

CATÓLICA  
LISBON  
BUSINESS & ECONOMICS

# How Communicating Sustainable Packaging Impacts the Consumer's Purchase Intention

Investigating the Effect of the Consumer's Added Value for  
Sustainable Packaging and Its Pro-Environmental Attitude

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Dissertation submitted in partial fulfilment of requirements for the MSc in  
Management with Specialization in Strategic Marketing, at the Universidade  
Católica Portuguesa, 05.01.2018.

## **ABSTRACT**

Consumers are more and more concerned about environmental and social issues and thus increasingly ask for products with sustainable product attributes. Around one third of the consumers already base their purchase decision on a brand's social and environmental-friendly efforts. Since green marketing efforts have a bad image among consumers though, marketers face a conflict when it comes to communicating their sustainable product attributes.

This study aims at identifying which factors and which communication style (emotional vs. informative) impact the consumer's purchase intention for products that communicate sustainable packaging – a product attribute that addresses the consumer's major environmental concern namely waste.

In the context of an exploratory study, a cross-sectional survey was conducted that exposed respondents to a product picture of washing-up liquid communicating sustainable packaging either in an emotional or in an informative way or to a control stimulus. The stimuli were created based on a pre-study inspired by the Delphi technique which aimed at finding a consensus between the respondents according their perceptions about the degree of emotions of existing sustainable packaging claims.

Findings indicate that communicating sustainable packaging in an emotional or an informative way makes no difference for the consumer's purchase intention. Overall, the impact of communicating sustainable packaging on the purchase intention is mediated by the consumer's added value for sustainable packaging and has different effects depending on the consumer's pro-environmental attitude.

## SUMÁRIO

Os consumidores estão cada vez mais preocupados com assuntos ambientais e sociais, por isso estão mais apreensivos com produtos que apresentam características sustentáveis. O “green Marketing” causa uma má imagem das marcas aos olhos dos consumidores e por isso, os profissionais do Marketing enfrentam problemas quando querem comunicar os atributos sustentáveis dos seus produtos.

Este estudo tem o objetivo de identificar quais os fatores e impactos na decisão de compra dos consumidores, dos estilos de comunicação utilizados para comunicar uma embalagem sustentável (emocional VS informativo) – um atributo de um produto que visa enaltecer o mais importante problema para os consumidores: desperdício.

No contexto deste estudo, uma pesquisa transversal foi realizada com o objetivo de expor aos participantes uma imagem de um produto de lava-loiças, com informação, quer emocional e informativa de forma a criar um estímulo, à cerca dos seus atributos sustentáveis. O estímulo foi criado com base num estudo previamente realizado e inspirado pela técnica Delphi que tem como objetivo encontrar consenso entre os participantes, de acordo com as suas perceções à cerca dos níveis de emoções criados devido à informação alusiva à sustentabilidade presente nas embalagens.

As conclusões deste estudo indicam que comunicar de forma emocional ou informativa nas embalagens não apresenta qualquer diferença para a decisão de compra dos consumidores. O impacto da comunicação sustentável nas embalagens na decisão de compra, é mediada se os consumidores consideram uma embalagem sustentável importante e apresenta efeitos diferentes consoante a visão dos consumidores para problemas ambientais.

## **ACKNOWLEDGEMENTS**

The expectations that I had for my master thesis were on the one hand to work on a topic that interests me and that I would enjoy working on for such a long period of time and on the other hand to do research in a field that would broaden my horizon and would be useful for my career. Thanks to my supervisor, professor Paulo Romeiro, I had the chance to fulfill all my expectations and at the same time got supported whenever I had an issue or a question. Throughout the seminar, he guided my colleagues and me the way through the dissertation process and made it very enjoyable and as easy as possible for every single one of us. Therefore, I would like to express my full gratitude to him on this way.

Also, I would like to thank all the respondents of my survey and the participants of my pre-study for investing their time and effort in supporting me to collect my data.

Finally, I would also like to highlight some special words to my family for giving me the opportunity to get such outstanding education. Without them, I wouldn't have been able to reach all the goals I achieved so far.

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## **GLOSSARY**

AV Added value

PI Purchase intention

PEA Pro-environmental attitude

SP Sustainable packaging

SPC Sustainable packaging communication

# **1 INTRODUCTION**

## **1.1 Background**

Social and ethical marketing activities have a bad image among consumers. They are perceived as a justification to increase prices and as corporate image boosters and they sometimes even lead to an inferior perception of product quality (Ottman, 1998; Pirsch, Gupta, & Grau, 2007). Nevertheless, consumers more and more ask for environmental-friendly products and have environmental concerns like waste (Zheng, 2012). This conflict makes it hard for marketers to communicate environmental development and thus such environmental changes are frequently not communicated at all (Pickett-Baker & Ozaki, 2008). Therefore, this study aims at studying which on-package communication style is the most effective in terms of sustainable packaging in order to give managerial implications for marketers that intent to introduce social packaging attributes. Further, this study examines a field of study that lacks profound research so far (Rokka & Uusitalo, 2008).

