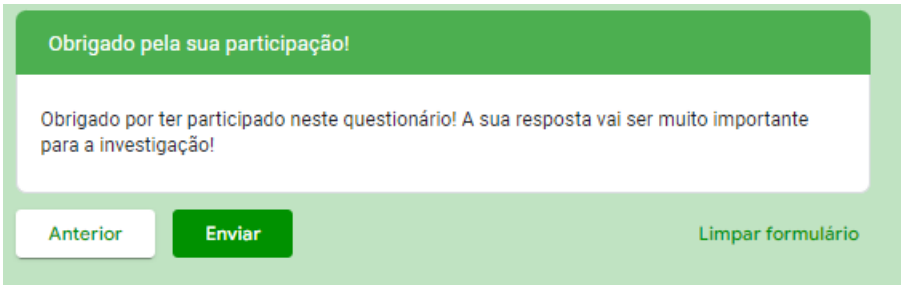
A sabedoria humana garantirá que não tornaremos a Terra inabitável *

	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente

Os seres humanos estão a abusar gravemente do ambiente *

	1	2	3	4	5	6	7	
Discordo Totalmente	○	○	○	○	○	○	○	Concordo Totalmente


A chamada crise ecológica que a humanidade enfrenta tem sido muito exagerada *
1 2 3 4 5 6 7
Discordo Totalmente
Concordo Totalmente
Se as coisas continuarem no seu curso atual, em breve experimentaremos uma grande catástrofe ecológica *
1 2 3 4 5 6 7
Discordo Totalmente
Concordo Totalmente
Anterior
Seguinte
Limpar formulário


Obrigado pela sua participação!
Obrigado por ter participado neste questionário! A sua resposta vai ser muito importante para a investigação!
Anterior
Enviar
Limpar formulário