Are Consumers Ready for the Cost of Sustainability?
The Trade-Off of Convenient versus Sustainable Packaging

An Analysis of Haribo's Goldbears

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ABSTRACT

Title: "Are Consumers Ready for the Cost of Sustainability? The Trade-Off of Convenient versus Sustainable Packaging. An Analysis of Haribo's Goldbears"

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The need to combat global warming and climate change is now beyond dispute. It is well acknowledged that one of the primary contributors to this societal issue is modern disposal methods. As a result, one solution is the creation of environmentally friendly packaging. Customers are demanding more goods with sustainable qualities, including packaging, as a result of growing consumer awareness of environmental and social issues. Indeed, consumers are increasingly likely to take a brand's social and environmental initiatives into account when choosing a product. Finding an ideal balance between usability and sustainability is therefore a challenge for marketers. In this vein, waste management is a sustainable packaging strategy that meets customers' top environmental concerns.

This study attempts to identify the various elements, including packaging (convenient vs. sustainable), that affect consumers' desire to buy products. Online respondents were exposed to various packaging images of a wine gum (Haribo Goldbears) as part of an exploratory study. The amount of material used varied among the packages. These stimuli were created using research from interviews and the existing literature.

According to the results, consumers' purchase intentions were not considerably impacted by the packaging's sustainability or convenience. Instead, consumer environmental attitudes were found to have an impact on perceived value and purchasing intention.

Keywords: Sustainability, Ease of Use, Purchase Intention, Environmental Attitude

SUMÁRIO

Título: "Os consumidores estão preparados para o custo da sustentabilidade? O Trade-Off da Embalagem Conveniente versus a Embalagem Sustentável. Uma análise dos Goldbears da Haribo"

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A necessidade de combater o aquecimento global e as alterações climáticas é hoje incontestável. A necessidade de combater o aquecimento global e as alterações climáticas é actualmente indiscutível. É bem sabido que um dos principais factores que contribuem para este problema social são os métodos modernos de eliminação. Consequentemente, uma solução é a criação de embalagens amigas do ambiente. Os clientes estão a exigir mais produtos com qualidades sustentáveis. De facto, é cada vez mais provável que os consumidores tenham em conta as iniciativas sociais e ambientais de uma marca quando escolhem um produto. Encontrar um equilíbrio ideal entre usabilidade e sustentabilidade é, por conseguinte, um desafio para os profissionais de marketing. Neste sentido, a gestão de resíduos é uma estratégia de embalagem sustentável que vai ao encontro das principais preocupações ambientais dos clientes.

Este estudo tenta identificar vários elementos, incluindo a embalagem (conveniente vs. sustentável), que afectam o desejo dos consumidores de comprar produtos. Os inquiridos online foram expostos a várias imagens de embalagens de uma pastilha elástica de vinho (Haribo Goldbears) como parte de um estudo exploratório. A quantidade de material utilizado variava consoante as embalagens. Estes estímulos foram criados com base em pesquisas de entrevistas e na literatura existente.

De acordo com os resultados, as intenções de compra dos consumidores não foram consideravelmente afectadas pela sustentabilidade ou conveniência da embalagem. Em vez disso, verificou-se que as atitudes ambientais dos consumidores têm um impacto no valor percebido e na intenção de compra.

Palavras-chave: Sustentabilidade, Facilidade de Utilização, Intenção de Compra, Atitude Ambiental

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GLOSSARY

RQ	Research Question
PI	Purchase Intention
PV	Perceived Value
EA	Environmental Attitude
EOU	Ease-of-Use

CHAPTER 1: INTRODUCTION

1.1 Background and Problem Statement

One-third of all greenhouse gas emissions, which cause global warming and broader environmental catastrophes, are produced by the food system, from production to consumption, including sourcing, processing, transport, and packaging. Nevertheless, the environmental impact of food products is more significant than that of its packaging (Crippa et al., 2021). This is an important distinction to make. Global concerns about plastic pollution have drawn attention to the issue of how to increase the sustainability of packaging (Kumar et al., 2021). By introducing new materials or designs that allow for the use of less material, several companies have begun to target packaging sustainability in their action plans (Boz et al., 2020). A packaging industry collaboration known as the Sustainable Packaging Coalition (SPC) defines sustainable packaging as packaging that is "sourced responsibly, designed to be effective and safe throughout its life cycle, meets market criteria for performance and cost, is entirely made using renewable energy, and once used, is recycled efficiently to provide a valuable resource for subsequent generations" (SPC, 2011, p. 1). Economic and environmental factors are interwoven, and there is more to packaging than just a container. This suggests that packaging functionality and environmental sustainability must be carefully balanced.

Consumers are becoming more environmentally conscious and want to actively contribute to the goal of keeping the environment safe (Leonidou et al., 2010). Generally, they are becoming more aware of the importance of sustainability because of recent events, natural disasters, and global warming. People are making more environmentally friendly decisions, such as choosing green brands and products, and they are embracing new options, such as recycled goods and materials, as well as reduced packaging. Thus, changing shopping habits have led to the emergence of a new consumer group called the green customer (Bonini & Oppenheim, 2008). Despite their environmental worries, customers' behaviors occasionally diverge from their initial beliefs. The consumer has a wide range of options when visiting a point of sale. The perceptions, assessments, and purchasing intentions of consumers regarding packaged goods may (un)intentionally change due to more environmentally friendly packaging designs, both in positive and negative ways. Given that sustainability is cognitively linked to other advantages, consumers may view a product's value or naturalness as being higher if it has sustainable packaging (Magnier et al., 2016). Furthermore, consumers may be forced to make a trade-off if aesthetic quality must be sacrificed for (possibly) higher material sustainability as a result of

this change in appearance brought on by an alternative packaging design introduced for environmental reasons.

The price of sustainability might be quite objective. It is important to emphasize that despite technological attempts to discover an ideal option, sustainable packaging solutions now often have observable downsides. For instance, consumers may have to avoid other benefits (such as convenience) to achieve a higher sustainability level. Even if these limitations are not objective, people may nonetheless view them as negative. Investigating how customers compromise, and the trade-off between perceived benefits and sacrifices is crucial, since this directly impacts consumers' propensity to buy sustainable alternatives.

Businesses are currently working on contributing to the goal of increased sustainability by reducing packaging, and if they want to achieve sustainability, they must adjust their marketing approaches accordingly (Yamaguchi & Takeuchi, 2016). Brands have begun to play a more aggressive game as a result of these challenges, and one tactic used to persuade customers to buy a particular product is packaging (Ahmad & Lakhan, 2012). Given the significance of product packaging as a tool for communication and as an integral component of the brand itself, it is critical for businesses to adapt this component to the changing needs of consumers when it comes to environmental factors. One way this could be achieved is by reducing packaging.

1.2 Problem Statement

The purpose of this study is to identify the primary factors that influence customers' intentions to choose wine gum products. This is done by determining how and why reduced packaging in the food category might affect customers' purchase intentions, as well as how perceived value and the environmental attitudes of consumers may play a role in this relationship.

The problem statement for this study can be stated as follows:

How do customers' purchase intentions and perceived value depend on sustainable packaging compared to convenient packaging?

The following research questions can therefore be derived from the problem statement:

RQ1: How does the perception of sustainable packaging versus the ease-of-use of packaging affect consumers' purchase intention?

RQ2: What impact does the perception of packaging have on perceived value?

RQ3: How does a consumer's environmental attitude affect their purchase intention?

1.3 Relevance

This research aims to add value to both managerial and academic discussions.

Academically, this study is critical because, despite the fact that there has already been much research on packaging and sustainability, there is still a need for further research on the reduction of packaging to make it more sustainable compared to ease-of-use options, and how its reduction might affect consumers' purchasing decisions and perceived value.

Regarding managerial relevance, this study offers businesses and marketers insightful findings insofar as reducing packaging would be good for the environment, might increase consumers' propensity to make purchases, and may enhance the perceived value of the products while saving money on packaging materials. The findings can support managers in making strategic decisions in light of understanding how consumers respond to reduced packaging.

1.4 Research Methods

Secondary and primary data will be used in the information-gathering process to address the research questions. To gather information on the study's most important variables (i.e. perception of packaging, ease-of-use versus sustainability, perceived value, environmental attitude, and purchase intention), better define the problem statement, and properly design the primary data collection process, the existing literature will be reviewed through journals, books, and academic articles for the secondary data. Secondary data are essential for gathering helpful evidence and drawing conclusions.

Additionally, when acquiring the primary data, a quantitative methodology will be used which includes a survey. When the survey is finished, a pilot test should be conducted to ensure that the participants fully understand it. Through this quantitative approach, the impact of the perception of packaging will be examined by exposing the participants to various scenarios at random and gauging their likelihood of making a purchase, as well as their perception of the value perceived due to the packaging. The gathered results will then be examined using IBM's Statistical Package for the Social Science (SPSS) statistical software, including mediation analyses and tests for the data's consistency, frequency, and descriptive statistics.

1.5 Dissertation Outline

The creation of the hypothesis and the literature review on which the study is based are covered in the following chapter. The literature review will outline each variable's significance and relevance for determining the intention to buy convenient versus sustainable packaged goods. The approach used in the study to test the hypothesis is presented in the third chapter. In this chapter, the structures that make up the questionnaire, as well as the process for applying each statistical test to the data gathered, will be covered in detail. The fourth chapter will describe the analysis conducted, both in a broad and detailed way, of the questionnaire data and the conclusions drawn from them. There will be some deliberation regarding the practical significance of the results. Finally, the dissertation's conclusions, limitations, and suggestions for further research in this field are covered in the last chapter.

CHAPTER 2: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

The following sections will concentrate on examining prior academic research and the extant literature to explore each relevant variable of the study and provide a context for the research questions, as well as the ensuing hypotheses. Consequently, the four primary factors of purchase intention, perception of packaging, perceived value, and environmental attitude will be examined in this chapter.

2.1 Purchase Intention

The variable of purchase intention can be defined as the likelihood that a customer will decide to acquire a product (Morrison, 1979). In other words, an individual's conscious plan to try to acquire a particular brand is their purchase intention.

Despite the strength of their environmental concerns, customers' behavior occasionally diverges from their initial perceptions (Essoussi & Linton, 2010). Different scholars have explained how sustainable packaging can affect a consumer's purchase decision differently. Some believe that environmentally friendly packaging is essential and influences consumers' decisions (Popovic et al., 2019). According to Schlegelmilch et al. (1996), customers express their opinions about the environment via their purchase decisions. Hence, it is not surprising that those who care more about the environment buy more eco-friendly goods (Schlegelmilch et al., 1996). People choose what to buy, depending on their requirements, while attempting to have as little environmental impact as possible. However, certain studies indicate that professed environmental opinions do not correspond to actual purchasing behavior (Johnstone & Tan, 2015). Purchase intention also depends on the product; thus, the buyer may or may not be ready to give up certain features in favor of a more environmentally responsible option (Laroche et al., 2001).

Purchase intention has been used in several studies as a significant component in predicting actual purchase habits, providing theoretical backing on buying behavior (Barber et al., 2012). Although purchase intention is formed by the anticipation of a future transaction, it is frequently a significant predictor of actual purchases. As a result, the present study will use customers' purchase intentions as predictors of their actual purchasing behavior.