Packaging in general is a far underestimated Marketing tool and is often not even part of a companies' Marketing strategy yet, although it can have a huge impact on consumers' purchase decision. Due to that, some academic researchers propose to transfer the classical 4 P's strategy to a 5 P's strategy by adding packaging to the marketing mix (Nickels/ Jolson, 1976). Research indicates that sustainable packaging, in particular, is an important element of consumers' purchase decision and is according to Silayoi and Speece (2007a) at least for one-third of the consumers the most important packaging attribute.

However, consumers' environmental attitude and their purchase behavior sometimes fall apart due to the above-mentioned issues. There are three major reasons that lead to this: Firstly, consumers often cannot identify at the POS whether product packaging is environmental-friendly or not and secondly, social pressure sometimes leads to attitudes that do not lead to behavior (Rokka & Uusitalo, 2008). Lastly, consumers underestimate their personal impact on the environment by acting environmental-friendly. Some researchers propose that emotional communication of environmental messages can effectively impact consumers' attitude and drive their purchase behavior (Alwitt & Pitts, 1996). Moreover, emotional communication increases attention and would therefore also address the problem of identification of environmental product attributes (J. D. Hawkins, Farrington, & Catalano, 1998). In contrast, Pickett-Baker & Ozaki (2008) stated that informational environmental messages are more effective than emotional ones. Since firms can only have a positive environmental impact if

they are able to convince the consumer, it is crucial to know how they should communicate their environmental packaging effort in order to influence the consumers purchase behavior. Having these conflicting approaches in mind, the aim of this research is to identify the impact of emotional vs. informative sustainable packaging communication on consumers' purchase intention and to measure how consumers' environmental attitude and the added value for sustainable packaging modifies this relationship.

## **1.2 Problem statement**

The scope of this research is to understand how sustainable packaging communication impacts purchase intention by analyzing the effects of consumers' added value through sustainable packaging and their pro-environmental attitude on this causal relationship. Essentially, the problem statement for this research is summarized as:

*How does the consumers' pro-environmental attitude and added value for sustainable packaging impact the relationship between communicating sustainable packaging (emotional vs. informative) and consumer's purchase intention?*

This problem statement can be expressed through the following research questions:

**RQ1:** What is the impact of sustainable packaging communication on purchase intention?

**RQ1a:** Does communicating sustainable packaging impact the consumers' purchase intention?

**RQ1b:** Does communicating sustainable packaging in an emotional versus in an informative way impact the consumers' purchase intention?

**RQ2:** How does the consumers' pro-environmental attitude impact the relationship between sustainable packaging communication and purchase intention?

**RQ3:** How does the consumers' added value for sustainable packaging impact the relationship between sustainable packaging communication and purchase intention?

## **1.3 Relevance**

Due to an increasing consciousness for environmental concerns, sustainability has become a huge consumer trend over the past years (Zheng, 2012). According to a recent study of Unilever, 33 percent of the consumers choose their products according the brand's environmental and social efforts (Unilever, 2017). Therefore, marketers are increasingly searching for new opportunities to improve their corporate social responsibility activities. Sustainable packaging can be a good chance for them to satisfy the new customer needs.

However, since the existing conflict between the bad image of green marketing and the need for higher awareness of sustainable product attributes keeps marketers from communicating their social activities, it is crucial to find the optimal way of communicating and targeting social effort like sustainable packaging. Investigating the effectiveness of emotional vs. informative sustainable packaging communication might help marketing managers to make reasonable decisions.

Additionally, identifying the mediating effects of the consumer's pro-environmental attitude and the added value through sustainable packaging will give implications for marketers about the consumer profile (their attitudinal profile) and about reasonable pricing strategies for sustainable packaging add-ons.

In general, the aim of this study is to shed a new light on the effectiveness of sustainable packaging and to convince more companies of the importance of sustainable activities by eventually proposing them an effective tool namely "sustainable packaging".

#### **1.4 Research methods**

In order to answer the research questions, both primary and secondary data will be used. Since a variety of academic articles about the different components of this research topic (such as packaging, sustainability, willingness to pay and pro-environmental attitudes) already exists, secondary data will deliver a good basis for further primary data investigations.

The primary data will be collected through a questionnaire, containing an cross-sectional design in order to identify the effectiveness of the different communication methods.

Three groups of respondents are exposed to a product picture of a no branded washing-up liquid either showing an emotional, an informative or no sustainable packaging marketing claim. The group that is not exposed to a sustainable packaging claim serves as control group. The questionnaire will further query for agreements about different pro-environmental attitudes and the willingness to pay – as a measure for added value – for the product as well as demographics and washing-up liquid knowledge.

#### **1.5 Dissertation outline**

The next chapter presents a literature review and the development of the hypotheses that guides the study. The literature review explains and describes the relevance of the variables used in order to investigate how sustainable packaging impacts purchase intention. The third chapter presents the methodology that will be used in order to answer the research questions. The constructs that constitute the questionnaire and the procedure, on how each statistical test will

be applied to the data obtained, will be detailed in this chapter. The fourth chapter contains the results identified through the analysis of the two surveys and finally the fifth chapter states a conclusion, as well as the dissertation's limitations and indications for further research in this area of study.

## **2 LITERATURE REVIEW**

The following chapter builds up a theoretical framework for the research questions of this thesis. It sums up, contrasts and criticizes existing literature from related topics that are relevant for understanding the background of the study purpose. In the first part of the literature review, the concept of purchase intention as dependent variable is presented, followed by explaining the idea of sustainable packaging communication by carefully explaining its single elements. In the following two parts of the literature review the potential mediators are presented – the pro-environmental attitude of the consumer and the consumer's added value through environmental attitude. Lastly, a conceptual framework summarizes the interdependencies between the variables and pictures the multiple hypotheses to give an overview about the construct of the study.

### **2.1 Purchase intention**

Consumer's purchase intention is dependent on the level of satisfaction that the consumer expects to reach after buying a product (Kupiec & Revell, 2001). The purchase decision can either be an immediate reaction to the purchase intention or be a plan that leads to a behavior in the farther future. Since the vast majority of purchases is done at the point of sale, purchase behavior mostly follows directly after the purchase intention is done. Thus, in this study purchase intention is assumed to be a representative proxy for purchase behavior.

However, one should be aware of the gap between intention and behavior. Particularly in the context of social and moral decisions, intention and behavior sometimes fall apart. This is due to people's self-ideal or the ideal they think is socially accepted which often differs from people's actual self-concept (J. D. Hawkins et al., 1998). Thus, when people state their intention to purchase, they tend to reveal their ideal self-concept instead of their actual self-concept.

### **2.2 Sustainable packaging communication**

#### **2.2.1 Packaging**

Definitions for packaging in literature differ when examining them from different perspectives. From a logistical perspective, packaging is considered as having several functions, including protecting the product, simplifying the transportation and optimal storage (White, Lin, Dahl, & Ritchie, 2016). Simmons (1949) described packaging as being a container that aims at transporting a product to the final consumer. Having a closer look at the marketing perspective, visible packaging attributes are paramount. According to McDaniel and Baker (1977), packaging attributes serve as an important marketing tool, which is able to communicate

information about product attributes and catch the consumer's attention through visual cues. Silayoi and Speece (2007) identified that packaging consists of different attribute types: imagery elements like graphics, color, shape, and size, as well as informative elements that contain information about producer, country-of-origin, brand or technology. A bunch of researchers investigated the impact of different packaging attributes on the purchase behavior. However, the vast majority of articles focuses only on the imagery elements of packaging like package size (Argo & White, 2012), design (Bloch, 1995; Liu, Li, Chen, & Balachander, 2017) or imagery (Underwood, Klein, & Burke, 2001). This dissertation only focuses on communicating through informational packaging elements, particularly on information about sustainable packaging – however, the way a claim is communicated, must not be informational, but can also be emotional.

Although a lot of companies simply are not aware of the importance of packaging, an effective package may be the most efficient marketing medium as it is cost effective and often has the ability to reach much more consumers than conventional advertising (Twedi, 1968). For new products, packaging can function as a differentiator, particularly in the fierce shelf space competition between manufacturers. It has the ability, by changing the packaging design, to double a company's sales (Twedt, 1962). Due to the fact, that the consumer also interacts with the package after purchasing the product, it can strengthen the promoting effect through frequently calling packaging attributes to mind (Schwartz, 1971). At the point of sale, packaging is thus the most important advertising instrument. Particularly because 73 percent of all purchase decisions are made at the point of sale (Connolly & Davison, 1996). Packaging seems to reach an even higher level of relevance in the future due to a rise of self-service offers (Gómez, Martín-Consuegra, & Molina, 2015). Therefore, marketers and researchers have an increasing interest in the theories of packaging. For instance, several researchers propose to add an additional “P” for “Packaging” to the traditional “4Ps” marketing mix scheme (Kotler & Keller, 2009; Nickels & Jolson, 1976). However, the vast majority of packaging research focused on communication elements of the package like color, shape, message, labels and design (e.g. Silayoi & Speece, 2007; Sundar & Noseworthy, 2014).