2.2 Packaging

When viewed from various angles, packaging has numerous definitions in the literature. The packaging of a product serves technical and marketing functions, with the protection and containment of the product being its primary purpose, followed by the package's capacity to draw customers' attention to the product and enhance its reputation (Rundh, 2005). Packaging is thought to serve a variety of purposes in logistics, including safeguarding the good, making transit and storage easier, and providing the best possible storage (Eldesouky et al., 2015). Finally, packaging can be seen as a container used to deliver goods to end users (Rundh, 2005). From a marketing standpoint, the importance of visible packaging qualities cannot be overstated. According to McDaniel and Baker (1977), packaging characteristics are a crucial marketing technique that can convey details about a product's features and draw customers in through visual cues. Packaging comprises various attribute categories, according to Silayoi and Speece (2007), which include informative components that provide information about the maker, country of origin, brand, or technology, as well as imagery elements like graphics, color, shape, and size. Numerous academics have looked into the effects of various packaging characteristics on consumer purchase behaviors. Nevertheless, most publications solely discuss packaging's visual components, such as package size, design, or imagery (Hussain et al., 2015; Mazhar et al., 2015). This paper focuses on the perception of packaging by the consumer due to the amount of packaging used, and more specifically on reduced packaging for sustainability goals compared to ease-of-use objectives.

An attractive product design can help differentiate a competing brand and influence decision making (Hussain et al., 2015). As most food decisions are made at the point of sale, where the packaging has the most significant influence (Chandon & Ordabayeva, 2009), the power of food packaging as a marketing tool has been growing (Hawkes, 2010). The prominence of packaging design aspects has increased in response to the food packaging industry's expanding influence and strength. According to Dhar (2007), between 60 and 70% of final purchase decisions are based on product packaging. Packaging serves as a communication tool to convey a message about the product, as well as the values of the brand. Packaging design is the final promotional tool used to inform, persuade, and convince the buyer before they make their final purchase decision. The final product in this form contributes to brand identity and helps in highlighting and marketing the value of the contained items (Hussain et al., 2015).

2.2.1 Sustainability

As mentioned above, packaging plays an essential role in communication, transportation, logistics, quality and safety assurance, and sustainability (Boz et al., 2020). How sustainable the consumer perceives a package to be, reflects how sustainable it is in their view. Packaging can communicate environmental information (Herbes et al., 2020) and reflect a variety of environmentally-based decisions and concerns, such as the production method or the materials used (Scott & Vigar-Ellis, 2014). There are numerous characteristics that could lead to more sustainable food packaging, but no single solution can satisfy every sustainability criterion. The ability of packaging to preserve packaged commodities and deliver them in excellent condition, which, for food packaging, implies without posing a hygienic danger to human health, is the most important sustainability quality of packaging (Russell, 2014). Customers that appreciate and care about the environment more are more inclined to act responsibly and are more aware of environmental issues (Zhang et al., 2018). Accordingly, the perceptions of sustainable packaging are consistent with the environmental concerns of green consumers.

2.2.1.1 Source Reduction

By altering the design, manufacturing, procurement, or use of the original materials and products, source reduction seeks to reduce the quantity of waste that is produced. Because it reduces trash formation, source reduction is regarded by the EPA as the best strategy to lessen the impact of solid waste on the environment. Using less packaging, making products last longer, and reusing goods and materials are all parts of source reduction (Marsh & Bugusu, 2007). Purchasing durable goods; buying items of larger sizes, which require less packing per unit volume; buying refillable containers; and choosing toxic-free products are a few specific approaches to reducing the source of pollution. Overall, source reduction helps the environment in numerous ways, such as through resource conservation, environmental protection, and decreasing greenhouse gas emissions.

Although reusable packaging is widely accepted as an approach to a material reduction in packaging, it is criticized for creating difficulties for manufacturers, retailers, and customers. Increased logistical complexity has been identified as one of the barriers for producers, necessitating supply chain reorganization to ensure that packaging is available and returned (Coelho et al., 2020). A further hindrance for producers is the initial costs associated with a new reusable packaging technology. In addition, product safety is an issue, particularly regarding food. Difficulties influencing consumer acceptance are the drawbacks of reusable

packaging, including the need to bring empty containers, the complexity of refilling, and the possibility that refills will not be available. Moreover, consumers may be deterred by the parent dispenser's initial cost of the refill scheme, and poor pricing practices by manufacturers or retailers may lead to the same or higher prices for a reusable system (Coelho et al., 2020). Such practices have led to a closer examination of single-use plastics. Despite criticism of their use, single-use plastics can be considered a viable packaging option if the plastic is used in a reduced form (e.g., using as little material as possible).

2.2.2. Ease-of-Use

Usability is one of the main factors influencing consumer happiness (Gant & Gant, 2002). According to Barber et al. (2012), a product is said to fulfill ease of use (EOU) if it can satisfy the fundamental demand as well as the physical, cognitive, and emotional needs of its intended users. In contrast to conventional design practices, where physical attractiveness, such as appearance and portability, are of more significant concern, the user-centered design emphasizes aspects of cognitive attractiveness, such as being logical to use, and emotional attractiveness, such as a lack of frustration in use (March, 1994).

Packaging is crucial for purchasing, as well as for using and discarding food products. Therefore, it has a significant influence on our lives when it comes to food (Rundh, 2005). Trends in society have increased the significance of food packaging. The need for handy and dependable food packaging is increasing, along with the need for quick and simple meals that make life easier (Ahmed et al., 2005).

Design and ergonomics work hand-in-hand when creating an excellent product to meet a particular consumer need. Ergonomics provides data on numerous contextual human compatibility variables to help create design guidelines for a final functional product. The perceived utility is creatively envisioned in such designs. The basic requirements of functional reliability and utility have given way to other criteria for a successful design, including general user satisfaction. Products that are seen as having better ergonomics are thought to be more practical, have a higher perceived EOU, are more adapted to meet consumer needs, or offer a more delightful experience (Chakrabarti, 2018).

A desire for packaging can be created, as the package can convince the consumer that the product could fill a need or satisfy an inner desire. Packages typically increase value through convenience (e.g., microwaveable packaged foods). Convenience should also be based on how

simple it is to dispose of the package. Improvements in packaging technology have kept pace with the demand for easy packaging. Furthermore, increasing consumer prosperity demonstrates that consumers are willing to pay more for the convenience and prestige of special packages (Kumar Agariya et al., 2012a). However, consumers' attention and interest are diverted away from sustainability by ergonomic views, which may cause them to place less value on sustainability features than on usability or enjoyment.

The following hypothesis has been made after considering the increasing environmental awareness that firms and consumers have been displaying, as they continually search out better and more sustainable practices while keeping an eye on the practicality of a product's packaging:

H1: *The perception of packaging positively affects consumers' intention to buy.*

H1a: *Ease-of-use perception has a higher effect on consumer intention to buy than sustainability perception.*

2.3 Perceived Value

Perceived value can be one of the main drivers of purchase intention. Value is the result of an evaluation, which is based on certain norms, standards, criteria, goals, or ideals (Sánchez-Fernández & Iniesta-Bonillo, 2007). Despite some similarities, as defined by Bolton and Drew (1991), value and quality are distinct notions (Sánchez-Fernández & Iniesta-Bonillo, 2007). Most business marketing authors appear to concur that the ratio of benefits to sacrifices that customers perceive about a supplier's product defines customer perceived value or customer value assessment (Flint et al., 1997; Ulaga & Chacour, 2001). The majority of authors also accept that value is a complex concept, including, for example, factors that affect the costs and benefits of the product in the customer's business, such as those that are technical, economic, service-related, and social (Fiol et al., 2011; Ulaga & Chacour, 2001). This paper focuses on the functional value that influences perceived value.

According to Woodruff (1997), customer value is the perception of a customer's preference for an assessment of the product attributes, performance results, and usage effects that support or obstruct the customer's goals and purposes for being used. Customers' value assessments are seen as subjective, and customers are active co-creators of value, although firms may start or participate in the generation of value propositions (Xie et al., 2008). Value and quality are

viewed as context dependent and individually unique. Moreover, customers' perceptions of value are believed to have a significant role in their decision-making. Thus, consumers will choose to purchase a product that they think has a higher perceived worth, meaning that it will provide them with significantly more benefits than the cost or price they must pay (Fang et al., 2016). Consumer understanding is crucial for creating customer responses or evaluations of a product, which is referred to as product-perceived value (Jayachandran et al., 2004). A critical factor in how customers perceive the value of a product is its packaging. Consumer product knowledge, product packaging, and design are all elements that have an indirect association with purchase intention, whereas the perceived value of the product has a direct relationship (Rashid Shafiq, 2011).

Understanding customers' value creation processes and perceptions is necessary when designing value offerings (O'Cass & Ngo, 2011). Given its many uses, packaging is a challenging subject for academics and professionals. Typically, it serves at least three fundamental purposes: protection, communication, and convenience (Kumar Agariya et al., 2012b). The first two capabilities may be viewed as the result of package characteristics in application scenarios. The third purpose of packaging, is convenience, which refers to how easy it is for consumers to handle and store items.

Packaging now needs to meet environmental requirements in addition to practical ones. There is pressure from customers and EU regulations for manufacturers to use environmentally friendly packaging (Rundh, 2005). Despite not usually being referred to as a packaging function, environmental friendliness is undoubtedly a packaging effect that should be considered when evaluating a packing solution. Environmental effects can even become more significant, especially when end consumers become more conscious of how their consumption habits affect the environment and establish their environmental objectives.

Considering the importance of consumers' perceived value, the following hypotheses were formulated:

H2: *The perception of packaging positively influences the perceived value of a product.*

H2a: *Ease-of-use perception has a stronger influence on the perceived value of a product than sustainability perception.*

H3: *Perceived value mediates the relationship between the perception of packaging and consumers' purchase intentions.*

2.4 Environmental Attitude

With each passing year, we get more evidence that human activities negatively impact the environment. Environmental attitude is thus another moderating factor influencing purchase intention. It can be defined as the kind of environmental attitude a person adopts correlated with how much that person feels like a part of the natural world. A person's attitude is their assessment of a specific entity (Eagly & Chaiken, 1993). Consumers with an eco-conscious mindset feel that because of deteriorating ecological conditions worldwide, immediate action must be taken to protect the environment (Schlegelmilch et al., 1996). For this reason, consumer attitude is crucial to the study of consumer purchase intention (Follows & Jobber, 2000).

Environmental attitude is a complex state that includes thoughts, emotions, values, and character traits associated with a tendency to act or participate in sustainable actions. Marketing methods involve identifying attitudes towards products, brands, and services to modify marketing strategies so that they appropriately reflect the product. According to Barber et al. (2012), by focusing on normative beliefs and altering them with new concepts, marketers can change consumers' perceptions of these beliefs and, thus their attitudes and intents.

A person's attitude toward the environment expresses how they feel about various environmental issues, products, and activities (Schultz et al., 2004). Consumers who display an environmentally friendly mindset are worried about the adverse effects on the environment. Therefore, they are anticipated to appreciate sustainable items more highly and have a favorable opinion of them, leading to a preference for these products. Furthermore, customers who have a pro-environmental mindset are more likely to make ecologically friendly purchases, such as buying goods with less packaging, even though doing so has drawbacks, such as inconveniences (i.e. extra effort to use), extra costs, and decreased product performance (Islam & Xiaoying, 2016; Laroche et al., 2001).

However, consumer attitudes only sometimes translate into real behavior, since some internal or external variables, such as financial constraints or socio-political developments, may prevent the expected behavior from manifesting.

Based on research on the environmental attitudes of consumers, the following hypotheses were formed:

***H4**: Consumers' environmental attitudes moderate the relationship between perceived packaging and consumers' purchase intentions.*

***H5**: Consumers' environmental attitudes moderate the relationship between perceived packaging and perceived value.*

2.5 Conceptual Framework

The conceptual framework below illustrates the relationship between the various variables examined in this inquiry (Figure 1).

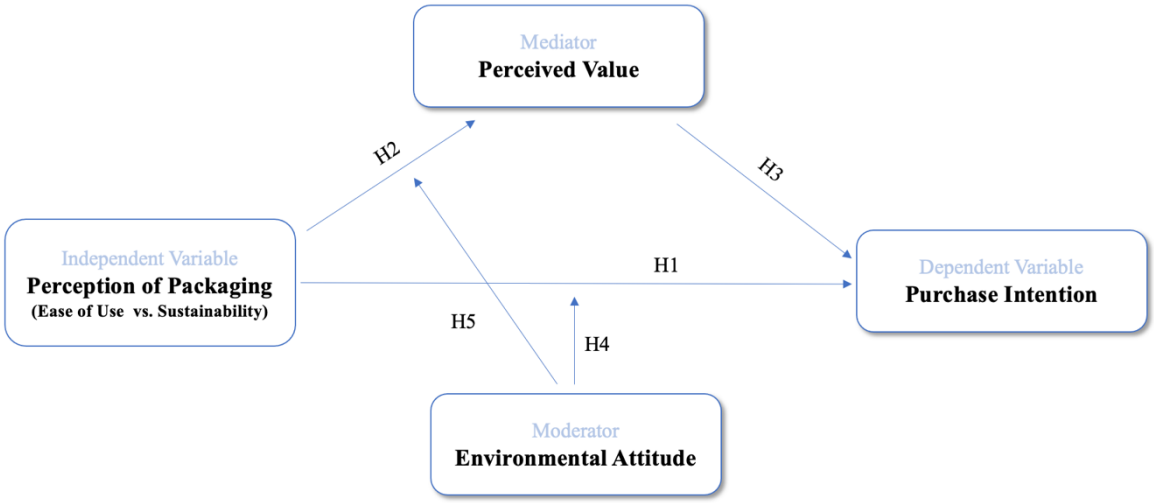

Figure 1: Conceptual Model

CHAPTER 3: METHODOLOGY

The research methods used in this study are described in this chapter, the primary objective of which is to provide a solid scientific methodology that allows for a dataset appropriate for evaluating the hypotheses to be obtained. The study plan and the procedures for obtaining the primary data are thus described.

3.1 Research Approach

This dissertation's primary objective is to evaluate how consumers' perceptions of packaging affect their purchasing decisions, perceptions of value, and attitudes toward the environment. A product category and a specific brand from that category had to be chosen to construct the context of this study. Large candy manufacturers, such as Nestlé, Mars, and Mondelēz, have been slow to switch to more environmentally friendly packaging and still produce a lot of single-use plastic (Jiménez, 2019). Furthermore, when considering plastic packaging, packaging foils made up the largest part of plastic packaging in 2020 in Germany, comprising 1.652 million tonnes out of 4.3 million tonnes (Brandt, 2021). The food industry, especially snacks and candy, is considered the most critical sector when it comes to packaging. Wine gums are one of the most popular snack categories among Germans (Janson, 2020). Haribo was chosen as the specific example here, as it is known worldwide and is the most popular brand of wine gum in Germany (Ahren, 2023; Davies, 2023; Nier, 2018; Smart News Fachverlag GmbH, 2015).

Two research methods, exploratory and explanatory, were used to address the research questions and assess the validity of the hypotheses. By using the exploratory technique in the literature review, it was possible to acquire information on the factors that most needed to be explored, thus setting the stage for the study by establishing hypotheses that led to the creation of the conceptual framework that was previously described. Data were acquired both qualitatively and quantitatively with regard to the experimental method. Individual interviews were conducted to obtain qualitative feedback on the questionnaire, and a pilot test was run to ensure that it was fully understood. To collect data, test the hypotheses, and draw final conclusions, an online survey was then undertaken.

3.2 Primary Data

After secondary sources were used to obtain information and define the specific product category, which was used to research and gather new information, primary sources were consulted to collect data and determine the impact that the perception of packaging has on customers' purchase intentions, as well as on perceived value.

3.2.1 Stimuli Creation and Interpretation

Four stimuli related to the previously selected food category (wine gums) and brand (Haribo) were developed based on information gathered from the literature review. According to Marsh and Bugusu (2007), small packages are less sustainable than larger packaging sizes, as less material is needed per unit volume (provided that the larger portion size does not lead to waste, as the product is not consumed in time). Reduction of packaging materials increases sustainability. Furthermore, resealable packaging offers convenience to consumers (Ford et al., 2016). With these assumptions, stimuli could be created. Four packages were illustrated using images of existing packaging designs (only available in certain countries) and adjusting them in Canva (Figure 3). In addition, the prices were created using information from the Edeka online shop (www.edeka24.de) and adjusting it to the packaging sizes of the created stimuli using the rule of proportion.

Figure 2: Packaging Stimuli

Semi-structured interviews and a pilot test were conducted to ensure the expected consumer interpretation and acceptance of the different stimuli, which was a necessary step in moving forward with the research. These steps confirmed the assumptions about the sustainability and practicality of the four different packaging options.

3.2.2 Data Collection

Individual interviews were conducted to measure how the respondents felt about the four stimuli that were created. Ten participants' input was considered, which resulted in a few changes. Afterward, an online survey created in Qualtrics was launched and published, as shown in Appendix 1. The questionnaire was accessible in English and German. To ensure that the survey was effective and understood by all the participants, a pilot test was carried out after the stimuli were changed and the questionnaire was created. As a result, specific improvements were made after considering the comments from 10 replies. An online survey was then carried out. It was primarily distributed through WhatsApp, Instagram, and Facebook from March 10 through March 18, 2023. This research approach holds little control over the respondents and their environments, providing a limited option for clarifying questions. Therefore, the results may not be representative of the target population, despite being convenient to analyze, cheap in cost, and high in speed and the number of responses (Taherdoost, 2022). Additionally, €0.25 were donated for each finished questionnaire to offer a higher incentive to possible participants. Donations were made to an organization chosen by one participant selected by raffle.

To ensure that the method could collect data from informed consumers and produce precise results, the target group comprised everyone who regularly consumed wine gum. This method included a control question at the beginning of the questionnaire to weed out any respondents who had not had gummy bears recently, ensuring that the respondents complied with this condition.

When the survey was closed, 155 of the replies received were deemed legitimate. This reduction is mainly caused by a failure to meet the requirements and manipulation questions. The randomly assigned stimuli were scattered so that stimuli 1 consisted of 31 participants, stimuli 2 consisted of 33 participants, stimuli 3 consisted of 49 participants, and stimuli 4 was answered by 44 participants.

3.2.3 Measurement/Indicators

One way to conduct the study would have been to create a shopping environment to test the conceptual model. However, this was not possible due to logistical and time constraints. Therefore, pictures of the different packaging options were created and shown to the participants. The chosen category of goods was candy wrapped in plastic, as several studies have shown that plastic is highly criticized as a packaging material (Brouwers, 2018). All

measurement constructs used in this study are commonly applied in the marketing literature and have been validated in several studies measuring consumer behavior. The most relevant measurements for the analysis of the primary variables in this study were discovered through existing research. As a result, the operational model (Table 1) contains all the methods utilized to develop the survey questions for each variable of this study, as well as the number of items, the appropriate scale, the author(s), and the reliability coefficient.

Framework	Measure	Items	Scale	Reference	Cronbach α
IV	Perception of Packaging	Stimuli	na	na	na
Moderator	Environmental Attitude	3	5-point Likert Scale	Schlegelmilch et al. (1996)	0.82
Mediator	Perceived Value	3	5-point Likert Scale	Makanyeza et al. (2016)	0.90
DV	Purchase Intention	4	5-point Likert Scale	Vilnai-Yavetz & Koren (2013)	0.84

Table 1: Operational Model

The stimuli were tested on their EOU, as well as their sustainability. The EOU was measured using parts of the USE (Usefulness, Satisfaction, and EOU) Questionnaire, which was developed by Lund (2001) and tested by Gao et al. (2018). A total of 11 items were used to test the EOU, each of which was measured by a 5-point Likert scale adjusted from the original 7-point scale. Based on the method of Steenis et al. (2018), consumers' perceptions of sustainability were measured. Here, three items using a 5-point Likert scale tested participants' perceptions of the sustainability of the stimuli. The variable of environmental attitude makes use of the construct developed by Schlegelmilch et al. (1996), which included three statements measured on a 5-point Likert scale. Regarding perceived value, Makanyeza et al. (2016) used a construct inspired by Wang (2013), and this study included three of these items measured by a 5-point Likert scale to test the mediator. Purchase intention was measured by a model created by Vilnai-Yavetz and Koren (2013) using a 5-point Likert scale.

As noted above, two of the presented constructs were adapted from their original 7-point Likert scales so that all of them would have the same number of response alternatives to facilitate the statistical analysis. The 5-point scale was chosen since the majority of constructs originally consisted of 5-point scales, and it is more accurate, easier to use, and constitutes a better reflection of a respondent's evaluation (Cox, 1980; Finstad, 2010).

3.3 Data Analysis

SPSS Statistics version 28 published by IBM was used to evaluate the quantitative data acquired in the online survey. This procedure's goals were to verify the hypotheses and evaluate the statistical importance of the variables' interactions.

The respondents' demographic data were examined through the creation of descriptive statistics and frequencies, which provided a description and overview of the entire sample. Cronbach's alphas were then calculated to assess each construct's reliability level and to ensure the study's validity. Also, a normality test was performed to determine whether the collected data were normally distributed, followed by a summary of the most pertinent descriptive statistics to make the final results simpler to comprehend and visualize.

The significance level was set at 5% for each statistical test when compared to the outcomes of the actual hypothesis. To determine whether there were statistically significant differences in purchase intention, perceived value, and environmental attitude among the four scenarios presented to the respondents, several non-parametric analyses were carried out. The indirect effects of the independent variable on purchase intention through perceived value and environmental attitude were then estimated using Hayes' PROCESS macro (Hayes, 2018).

CHAPTER 4: RESULTS AND DISCUSSION

In the following chapter, the key conclusions from the data analysis based on the collected quantitative data are presented. The research sample will be looked at and described in the beginning. After describing the results of the hypothesis testing, Section 4.5 draws a relationship between the findings and the expectations from the literature review and the creation of the research questions.