Nevertheless, one purpose of this dissertation - how to effectively communicate through packaging (communication style) and particularly how to communicate a sensitive topic like sustainability - has not been investigated by research very detailed yet. The existing literature about these topics is reviewed in the following two chapters.

### **2.2.2 Packaging in the context of sustainability**

Sustainability has multiple facets. Thus, literature proposes different approaches for defining sustainable products. Researchers often use the term “green” particularly in combination with packaging, which mainly refers to environmental efforts. Tanner & Kast (2003) describe “green” food products as being domestically cultivated, originally grown, seasoned and fresh, not packed and make use of fair trading conditions. However, sustainability has a very broad meaning and thus can also refer to animal care, human health and people’s living and working conditions. Regarding human health, researchers often use the term “organic” for healthy products particularly researched in the food context (e.g. Van Doorn & Verhoef, 2011). Organic products also claim to have a positive impact on the environment, through a reduced usage of pesticides and artificial fertilizers in the production process, and on the human health, since they usually are less processed and thus more natural than conventional products (Cornelissen, Pandelaere, Warlop, & Dewitte, 2008). Even though the different terms that describe sustainable efforts seem to be similar, consumers often have different perceptions about the goals of the different claims. For instance, consumers perceive organic food as an intend for health, enjoyment, belief in nature and animal welfare (Baker, Thompson, Engelken, & Huntley, 2004), whereas the term “fair trade” among French consumers is perceived as having the goal to achieve a sense of satisfaction, accomplishment, equality between humans and a world of beauty (De Ferran & Grunert, 2007). Moreover, recycling from the consumer perspective has the goal to be healthy, achieve life-sustaining goals and to protect future generations (Bagozzi & Dabholkar, 1994). Particularly with specific regard to packaging, recycling and waste play major roles in a sustainable context. Thus, as consumers perceive recycling as a tool not only for protecting the environment, but also human health and wellbeing, both aspects will be investigated in this study.

During the past years, environmental concerns like global warming came into sharp focus for the society. Since environmental pollution is known to be caused by worldwide industrial manufacturing, companies accepted to take responsibility (Chen, Lai, & Wen, 2006). Coming back to the consumption perspective, energy use, household waste and discarded products have the biggest negative impact on the environment and thus make packaging come to the fore in a negative way. Although the consumers are aware of these problems and are convinced to be environmentally concerned, consumption pattern does not significantly change. Retailing trends like self-service offers and convenience food lead to an even higher production of waste (Rokka & Uusitalo, 2008). How concerned consumers are about the problem of waste shows a

recent study from *Research and Markets* (2017). According to the authors, the global sustainable packaging market grows at an exponential rate and will reach a market size of 440,3 billion US\$ by 2025. Therefore, by investing in sustainable packaging, companies cannot only support the reduction of waste, but can also accelerate the success of their products by making use of a fast-growing market.

Research about the effectiveness of sustainable packaging is somehow contradictory. Whereas for instance Roper and Parker (2006) stated that environmental packaging attributes have no impact on the purchase decision of the consumer, other researchers expressed that environmental packaging can have very well a practical importance in the decision process of the consumer. Silayoi and Speece (2007b) indicated that for one third of the population, sustainable packaging is even the most important attribute for their choice. Similarly, Rokka and Uusitalo (2008) conducted a conjoint study in order to identify the relative importance of different packaging attributes of functional drinks. The results indicated that environmental packaging is a strongly preferred product attribute among consumers. Nevertheless, the few researchers that studied in the field of environmental packaging, stated that this topic clearly lacks profound investigation so far.

### **2.2.3 Communicating sustainable packaging at the point of sale**

In this context, the role of packaging as a communicative element that influences consumers' purchase behavior has been analyzed at different moments of the purchase decision process (Clement, 2007). The consumer decision-making process generally consists of five stages: problem identification, search for information, evaluation of alternatives, decision to purchase and post-purchase behavior (Kotler & Keller, 2009). This study focuses on the purchase intention and thus only examines the stages that arise before the final decision is made by the consumer. The impact of packaging communication on purchase intention is a widely researched relationship in literature already and also sustainable intermediations seem to find more and more interest among researchers. But the way to communicate sustainability through packaging at the point of sale still leaves a lot of room for research.