4.1 Data Preparation

There were 562 responses obtained when the online survey was closed. Only 157 of the total replies were deemed valid for inclusion. Several processes were applied to verify the accuracy of the responses. Participants who only partially (less than 96%) completed the survey (179) were excluded, and those who had not purchased snacks in the previous six months (17) or had not consumed wine gums within the last month (117) were excluded from the survey based on the two screening questions. Furthermore, participants with repeated IP addresses that could not be separated by email addresses (8) were excluded from the results. Additionally, 84 responses had to be excluded due to wrong answers to the manipulation question (which had to be answered with [strongly] agree/disagree, only in the case of the standard packages being "neutral" accepted regarding the packaging being resealable, as every packaging is resealable to a certain degree). Therefore, only 157 of the responses were used for the statistical analysis. These responses were randomly assigned to one of four different stimuli (S1: Standard Share Size; S2: Standard Party Size; S3: Resealable Party Size; S4: Mini-Bags Party Size). To identify errors or responses that could bias the results, a multivariate outlier analysis was conducted before further analysis to find unusual combinations of two or more variables for the same participant. A new variable was then created for each participant to calculate the Mahalanobis distance. Variables with a p-value below 0.001 were considered outliers. The results showed no outliers in the survey results, meaning no further participants were excluded.

4.2 Sample Characterisation

In general, the population of authenticated responses revealed that the majority of respondents were women (75.8%), primarily German citizens (74.5%), and between the ages of 18 and 34 (74.5%; Appendix 2). In addition, most participants had either a bachelor's or master's degree (75.8%) and were employed (63.1%). Most respondents (63.0%) had a yearly net income of up to €39,999. Finally, 42.0% consumed wine gums at least once a month.

4.3 Scale Reliability

The questionnaire's scales were modified from those found in the literature. Cronbach's alpha was calculated to assess the validity and internal consistency of the multi-item scales employed. According to Terwee et al. (2007), an alpha value between 0.70 and 0.90 on a scale from 0.10 to 1 indicates satisfactory internal consistency.

For this investigation, three scales with good internal consistency and Cronbach's alpha values between 0.70 and 0.90 were measured (Table 2). More detailed information can be found in Appendix 3. As a result, there was no need to remove any items from the three scales.

Construct	Number of Items	Cronbach's Alpha	Quality
Purchase Intention	4	0.858	Good
Perceived Value	3	0.864	Good
Environmental Attitude	3	0.706	Good

Table 2: Cronbach's Alpha Test Results

4.4 Manipulation Check

Before hypothesis testing, a manipulation test was conducted to determine whether participants responded as expected to all four manipulations. Regardless of which stimulus was assigned, each participant had to choose a level of agreement for the packaging (1 = "Completely disagree" to 5 = "Completely agree"). To determine whether each package was perceived differently, a Kruskal–Wallis test (Appendix 4) was conducted, since the data were non-parametric, which will be demonstrated in the next section. Three manipulation questions identified the four stimuli. Since the participants who answered the manipulation question incorrectly in relation to the stimulus were already excluded, the test results showed different means for the four stimuli.

4.5 Hypothesis Testing and Results

The hypotheses from Chapter 2 were tested through a series of statistical tests with a significance level (p-value) of 0.05.

First, an analysis was carried out to determine whether the collected data corresponded to a normal distribution. This was done by performing a normality test (Appendix 5), which yielded a p-value of less than 0.05, meaning that the data should have been treated non-parametrically

when performing statistical tests. To perform non-parametric tests, several assumptions had to be checked. First, quantifying the dependent variable at an ordinal or continuous level is necessary. Because it was quantified using a Likert agreement scale, purchase interest could be regarded as an ordinal variable. Additionally, the independent variable must contain two or more categorical independent groups. This assumption was supported by the fact that these variables were connected to the stimuli groups created. Furthermore, there must be independence from observation, meaning that there must not be a relationship between the responses within or between the groups themselves. In the present study, there was an independence of observations since the online survey was given to various participants, who were randomly assigned to various stimuli. Finally, the distribution within each group should be the same in terms of shape and variability to compare the medians of the dependent variable for the various groups of the independent variable.

4.5.1 Hypothesis 1

H1: The perception of packaging positively affects consumers' intention to buy.

To test this hypothesis, a linear regression (Appendix 6) was carried out to examine the effects of packaging perception on PI measured at a continuous level. To complete the test, a dummy variable was created with 1 = Standard Share Size, 2 = Standard Party Size, 3 = Resealable Party Size, and 4 = Mini-Bags Party Size. The regression was run with PI as the dependent variable and perception of packaging (stimuli) as the independent variable. However, as the normality test showed that the data were not metric, the results of the test had to be interpreted with caution. Apart from that, the presumptions for the test were met, as mentioned above. The data exhibited homoscedasticity, there was the independence of observations (Durbin–Watson = 1.727), and there were no issues with multicollinearity.

The variables were inversely correlated (-0.264) and did not have a very high correlation with one another. Only 6.9% of the variance in PI could be explained by the model, indicating that there were other significant factors that could contribute to the explanation of purchase intention. Nevertheless, this model significantly predicted the intention to purchase (p-value ANOVA < 0.01). At a 95% level of confidence, it was concluded that total perceived risk had a statistically significant impact on purchase intention by rejecting the H0 (1 = 0) of the coefficients model (p-value < 0.001). The buying intention fell by 0.242 for every unit of packaging perception that increased (Figure 3).

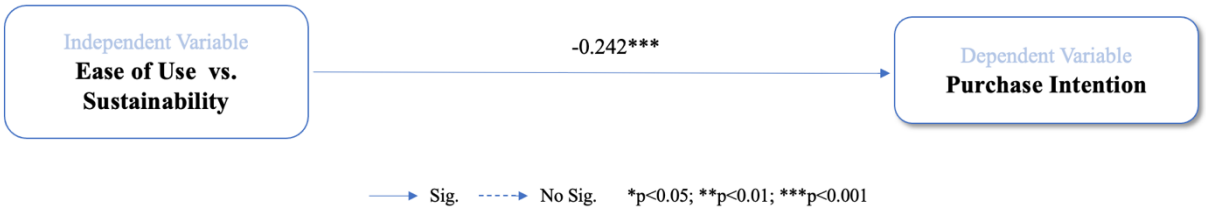

Figure 3: Results of Linear Regression for Packaging Perception on PI

As a result, **H1 was verified**, but PI was negatively impacted by packaging perception.

H1a: Ease-of-use perception has a higher effect on consumer intention to buy than sustainability perception.

A Mann–Whitney U test (Appendix 7) was then conducted to determine how the groups differed from each other.

The median rank for the sustainable group (both standard packages) was somewhat higher than that for the ease-of-use group (resealable and mini-bag packages; Figure 4), as indicated by the p-value, which revealed that this difference was not statistically significant. The test's related p-value was 0.127, which was higher than the standard alpha threshold of 0.05. As a result, we could not rule out the null hypothesis and drew the inference that there was no evidence to support a significant impact of the independent variable's two levels on the dependent variable.

Figure 4: Results of Mann–Whitney Test of Sustainability/EOU on PI

In conclusion, **H1a was rejected** because the Mann–Whitney U test failed to detect a statistically significant difference in purchase intention between the sustainable and EOU conditions. Therefore, the null hypothesis, that EOU perception does not have a higher effect on consumer intention to buy than sustainability perception, was verified.

This shows that consumers are not only motivated to buy by the convenience of a package, but that companies can also save material here. The Kruskal–Wallis test of H1 showed that packaging with less material, as well as resealable packaging, had a higher mean, which indicates that consumers pay attention to the fact that there is no unnecessary packaging material, and if additional material is used, it should be as minimal as possible.

4.5.2 Hypothesis 2

H2: The perception of packaging positively influences the perceived value of a product.

To test this hypothesis, a linear regression analysis (Appendix 8) was conducted again to investigate the impacts of packing perception on PV measured at a continuous level. A dummy variable for the stimuli was used for this test as well. PV was used as the dependent variable in the regression, while packaging perception was the independent variable. However, because the normality test revealed that the data were not metric, care had to be taken when interpreting the test's results. Aside from that, the test's assumptions were satisfied. The results of the Durbin–Watson test (1.239) showed that independence of observation was present, as well as homoscedasticity of the data, and multicollinearity was not a problem.

The variables did not have a particularly strong link with one another and were adversely correlated (- 0.280). The model could explain only 7.8% of the variance in PV, showing that there were additional important components that would contribute to the explanation of PV. However, this model accurately predicted the value perceived by consumers (p-value ANOVA < 0.001). By rejecting the H0 of the coefficients model (p-value < 0.001), it was determined with a 95% level of confidence that the perception of the packaging had a statistically significant impact on PV.

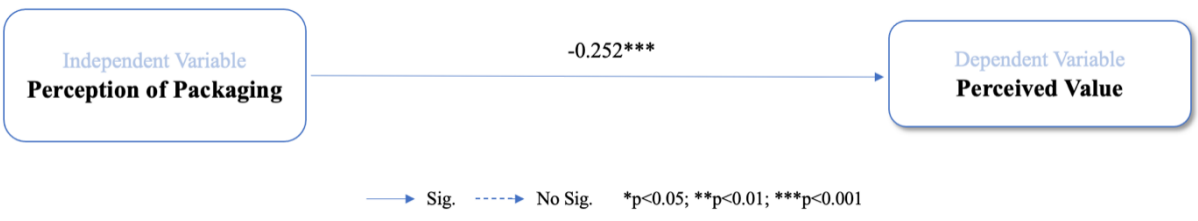

Figure 5: Results of Linear Regression of Packaging Perception on PV

For every additional unit of packaging perception, the PV would decrease by 0.252 (Figure 5). As a result, **H2 was supported**, but packaging perception had a detrimental effect on PV.

H2a: Ease-of-use perception has a stronger influence on the perceived value of a product than sustainability perception.

The results of a Mann–Whitney U test (Appendix 9) showed that ease of use had a mean score of 72.58, while sustainability had a mean score of 88.34. This indicates that participants preferred the group with the highest usability score. The results of this analysis may therefore be helpful for product designers and marketers in developing greener and more sustainable products that meet customer needs.

With a p-value of 0.031 the results also indicate that there were significant differences in the ranks between the two stimulus groups (Figure 6), which refutes the null hypothesis that there was no significant difference between the groups. Thus, **H2a was confirmed**. In summary, the results of this study showed that the group sustainability was significantly different from EOU.

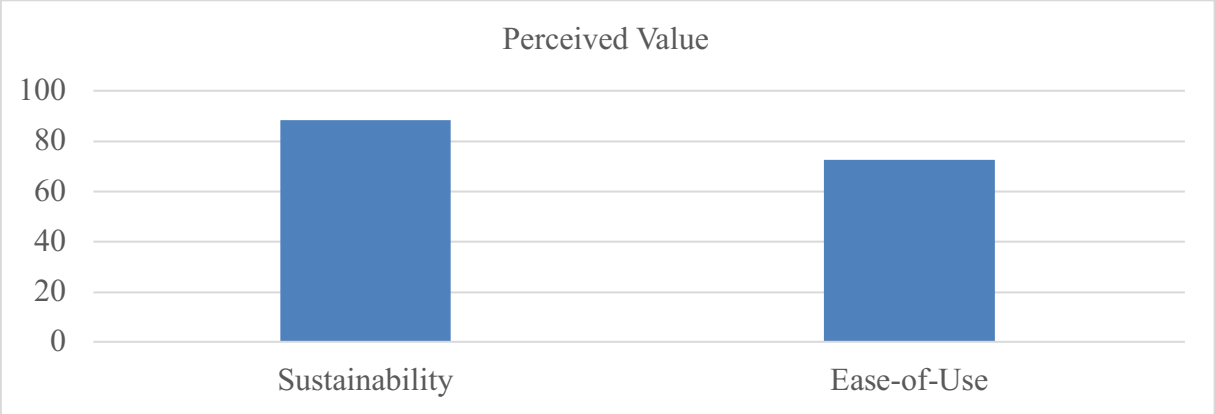

Figure 6: Results of Mann–Whitney for Sustainability/EOU on PV

Finally, the results show that participants want resealable packaging and prefer the larger options to the smaller ones, and that mini-bags with a lot of packaging material are the least favorite option. Snack manufacturers can use these results when developing their packaging and marketing strategies. The findings may also be helpful for product designers and marketers in developing greener and more sustainable products that meet customer needs.

4.5.3 Hypothesis 3

Perceived value mediates the relationship between the perception of packaging and consumers' purchase intentions.

The mediation effect of PV on packaging perception and PI was examined using Hayes' PROCESS model 4 (Appendix 10; Hayes, 2018).

The results of the test show that the stimulus had a minor impact size (R-sq = .0783, $p < 0.001$), indicating that different packages had different PV. Path a (-0.2522) showed that different packages had different PV (Figure 7), and packaging perception was statistically significant (p-value < 0.001). Independent of packaging perception, path b (0.6685) showed the influence of PV on PI, which was also statistically significant. The estimated relative indirect effect of packaging perception was -0.1679. As the relative indirect effect varied from zero, PV moderated the PI for packaging perception. Looking at the direct effect of packaging perception (c' = -0.0739), it was found to have a negative impact but not a significant one ($p > 0.05$). Since the direct effect of packaging perception was not statistically significant, it could be assumed that PV had an effect on PI.

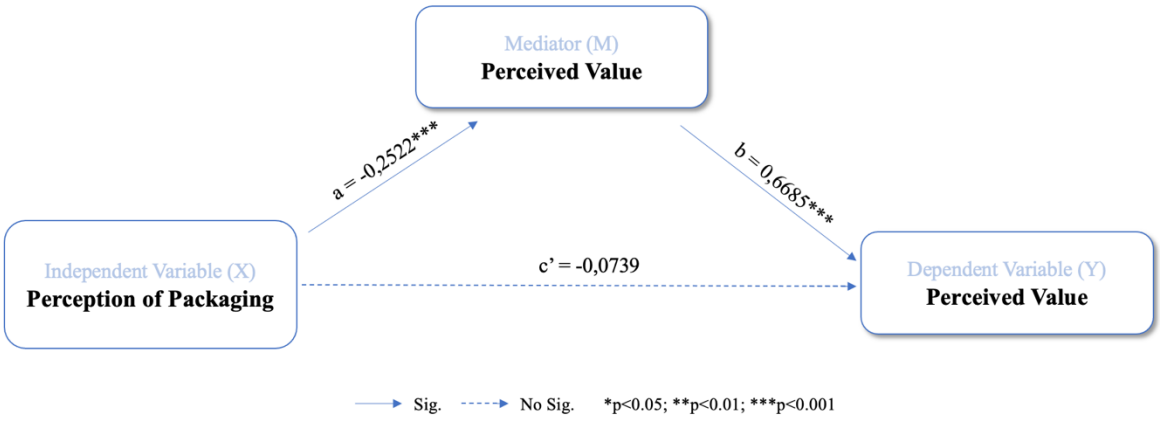

Figure 7: Statistical Model of Mediator Coefficients

In conclusion, the findings imply that packaging perception has a major negative impact on PV, and that PV significantly affects PI. Packaging's detrimental impact on PI was largely mitigated by its impact on PV. Therefore, **H3 was valid,** as it was a full mediation.

4.5.4 Hypothesis 4

Consumers' environmental attitudes moderate the relationship between perceived packaging and consumers' purchase intentions.

Using Hayes' PROCESS model 1 (Appendix 11), the moderation effect of EA on packaging perception and PI was investigated (Hayes, 2018).

The summary of the model shows the R-squared value, which indicates that the model explained 9.15% of the PI variance, and the predictors accounted for only a small part of it. The

result was statistically significant (p-value < 0.05), indicating that EA affected PI for different packaging perceptions.

The packaging perception coefficient (b1 = 0.3550) showed that a one-unit increase in the packaging was associated with a 0.3550-unit increase in PI, while all other predictors remained constant (Figure 8). The EA coefficient (b2 = 0.4975) showed that when all other predictors remained constant, a one-unit increase in EA was associated with a 0.4975-unit increase in PI. However, neither of these positive relations was statistically significant, with p-values above 0.05. The interaction between packaging perception and EA is described by the interaction term Int_1 (b3 = -0.1758). Comparing two participants who differed by one unit in terms of EA, the value for b3 showed that packaging preference decreased by 0.1758. These results seem to indicate that participants with higher EA will prefer standard packaging (codes with lower numbers [1 and 2]) compared to resealable packages (coded with 3) and multiple mini-bags (coded 4). Nevertheless, the interaction (b3) had a p-value close to 0.05 but was not statistically significant.

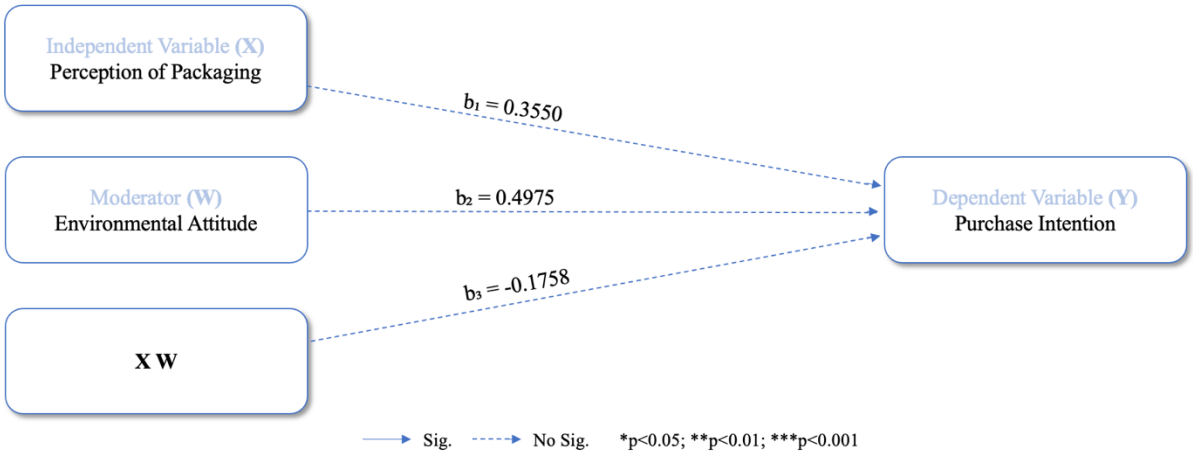

Figure 8: Statistical Model of Moderator Coefficients (Packaging Perception & PI)

Overall, the results of the analysis suggest that both packaging perception and EA affected PI, but the effects were not statistically significant. The negative coefficient of the interaction term also lacked statistical significance. Therefore, the effects were not strong enough to be considered reliable, which led to the conclusion that **H4 was not validated**.

4.5.5 Hypothesis 5

Consumers' environmental attitudes moderate the relationship between perceived packaging and perceived value.

Again, Hayes' PROCESS model 1 was used (Appendix 12) to investigate the moderation effect of EA on packaging and PV (Hayes, 2018).

The predictor variables (packaging perception and EA) accounted for 10.28% of the variance in the outcome variable (PV), as shown in the model. The model had a statistical significance ($p < 0.05$).

The packaging perception coefficient (b1 = 0.2910) showed that a one-unit increase in the packaging was associated with a 0.2910-unit increase in PV, while all other predictors remained constant (Figure 9). When comparing two individuals with regard to an EA difference of one unit, the value for b2 revealed that package preference declined by 0.5380. The p-value (0.0441) showed that the path was statistically significant. The estimated link between EA and PV was represented by path 3b, the results of which showed an interaction of -0.1605. However, this link was not statistically significant.

The statistics do not support this hypothesis, as not all interactions were statistically significant; therefore, the process model can be described as moderated mediation, where packaging's as well as the Int_1's (packaging x EA) direct paths were not significant, but the moderation path was significant. **H5 was only partially valid**.

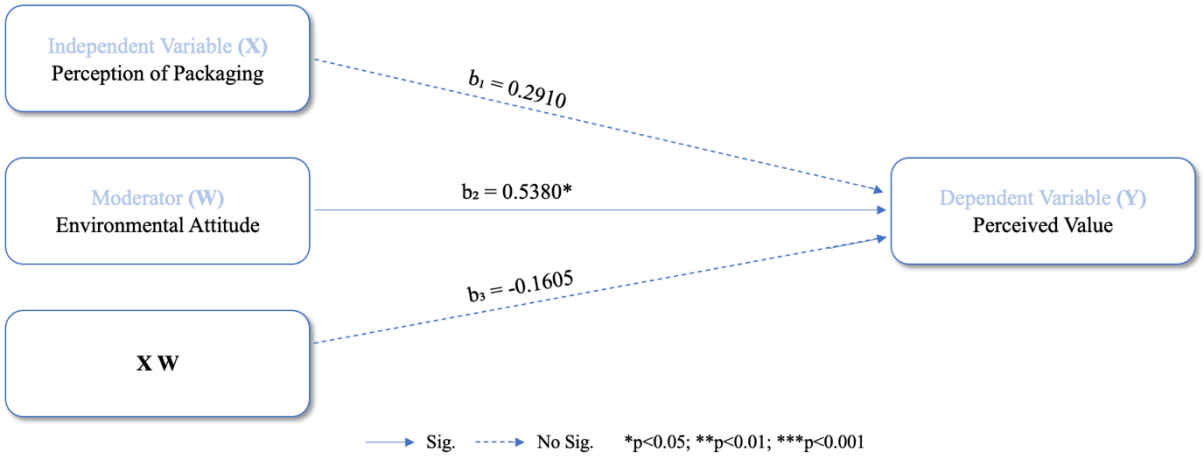

Figure 9: Figure 7: Statistical Model of Moderator Coefficients (Packaging Perception & PV)

These results show that the moderation between packaging perception and PV was ambiguous, and that other factors not considered in the model were involved. Furthermore, the significant effects of EA on PV suggest that it was a predictor of PV in this sample. Overall, the results suggest that while packaging perception has no statistically significant influence on PV, there

are likely other factors that are more important to consumers when making purchasing decisions while keeping the PV, but EA is at least one of the influences.

4.5.6 Full Model

PROCESS model 8 was used to assess the conceptual framework as a whole (Hayes, 2018).

The results (Appendix 13) show that there was a significant relationship between the outcome variable PV and the predictors. The summary of the model shows that these predictors explained 10.28% of the variance in PV, with EA having a significant positive effect on PV (Figure 10). The focal predictor, packaging perception, did not have a significant direct effect on PV. The model summary for PI shows that the predictors PV and EA had significant positive effects on PI. However, the effects of packaging perception on PI were not significant.