Although sustainability is known to be one of the biggest consumer trends of the last years, several researchers have doubts that the impact of companies' social efforts on their success is even existing (e.g. Carrigan & Attalla, 2001; De Pelsmacker, Driesen, & Rayp, 2005). One possible explanation for this, could be that communication for environmental product attributes seems to fail. Consumers simply cannot identify environmental benefits (Pickett-Baker &

Ozaki, 2008). Marketers are afraid to communicate environmental benefits, even though literature proved that a greater marketing exposure would have a positive impact on sales of environmentally-friendly products (Pickett-Baker & Ozaki, 2008). The companies' restraint may come from the bad image of environmental marketing. Consumers perceive environmental marketing activities as image boosters and thus do not trust in respective messages (Pirsch et al., 2007). But for a reason: Polonsky, Bailey and Baker (1998) found out that the vast majority of environmental marketing elements on packages are misleading. Particularly the communication of environmental-friendly product attributes – like sustainable packaging – is perceived to be misleading in contrast to just communication environmental facts (Carlson, Grove, Laczniak, & Kangun, 1996). However, trust is not the only problem, that companies must face. Consumers believe that the performance of sustainable products is significantly worse than the performance of conventional products, what makes it even harder for marketers to convince them to buy these products (Ottman, 1998). Nevertheless, consumers state that they are willing to pay more for social product feature like environmental packaging – if they do not have to make cuts in product performance (Auger, Devinney, Louviere, & Burke, 2008). Thus, the right way of communicating sustainable benefits is a crucial factor for convincing the consumer.

Literature about the most effective way of communicating sustainable messages, sustainable packaging in particular, is very rare. In advertising literature, the distinction between emotional and informative or rational advertising appeals has frequently been investigated in different context. Emotional appeals are defined to address feelings by making use of emotion-causing tools like mood or music, whereas informative appeals address cognition by making use of objective information (MacInnis, Rao, & Weiss, 2002; Yoo & MacInnis, 2005). But also in the context of communicating sustainable messages, emotional and informative distinctions have been made in literature. Some researchers indicate that informational communication of sustainable products attributes is more effective than emotional communication due to a low information base that consumers usually have regarding such attributes and thus cannot make reasonable decisions without an add on information (Pickett-Baker & Ozaki, 2008). Similarly, Davis (1993) proposed that environmental marketing claims must be concrete, objective and factual in order to influence consumers' perceptions about the environmental-friendly product attributes. He states that the more indistinct or emotional the claim, the more it will be perceived as manipulative. However, Alwitt and Pitts (1996) found that simply communicating environmental attributes does not lead to desired results. Having in mind, that the average time

for making a purchase decision is only 12 seconds and that sustainable product attributes have a problem of recognition among consumers (as stated above), it is particularly important to attract the consumers attention at the point of sale. Since Hawkins and Mothersbaugh (2010) claimed that emotional content has a higher impact on a product's attention than informational content, emotional sustainable packaging communication might thus have a higher impact on purchase intention than informative.

Moreover, consumers always decide in the context of the situation of purchase. Therefore, one type of information in isolation has not the ability to convince in different situations (Plous, 1993). Since the consumer is exposed to a bunch of information at the point of sale – like prices, promotions and several different product information – simple information about sustainable product attributes is not likely to catch attention and to drive purchase intention as much as emotionally communicating product attributes.

Based on these findings, the first hypotheses can be conducted:

*H1a: Sustainable packaging communication has a positive impact on the consumer's purchase intention.*

*H1b: Emotional communication of sustainable packaging has a positive impact on the consumer's purchase intention.*

*H1c: Informative communication of sustainable packaging has a positive impact on the consumer's purchase intention.*

*H1d: Emotional communication of sustainable packaging has a higher impact on the consumer's purchase intention than informative communication of sustainable packaging.*

### **2.3 Consumers' pro-environmental attitude**

Attitudes are judgements of objects of thought. These objects value and process everything that is in a person's mind, from mundane to abstract elements, including things, people, groups and ideas. Attitudes can process information and have an impact on behavior (Bohner & Dickel, 2011). There are different views from different researchers on how attitudes are stored in the human brain. Some believe that they are just temporary judgements and thus can easily change whereas others are sure that they are long-term stored in the memory (Gawronski, 2007). This

study assumes that attitudes are not affected by a changing environment or new insights and therefore do not differ between the three groups though the exposure to the different stimuli.