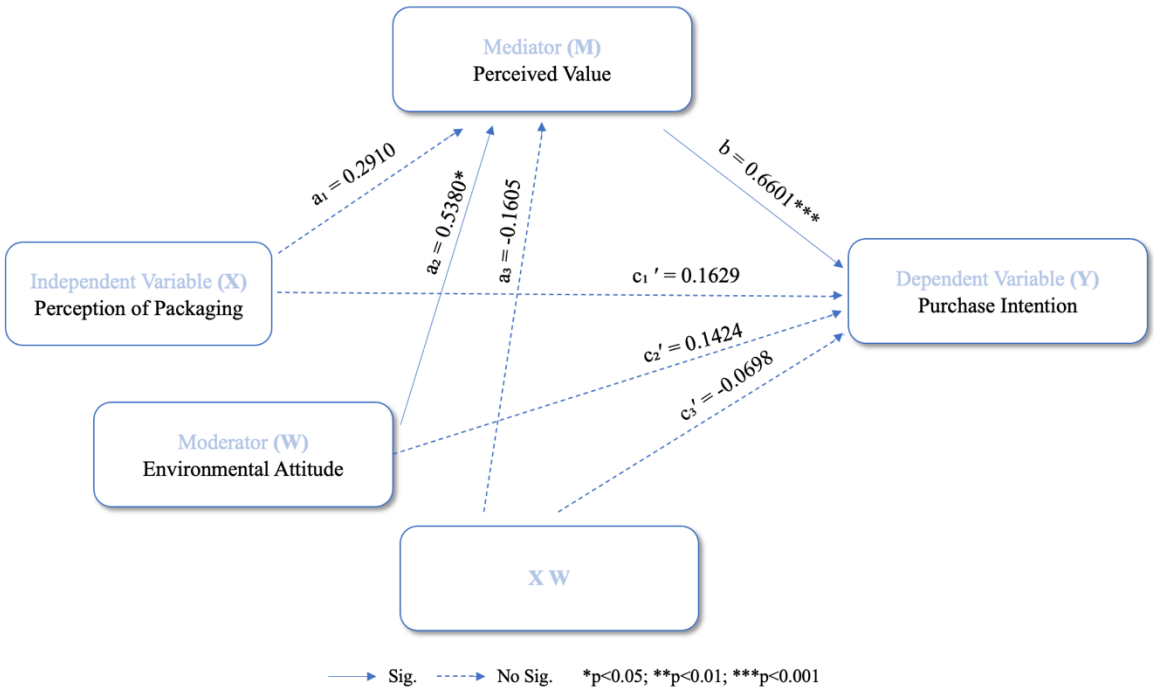

Figure 10: Figure 7: Statistical Model of Full Model Coefficients

The results suggest that there was a moderated mediation effect, with EA moderating the indirect effect of packaging perception on PI through PV. The overall findings provide insights into the relationships between the variables and demonstrate the importance of considering indirect and moderated effects in statistical analyses. This can be useful in order to design packaging which leads to an increased purchase intention of consumers.

CHAPTER 5: CONCLUSIONS AND LIMITATIONS

As indicated above, the purpose of this study was to ascertain whether packaging appearance has an effect on consumers' purchase intentions and to what extent this link may be attributed to consumers' perceptions of value and their environmental attitudes. This study primarily sought to compare the effects of more environmentally friendly packaging, which uses less packaging material, and the EOU of packaging, which uses more packing material. The study's key conclusions and findings are summarized in the next chapter. Followed by consequences for management and science and finally limits and recommendations for future research are addressed.

5.1 Main Findings & Conclusions

The present study examined how modern customers respond to judgments about product packaging with respect to sustainability when they include sacrifices and trade-offs. This was done via an online survey, in which four different stimulus packages were given. The sustainability advantage of using less packaging material has been the main emphasis of the existing literature (Marsh & Bugusu, 2007). The function of sustainability with respect to other competing benefits, such as conservation and protection, as well as desirability, has, however, received no attention.

Sustainable packaging versus the ease-of-use of packaging and consumers' purchase intention

This dissertation's major goal was to determine how consumer purchase intentions and perceived value differ between sustainable packaging and the EOU of packaging. To ultimately increase product sales, the first research question sought to determine whether consumers were willing to buy products with low material content, which resulted in a decrease in EOU. The findings imply that various types of packaging affect consumers' intentions to buy. The best performance was shown by resealable packaging, demonstrating that consumers prefer EOU with the least amount of packaging. The findings also show that packaging directly affects purchase intention and that the effect is substantial. However, the distinction between sustainability and convenience appears to have no impact on the intention to buy. In conclusion, it can be said that, in relation to the first research question, customers' purchase intentions are directly influenced by the packaging; however, the kind of packaging has no bearing on those intentions. Furthermore, it should be noted that PI was influenced by many factors, and the statistical significance decreased as soon as other factors were included in the model.

Packaging's impact on perceived value

The first study question's findings revealed that packaging appears to have a direct impact on purchase intention; thus, it was intriguing to investigate whether a mediator could also account for this association. It turns out that both the direct impacts (packaging on PV and PV on PI) existed, but only with low values. The correlation results demonstrate that PV is negatively influenced by its packaging, which in this case means positively by sustainable packaging. The impact is not highly significant because there are probably more factors at play than just consumer awareness and packaging amount that affect the added value of sustainable packaging. Possible variables that were not investigated in this study include health consciousness, as well as perceptions of the brand, category, or product. Consumer PV from environmentally friendly packaging can be viewed as a significant mediator and was accessed with PROCESS. PV of packaging can therefore be used to explain the connection between packaging and the likelihood that a consumer will buy the product. The regression model shows that the added value is the sole indirect effect that can account for PI, making PV a mediator.

Effect of consumers' environmental attitudes on purchase intention and value

The third RQ concentrated on the influence of customer environmental attitudes on the relationship between packaging and PV, as well as the relationship between packaging and PI. The environmental attitude had a considerable impact on the PV; in fact, it turned out that the consumer's environmental attitude outweighed a moderating role regarding value. According to the regression model, a greater environmental attitude has a greater impact on perceived value. At the same time, the results showed that EA had no significant moderator in the relationship between packaging and PI.

5.2 Managerial Implications

The study's findings may be used to direct businesses toward more consumer-acceptable packaging options. The findings may also be considered by marketers who work with products in the candy or snack sectors. It is crucial to consider additional factors that may affect consumers' buying intentions if businesses want to promote sustainability while using less packaging. They must remember that simply reducing packing will not change consumers' intentions to buy. They must be aware that people who consider sustainable packaging to be a valuable addition to standard product characteristics must be their target market. It is critical to have a thorough understanding of your target market's requirements and preferences. However,

it can be claimed that customers have the propensity to forgo limited EOU in favor of greater sustainability. Additionally, proper material containment can reduce costs and increase turnover

5.3 Academic Implications

Research on sustainable packaging qualities and traits has primarily focused on categories like material type. The characteristics of sustainable packaging in terms of the quantity of material have not yet been investigated, despite the fact that the food industry generates a huge amount of plastic trash, which nonetheless has advantages when minimized as much as feasible. The study covered this knowledge gap by investigating consumers' willingness to give up convenience which often goals along with more packaging material used in order to increase sustainability.

5.4 Limitations and Further Research

This study was constrained by a limited period and budget because it is a component of a master's dissertation. It thus exhibits several limitations, which the reader should be aware of and which could provide opportunities for further research.

The limitations of time and funding are this study's main drawbacks. This contributed to the survey's relatively small sample size. If there had been more participants, the study's findings might have been more significant. It is also important to note that it was not possible to choose a sample that was representative of the entire population that consumed wine gums. The majority of the respondents had higher education degrees, were working, and were young people. This customer profile represents only a small portion of the overall wine gum market. To overcome this problem, the study might be repeated using a larger and more representative sample of participant profiles.

Another drawback of this study is that it used only four different variables. The choices made by consumers are influenced by various factors, and the price is a key factor in the decision-making process in genuine circumstances. It is also important to consider the brand effect and its follow-up consequences, such as image connections and loyalty expectations.

Additionally, purchase intention was used in this study as a stand-in for the consumer's purchase decision. Although several researchers disagree with Follows and Jobber's (2000) contention that purchase intention is a better predictor of purchase decision than attitude, particularly in the context of sustainability, they believe that there is a relatively wide gap

between consumer purchase intention and behavior. As a result, it is not advised to use the study's findings to generalize about consumer behavior. Using field data to examine consumer behavior about sustainable packaging messages might be a constructive way to overcome this barrier.

Furthermore, due to the high number of participants who were excluded because they had not consumed wine gums in the last month, it can be assumed that this criterion should be extended to a longer period, or that another product should be used. Likewise, many participants were excluded because they answered the manipulation question incorrectly, which indicates that the various stimuli should be created differently.

Another limitation of the work is that the participants were not asked in the survey about their perceptions of the packaging, and the classification according to sustainability and convenience was made based on the literature and the previously conducted interviews. In further surveys, the participants should be asked to rate their perceptions of the packaging. Another option would be to employ a fractional cyclical design that highlights the type and degree of the trade-off between various packaging options. This would enable a more accurate assessment of the trade-offs in sustainable development and might bolster support for sustainable packaging.

Numerous participants in the online survey and interview sessions expressed their points of view by saying that their decision to buy this kind of snack was partially influenced by the brand. Haribo was utilized in this study, which could have led to bias. As a result, more studies may be conducted to determine how perceptions of the quality of various packaging and pricing affect consumer choice with other brands.

To gain a deeper understanding of the subject, more investigation is required to ascertain the aspects that customers value most and how they combine to affect consumers' preferences for packaging.

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APPENDICES

Appendix 1: Online Survey

Introduction

Dear Participant,

This survey is being done in order to meet the requirements for a master's degree at Católica Lisbon School of Business and Economics.

Participation in the survey is completely voluntary, and there are no right or wrong answers. Your personal viewpoint is important. It is also crucial to note that your responses are anonymous, and that the information gathered will only be utilised to support my thesis. It should not take more than 7 minutes to complete the survey.

If you have any questions, please get in touch with me (s-ameyer@ucp.pt).

I appreciate your time and attention!

Block 1: Screening Question

Q1 – Have you bought any snack products for your household in the last 6 months?

- No (1)
- Yes (2)

  If the respondent selects "No," skip straight to the survey's end.

Q2 – How often have you eaten wine gum in the last 6 months?

- Every day (1)
- 2–5 times a week (2)
- Once a week (3)
- Every 2–3 weeks (4)
- Once a month (5)
- Never (6)

If the respondent selects “Never,” skip straight to the survey’s end.

Block 2: Environmental Attitude

Q3 – Please indicate your level of agreement with the following statements. (1 = “Strongly disagree” to 5 = “Strongly agree”)

Items	1 - Strongly disagree	2 - Disagree	3 - Neutral	4 - Agree	5 - Strongly agree
I choose the environmentally friendly alternative if one of a similar price is available.					
I choose the environmentally friendly alternative regardless of price.					
I try to discover the environmental effects of products prior to purchase.					

Block 3: Stimuli (Randomised)

Q4.1 – Imagine you are searching for Haribo Goldbears at your local supermarket. You come across the product below while browsing the store, so you take a closer look. This product is **Share Size, meaning a bag of 200 g (compared to a larger Party Size = 1,360 g)**, which costs €1.36.

Please consider this product when you respond to the following questions.