Transferring the definition of attitude to the environmental context, one can conclude, that a pro-environmental attitude is the positive evaluation of environmental information with which people are mentally confronted. This information can be split into two categories: “inward” and “outward” pro-environmental attitudes. Inward pro-environmental attitudes refer to the consumers individual impact on the environmental abuse, whereas outward pro-environmental attitude refers to the need for social, political and legal changes in the context of environmental protection (Kilbourne & Pickett, 2008; Sarigöllü, 2009).

Pickett-Baker and Ozaki (2008) state that pro-environmental attitude sometimes does not lead to pro-environmental purchase intention, although the consumer may have a perfect pro-environmental self-impression. Hawkins, Farrington and Catalano (1998) explain this by consumers’ attempts to achieve or self-ideals that are often related to purchase behavior. Anyways, a range of researchers predicted that pro-environmental attitude is a good moderator for green purchase behavior (Dunlap & Van Liere, 1978; Tanner & Kast, 2003). Besides that, several studies indicated that environmental efforts are more effective when they match the consumer’s environmental goals arising from their attitudes (Kinnear, Taylor, & Ahmed, 1974; White, MacDonnell, & Dahl, 2011; White & Simpson, 2013). In order to effectively target the consumer, it is thus important that the effect of pro-environmental attitude is investigated when analyzing the impact of environmental efforts on consumers purchase intention. Ajzen (1985, 1991) was convinced that the impact of pro-environmental attitude has an impact on pro-environmental purchase intention. His conclusions indicate that the consumers purchase intention is higher for a product that communicates sustainable packaging in case that the consumer has a high pro-environmental attitude (Magnier & Schoormans, 2015). These findings are also supported by Pickett-Baker and Ozaki (2008), who identified that consumers with a higher pro-environmental attitude are more likely to identify and proceed messages in green marketing efforts and are thus are also more likely to push the effect of communicating sustainable packaging on purchase intention. Correspondingly, it can be expected that if the pro-environmental attitude of the consumer is low, the effect on purchase intention is higher whenever sustainable packaging is not communicated.

*H2a: Communicating sustainable packaging has a higher effect on purchase intention if the consumer’s pro-environmental attitude is high.*

*H2b: The purchase intention for the product that does not communicate sustainable packaging is higher if the consumer's pro-environmental attitude is low.*

## **2.4 Added value for the consumer**

There is a lot of discussion in literature and practice about the term “added value”. According to the situation of use, it can have several different meanings (De Chernatony, Harris, Dall, & Riley, 2000). In a brand management sense, added value was in the past often used to distinguish products from brands (Ng, Butt, Khong, & Ong, 2014). Levitt (1980) describes added value as something that is completely new to the consumer and thus can be interpreted as an over-satisfaction for the consumer. Researchers often perceive added value only as a positive value – a necessity for a brand to exploit the consumer’s purchase and consumption experience that is either present or not (De Chernatony et al., 2000). In contrast to that Grönroos (1997) found that an added value can also become negative, when comparing it with the original core value of a product. In the context of this study, the term “added value” matches the definition that De Chernatony, Harris, Dall and Riley (2000) identified. They claimed that added value for the consumer is existent, if they are willing to pay a price premium for it. This finding is also consistent to what pricing literature indicates: customers are willing to pay a price premium if the perceived benefits exceed the consumer’s perceived costs (Dodds, Monroe, & Grewal, 1991; Larie, 1979). The WTP is the maximum amount of money a customer is willing to spend for a product or service (Cameron & James, 1987). Summarized, the consumer’s added value for sustainable packaging, that is core for this study, is defined as the increase in the consumer’s willingness to pay through the shift from conventional packaging to sustainable packaging. That means that a strongly increased willingness to pay for sustainable packaging compared to conventional packaging indicates a high added value for sustainable packaging and a slight increase in willingness to pay for sustainable packaging indicates a low added value respectively.

Several studies discuss the willingness to pay for sustainable products or sustainable product attributes. The results of a study investigating the willingness to pay for organic food show that although in theory consumers prefer organic products over conventional products, they are not willing to pay a price premium for it (Sen & Bhattacharya, 2001; Verhoef, 2005). Nevertheless, most researchers came to the result that the willingness to pay for sustainable products is higher than for conventional products. Higher willingness to pay for products with sustainable attributes. Tanner and Kast (2003) even promote that cost is not a dominant determinant for the

sustainable products. This imply that consumers are also not price sensitive for products that make use of sustainable packaging.

Additionally, in literature the term “added value” is sometimes used simultaneously for the term “brand equity” since both concepts have similar characteristics (Aaker, 1991). Brand equity, in turn, proves to have a significant positive impact of the consumer’s purchase intention (Cobb-Walgren, Ruble, & Donthu, 1995). Combining these two findings, it can be assumed, that the impact of added value will also show a positive impact on purchase intent.

*H3a: Sustainable packaging communication has a positive impact on the consumer’s added value through sustainable packaging.*

*H3b: A higher consumer’s added value for sustainable packaging has a positive impact on purchase intention.*

*H3c: The relation between sustainable packaging communication and purchase intention is mediated by the added value for the consumer.*

## 2.5 Conceptual framework

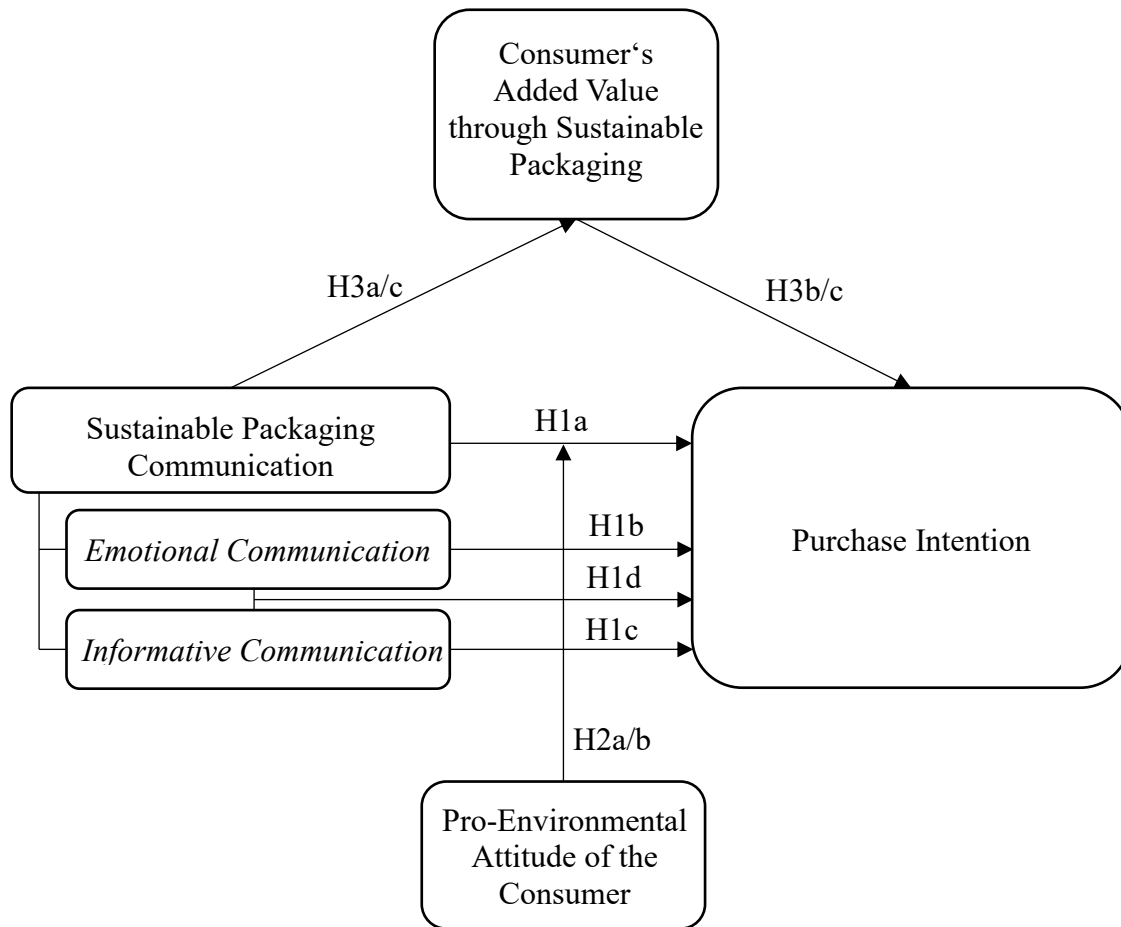


Figure 1: Conceptual Framework

### **3 METHODOLOGY**

This chapter presents and justifies the methodology used to study the research questions of this thesis and shows how the hypotheses from chapter 2 are addressed. In the first part, the research approach will be defined, followed by a summary of what kind of primary and secondary data was used for the study. The approach of primary data collection will be expressed in further detail by providing information about data collection, measurement and data analysis techniques.

#### **3.1 Research approach**

The objective of this study is to gain insights in the effectiveness of the different ways of communication sustainable packaging by reviewing literature and exploring recent studies about sustainable packaging, POS communication and purchase intention, to identify the effect of different factors that could impact this relationship. The approach aims at developing a conceptual model before empirically testing this model in order to detect statistically significant associations between the variables.