Q4.2 – Imagine you are searching for Haribo Goldbears at your local supermarket. You come across the product below while browsing the store, so you take a closer look. This product is **Party Size, meaning a large bag of 1,360 g (compared to a smaller Share Size of 200 g)**, priced at €9.50.

Please consider this product when you respond to the following questions.

Q4.3 – Imagine you are searching for Haribo Goldbears at your local supermarket. You come across the product below while browsing the store, so you take a closer look. This product is

Party Size, meaning a large bag of 1,360 g, with a **zip to reseal** it, priced at €9.50.

Please consider his product when you respond to the following questions.

Q4.4 – Imagine you are searching for Haribo Goldbears at your local supermarket. You come across the product below while browsing the store, so you take a closer look. This product is **Party Size, meaning a large bag of 1,360 g** with **60 small bags inside**, priced at €9.50.

Please consider this product when you respond to the following questions.

Perceived Value per Stimuli

Q5 – Having in mind the packaging you saw before, please indicate your level of agreement with the following statements regarding the product packaging. (1 = “Strongly disagree” to 5 = “Strongly agree”)

Items	1 - Strongly disagree	2 - Disagree	3 - Neutral	4 - Agree	5 - Strongly agree
The package offers me good value for money.					
For the price I pay, I get what I expect from the package.					
The benefit I get from the packaging is in proportion to my input.					

Purchase Intention per Stimuli

Q6 – Having in mind the packaging you saw before, please indicate your level of agreement with the following statements regarding the product packaging. (1 = "Strongly disagree" to 5 = "Strongly agree")

Items	1 - Strongly disagree	2 - Disagree	3 - Neutral	4 - Agree	5 - Strongly agree
I believe that most people would like to buy this product.					
I would be glad to try the food with this package.					
I would recommend this product to my friends.					
I would purchase this product.					

Block 4: Manipulation Check

Q7 – Please indicate your level of agreement with the following statements regarding the product packaging you just saw. (1 = "Strongly disagree" to 5 = "Strongly agree")

Items	1 - Strongly disagree	2 - Disagree	3 - Neutral	4 - Agree	5 - Strongly agree
The packaging is resealable.					
The product has multiple mini bags inside the large bag.					
The product is Party Size (1,360 g).					

Block 5: Ease-of-Use vs. Sustainability

Q8 – In the supermarket, you found not only the product you saw before, but also 3 others. Please answer the following questions regarding the 4 products.

Product Mini-Bags Party Size (1360g)

Product Standard Party Size (1360g)

Product Resealable Party Size (1360g)

Product Standard Share Size (200g)

Q9 – Please rank the products' packaging in order of ease-of-use. (1 = "Easiest" to 4 = "Least easiest")

1. Mini-Bags Party Size
2. Standard Party Size
3. Resealable Party Size
4. Share Size

Q10 – Please rank the products' packaging in order of convenience. (1 = "Most convenient" to 4 = "Least convenient")

1. Mini-Bags Party Size
2. Standard Party Size
3. Resealable Party Size
4. Share Size

Q11 – Please rank the products' packaging in order of sustainability. (1 = "Most sustainable" to 4 = "Least sustainable")

1. Mini-Bags Party Size

2. Standard Party Size
3. Resealable Party Size
4. Share Size

Block 9: Demographics

Q12 – What is your gender?

- Male (1)
- Female (2)
- Non-binary/third gender (3)
- I prefer not to say (4)

Q13 – What is your age?

- Younger than 18 years (1)
- 18 - 24 years (2)
- 25 - 34 years (3)
- 35 - 44 years (4)
- 45 - 54 years (5)
- 55 - 64 years (5)
- 65 years or older (6)

Q14 – What is your nationality?

- German (1)
- Portuguese (2)
- Italian (3)
- Spanish (4)
- Dutch (5)
- French (6)
- Other (7)

Q15 – What is the highest educational level you have completed?

- 9th grade (1)
- High school (2)
- Bachelor's degree (3)
- Master's degree (4)
- Ph.D. degree (5)

Q16 – What is your current occupation?

- Student (1)
- Working student (2)
- Employed (3)
- Unemployed (4)
- Retired (5)

Q17 - What is your approximate net yearly income in euros? (Just for statistical purposes)

- Less than €10,000 (1)
- €10,000 - €19,999 (2)
- €20,000 - €29,999 (3)
- €30,000 - €39,999 (4)
- €40,000 - €49,999 (5)
- €50,000 - €59,999 (6)
- €60,000 - €69,999 (7)
- €70,000 - €79,999 (8)
- €80,000 or more

Block 10: Email & Motivation

Q16 – Please enter your email address here and remember to click to the next page to submit your results.

(This information will **not** be used to link your responses to your identity. This is solely done to prevent participants from responding several times and to contact any individuals who are selecting an organisation for a donation.)

For each completed survey 0.25€ will be sent to one of the following three organisations:
- Greenpeace e. V.
- OceanCare
- Kindernothilfe e.V.

One participant will be drawn at random to choose one of the above-mentioned organisations and will be texted via email to select the organisation which gets all full donation.

Appendix 2: Sample Characteristics

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	36	22.9	22.9	22.9
	Female	119	75.8	75.8	98.7
	Non-binary / third gender	1	.6	.6	99.4
	Prefer not to say	1	.6	.6	100.0
	Total	157	100.0	100.0	

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	younger than 18 years	2	1.3	1.3	1.3
	18 – 24 years	31	19.7	19.7	21.0
	25 – 34 years	86	54.8	54.8	75.8
	45 – 54 years	14	8.9	8.9	84.7
	55 – 64 years	11	7.0	7.0	91.7
	35-44 years	13	8.3	8.3	100.0
	Total	157	100.0	100.0	

Nationality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	German	117	74.5	74.5	74.5
	Portugese	13	8.3	8.3	82.8
	Spanish	2	1.3	1.3	84.1
	French	1	.6	.6	84.7
	Other:	24	15.3	15.3	100.0
	Total	157	100.0	100.0	

Educational level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	9th grade	4	2.5	2.5	2.5
	High School	33	21.0	21.0	23.6
	Bachelor's degree	64	40.8	40.8	64.3
	Master's degree	55	35.0	35.0	99.4
	Ph.D.	1	.6	.6	100.0
	Total	157	100.0	100.0	

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	30	19.1	19.1	19.1
	Working Student	24	15.3	15.3	34.4
	Employed	99	63.1	63.1	97.5
	Unemployed	2	1.3	1.3	98.7
	Retired	2	1.3	1.3	100.0
	Total	157	100.0	100.0	

Net yearly income in euros

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than €10.000	29	18.5	18.5	18.5
	€10.000 - €19.999	28	17.8	17.8	36.3
	€20.000 - €29.999	20	12.7	12.7	49.0
	€30.000 - €39.999	22	14.0	14.0	63.1
	€40.000 - €49.999	13	8.3	8.3	71.3
	€50.000 - €59.999	8	5.1	5.1	76.4
	€60.000 - €69.999	12	7.6	7.6	84.1
	€70.000 - €79.999	13	8.3	8.3	92.4
	€80.000 or more	12	7.6	7.6	100.0
	Total	157	100.0	100.0	

How often wine gum

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Every day	4	2.5	2.5	2.5
	2-5 times a week	16	10.2	10.2	12.7
	Once a week	32	20.4	20.4	33.1
	Every 2-3 weeks	39	24.8	24.8	58.0
	Once a month	66	42.0	42.0	100.0
	Total	157	100.0	100.0	

Appendix 3: Cronbach's Alpha

Construct	Number of Items	Cronbach's α
Purchase Intention:	4	**0.858**
Stimulus 1	4	0.822
Stimulus 2	4	0.843
Stimulus 3	4	0.868
Stimulus 4	4	0.898
Perceived Value:	**3**	**0.864**
Stimulus 1	3	0.785
Stimulus 2	3	0.901
Stimulus 3	3	0.882
Stimulus 4	3	0.887
Environmental Attitude:	**3**	**0.706**

Purchase Intention:

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.822	.813	4

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.843	.844	4

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.868	.870	4

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.898	.894	4

Value:

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.785	.801	3

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.901	.903	3

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.882	.885	3

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.887	.890	3

Environmental Attitude:

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.706	.710	3

Appendix 4: Kruskal–Wallis Test

Ranks

	Stimulus	N	Mean Rank
Packaging is resealable	Standard Share Size	31	51.87
	Standard Party Size	33	53.26
	Resealable	49	133.00
	Mini-Bags	44	57.28
	Total	157	
Multiple mini bags	Standard Share Size	31	54.58
	Standard Party Size	33	60.55
	Resealable	49	56.14
	Mini-Bags	44	135.50
	Total	157	
Party Size (1,360g)	Standard Share Size	31	16.00
	Standard Party Size	33	91.27
	Resealable	49	97.43
	Mini-Bags	44	93.66
	Total	157	

Test Statistics[a,b]

	Packaging is resealable	Multiple mini bags	Party Size (1,360g)
Kruskal-Wallis H	107.435	111.053	88.619
df	3	3	3
Asymp. Sig.	<.001	<.001	<.001

a. Kruskal Wallis Test

b. Grouping Variable: Stimulus

Appendix 5: Normality Test

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PV	.133	157	<.001	.963	157	<.001
PI	.114	157	<.001	.967	157	<.001
EA	.093	157	.002	.967	157	<.001

a. Lilliefors Significance Correction

Appendix 6: Hypothesis 1 – Linear Regression

Correlations

		PI	Stimulus
Pearson Correlation	PI	1.000	-.264
	Stimulus	-.264	1.000
Sig. (1-tailed)	PI	.	<.001
	Stimulus	.000	.
N	PI	157	157
	Stimulus	157	157

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.264[a]	.069	.063	.96518	1.727

a. Predictors: (Constant), Stimulus

b. Dependent Variable: PI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.780	1	10.780	11.572	<.001[b]
	Residual	144.393	155	.932		
	Total	155.173	156			

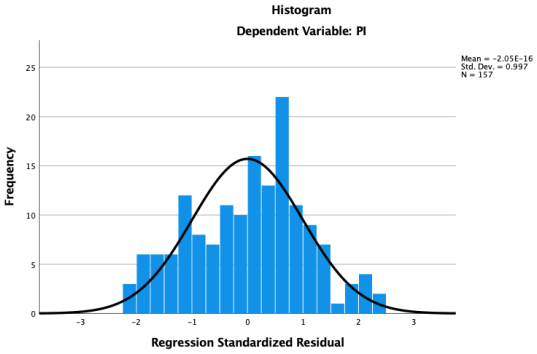
a. Dependent Variable: PI

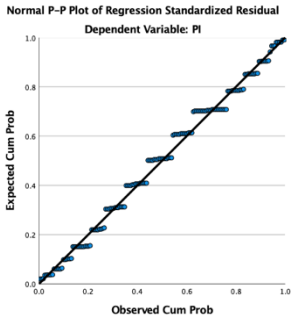
b. Predictors: (Constant), Stimulus

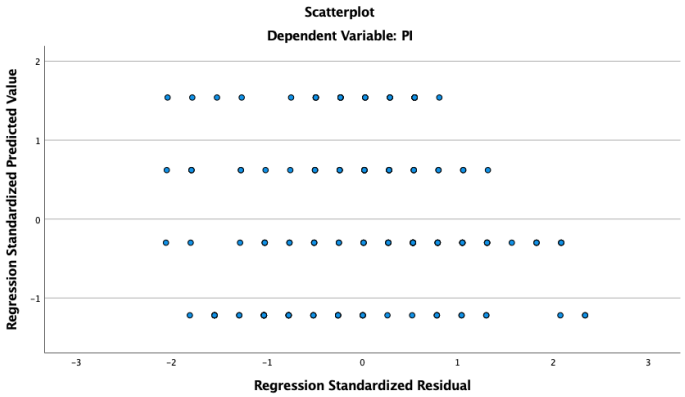
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	3.714	.205		18.103	<.001		
	Stimulus	-.242	.071	-.264	-3.402	<.001	1.000	1.000

a. Dependent Variable: PI







Appendix 7: Hypothesis 1 – Mann–Whitney Test

Ranks

	Stimuli Groups	N	Mean Rank	Sum of Ranks
PI	Sustainable	64	85.66	5482.00
	Ease of Use	93	74.42	6921.00
	Total	157		

Test Statistics[a]

	PI
Mann-Whitney U	2550.000
Wilcoxon W	6921.000
Z	-1.527
Asymp. Sig. (2-tailed)	.127

a. Grouping Variable: Stimuli Groups

Appendix 8: Hypothesis 2 – Linear Regression

Correlations

		PV	Stimulus
Pearson Correlation	PV	1.000	-.280
	Stimulus	-.280	1.000
Sig. (1-tailed)	PV	.	<.001
	Stimulus	.000	.
N	PV	157	157
	Stimulus	157	157

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.280[a]	.078	.072	.94386	1.239

a. Predictors: (Constant), Stimulus

b. Dependent Variable: PV

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.726	1	11.726	13.163	<.001[b]
	Residual	138.085	155	.891		
	Total	149.812	156			

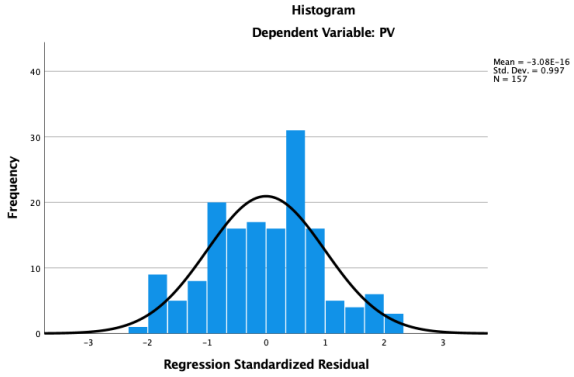
a. Dependent Variable: PV

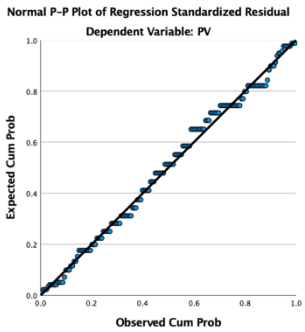
b. Predictors: (Constant), Stimulus

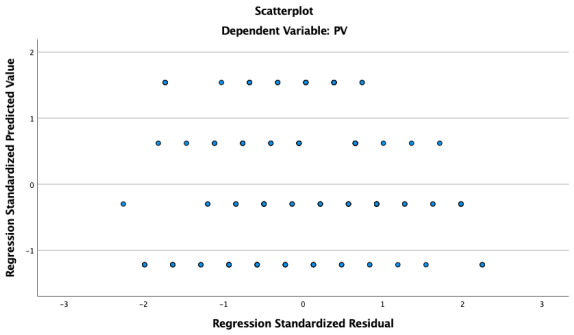
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	3.887	.201		19.376	<.001		
	Stimulus	-.252	.070	-.280	-3.628	<.001	1.000	1.000

a. Dependent Variable: PV







Appendix 9: Hypothesis 2 – Mann–Whitney Test

Ranks

	Stimuli Groups	N	Mean Rank	Sum of Ranks
PV	Sustainable	64	88.34	5653.50
	Ease of Use	93	72.58	6749.50
	Total	157		

Test Statistics[a]

	PV
Mann-Whitney U	2378.500
Wilcoxon W	6749.500
Z	-2.153
Asymp. Sig. (2-tailed)	.031

a. Grouping Variable: Stimuli Groups

Appendix 10: Hypothesis 3 – PROCESS Model 4

Run MATRIX procedure:

********** PROCESS Procedure for SPSS Version 4.2 **********

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2022). www.guilford.com/p/hayes3

****
Model : 4
Y : PI
X : Stimulus
M : PV

Sample
Size: 157

****
OUTCOME VARIABLE:
PV

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2798	.0783	.8909	13.1629	1.0000	155.0000	.0004

Model

	coeff	se	t	p	LLCI	ULCI
constant	3.8869	.2006	19.3757	.0000	3.4906	4.2831
Stimulus	-.2522	.0695	-3.6281	.0004	-.3894	-.1149

Standardized coefficients

	coeff
Stimulus	-.2798

****
OUTCOME VARIABLE:
PI

Model Summary

R	R-sq	MSE	F	df1	df2	p
.6812	.4640	.5401	66.6581	2.0000	154.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.1256	.2889	3.8955	.0001	.5548	1.6964
Stimulus	-.0739	.0564	-1.3105	.1920	-.1852	.0375
PV	.6658	.0625	10.6469	.0000	.5423	.7894

Standardized coefficients

	coeff
Stimulus	-.0805
PV	.6542

********** DIRECT AND INDIRECT EFFECTS OF X ON Y **********

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_cs
-.0739	.0564	-1.3105	.1920	-.1852	.0375	-.0805

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
PV	-.1679	.0503	-.2694	-.0731

Completely standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
PV	-.1830	.0535	-.2875	-.0799

********** ANALYSIS NOTES AND ERRORS **********

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

------ END MATRIX -----

Appendix 11: Hypothesis 4 – PROCESS Model 1

Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2022). www.guilford.com/p/hayes3

****
Model : 1
Y : PI
X : Stimulus
W : EA

Sample
Size: 157

****
OUTCOME VARIABLE:
PI

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3025	.0915	.9214	5.1377	3.0000	153.0000	.0021

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.0264	.9440	2.1465	.0334	.1613	3.8914
Stimulus	.3550	.3183	1.1152	.2665	-.2739	.9839
EA	.4975	.2714	1.8331	.0687	-.0387	1.0338
Int_1	-.1758	.0914	-1.9235	.0563	-.3563	.0048

Product terms key:
Int_1 : Stimulus x EA

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	.0220	3.6998	1.0000	153.0000	.0563

Focal predict: Stimulus (X)
Mod var: EA (W)

Conditional effects of the focal predictor at values of the moderator(s):

EA	Effect	se	t	p	LLCI	ULCI
2.6667	-.1137	.0972	-1.1698	.2439	-.3058	.0783
3.6667	-.2895	.0749	-3.8651	.0002	-.4375	-.1415
4.3333	-.4067	.1110	-3.6626	.0003	-.6260	-.1873

********** ANALYSIS NOTES AND ERRORS **********

Level of confidence for all confidence intervals in output:
  95.0000

W values in conditional tables are the 16th, 50th, and 84th percentiles.

------ END MATRIX -----

Appendix 12: Hypothesis 5 – PROCESS Model 1

Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2022). www.guilford.com/p/hayes3

****
Model : 1
Y : PV
X : Stimulus
W : EA

Sample
Size: 157

****
OUTCOME VARIABLE:
PV

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3206	.1028	.8785	5.8439	3.0000	153.0000	.0008

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.0588	.9218	2.2335	.0270	.2377	3.8800
Stimulus	.2910	.3109	.9363	.3506	-.3231	.9052
EA	.5380	.2650	2.0300	.0441	.0144	1.0616
Int_1	-.1605	.0892	-1.7992	.0740	-.3368	.0157

Product terms key:
Int_1 : Stimulus x EA

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	.0190	3.2370	1.0000	153.0000	.0740

Focal predict: Stimulus (X)
Mod var: EA (W)

Conditional effects of the focal predictor at values of the moderator(s):

EA	Effect	se	t	p	LLCI	ULCI
2.6667	-.1371	.0949	-1.4440	.1508	-.3246	.0505
3.6667	-.2976	.0731	-4.0694	.0001	-.4421	-.1531
4.3333	-.4046	.1084	-3.7322	.0003	-.6188	-.1904

********** ANALYSIS NOTES AND ERRORS **********

Level of confidence for all confidence intervals in output:
  95.0000

W values in conditional tables are the 16th, 50th, and 84th percentiles.

------ END MATRIX -----

Appendix 13: Full Model – PROCESS Model 8

Run MATRIX procedure:

**** PROCESS Procedure for SPSS Version 4.2 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2022). www.guilford.com/p/hayes3

****

Model : 8
Y : PI
X : Stimulus
M : PV
W : EA

Sample
Size: 157

****

OUTCOME VARIABLE:
PV

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3206	.1028	.8785	5.8439	3.0000	153.0000	.0008

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.0588	.9218	2.2335	.0270	.2377	3.8800
Stimulus	.2910	.3109	.9363	.3506	-.3231	.9052
EA	.5380	.2650	2.0300	.0441	.0144	1.0616
Int_1	-.1605	.0892	-1.7992	.0740	-.3368	.0157

Product terms key:
Int_1 : Stimulus x EA

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	.0190	3.2370	1.0000	153.0000	.0740

Focal predict: Stimulus (X)
Mod var: EA (W)

Conditional effects of the focal predictor at values of the moderator(s):

EA	Effect	se	t	p	LLCI	ULCI
2.6667	-.1371	.0949	-1.4440	.1508	-.3246	.0505
3.6667	-.2976	.0731	-4.0694	.0001	-.4421	-.1531
4.3333	-.4046	.1084	-3.7322	.0003	-.6188	-.1904

****
OUTCOME VARIABLE:
PI

Model Summary

R	R-sq	MSE	F	df1	df2	p
.6848	.4690	.5421	33.5624	4.0000	152.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	.6672	.7358	.9068	.3660	-.7865	2.1210
Stimulus	.1629	.2449	.6652	.5069	-.3209	.6467
PV	.6601	.0635	10.3948	.0000	.5347	.7856
EA	.1424	.2110	.6748	.5008	-.2744	.5592
Int_1	-.0698	.0708	-.9854	.3260	-.2097	.0701

Product terms key:
Int_1 : Stimulus x EA

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	.0034	.9709	1.0000	152.0000	.3260

********** DIRECT AND INDIRECT EFFECTS OF X ON Y **********

Conditional direct effects of X on Y

EA	Effect	se	t	p	LLCI	ULCI
2.6667	-.0232	.0751	-.3094	.7574	-.1715	.1251
3.6667	-.0930	.0605	-1.5382	.1261	-.2125	.0265
4.3333	-.1396	.0890	-1.5688	.1188	-.3153	.0362

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
Stimulus -> PV -> PI

EA	Effect	BootSE	BootLLCI	BootULCI
2.6667	-.0905	.0631	-.2066	.0435
3.6667	-.1965	.0538	-.3058	-.0965
4.3333	-.2671	.0803	-.4392	-.1234

Index of moderated mediation:

	Index	BootSE	BootLLCI	BootULCI
EA	-.1060	.0621	-.2417	-.0002

********** ANALYSIS NOTES AND ERRORS **********

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the 16th, 50th, and 84th percentiles.

------ END MATRIX -----