To achieve the proposed objectives and achieve conclusions that provide evidence to confirm or reject the hypotheses, exploratory and explanatory approaches, based on qualitative and quantitative methods respectively, had been used. For the sake of this work, the qualitative approach inspired by the Delphi technique was mainly used as a basis for appropriately designing the survey for the quantitative research study. In contrast to that, quantitative approaches were applied to investigate specific hypotheses of the research problem. Explanatory research – or causal research – aimed at identifying the reasoning behind the relationship between the variables and therefore can be considered as the appropriate approach for investigating the causal relationship between emotional vs. informative sustainable packaging communication and the purchase intention of the consumer (Saunders, Lewis, & Thornhill, 2008).

Existing literature and previous studies on the sustainable packaging communication formed a starting point and paved the way for the theoretical framework described before. This process ensures to detect the most important factors that are considered to have impact on the purchase behavior of the consumer. The research was formalized, and hypotheses and problem statements were conducted in order to give a clear framework of what kind of data needed to be collected.

To test the derived hypotheses and statements, concepts had to be operationalized to ensure that they were transformed into clear researchable items (Saunders et al., 2008). Thereafter, data was collected and analyzed to ensure if any associations between the independent variables and purchase intention can be identified.

### **3.2 Secondary data**

For the previous chapter – the literature review – secondary data has been used mainly in form of academic articles. The data was used to get sufficient insights and knowledge about potential variables referring to the problem statement in order to eventually generate a conceptual model and to justify the hypotheses and constructs for the study. Additionally, secondary research was used to deliver content to base the pre-study on.

### **3.3 Primary data**

In order to give justified answers to the research questions, primary data has been collected and analyzed. Two studies – one pilot study and one main study have been conducted to reasonably meet the research objectives.

#### **3.3.1 Pre-study: Delphi technique**

##### ***3.3.1.1 Data collection***

The pilot study aims at identifying one emotional and one informational claim that promote sustainable packaging. As suggested in the literature review, the main environmental concern regarding sustainable packaging is waste. Moreover, the material that is primarily in focus of public environmental concerns is plastic. Since household detergents can be considered as the category in which plastic is the major material used for packaging, household detergent had been chosen as the category of interest for this study. In a content analysis, claims that contain messages about sustainable packaging on household detergent packages had been collected by investigating packages of detergent products in supermarkets and by searching the internet for respective packages.

25 claims could have been identified and were slightly adapted in order to match the purpose of the study (i.e. making them comprehensible for participants without being presented in context). An iterative procedure, inspired by the Delphi technique (N. Dalkey, 1969; N. C. Dalkey, Bernice Brown, & Cochran, 1970), was selected to reach a consensus between the participants aimed at finding the claims that are perceived the most emotional and the most informative by the consumer. For that, participants were asked to rank all 25 claims according to their perception about the emotional vs. the informative/ rational appeal of the claims. One

after the other participant manually ranked the claims according their perception until a consensus of 5 participants in a row was reached about the 5 most emotional and the 5 most rational claims. Finally, the outcome of the study was a list of claims ordered by their degree of emotional (or rational) appeal.

Participants were students and young professionals, aged between 23 and 36, having different nationalities from across Europe (Italian, Portuguese, German, Norwegian). In order to avoid opinion leadership bias, the respondents were consulted and queried individually.

### ***3.3.1.2 Results***

The result of the study indicates that the perceptions about the degree of emotions in the claims were similar among the participants. Particularly the order of the claims that appeared at the extremes of the scale (most informative and most emotional) only slightly changed from participant to participant after the order has been done by the first participant. From participant 13 to participant 15 the order of the four most informative and the four most emotional claims did not change anymore and therefore the data collection had been closed. The claims that ended up being perceived the most emotional was “With our eco-friendly package you have nothing to lose. Our planet has everything to gain. Thank you!”, whereas the one perceived the most informative was “Our package offers a 78-82% water, energy + plastic saving vs. a usual bottle”. These two claims were used as stimuli in the main study. The claims that reached the second position were “Biodegradable package. Love our planet.” (emotional) and This bottle uses 60% less plastic. It is partly recyclable or compostable.” (informative) respectively. The complete ranking is listed in Appendix 2.

Whereas the most emotional and most informative claims were used for the main survey experiment, the second most emotional and informative claims were only used in order to control for the appropriateness of the degree of emotion in the first two claims.

## **3.3.2 Main study: Survey questionnaire**

### ***3.3.2.1 Data collection***

Between the 23<sup>rd</sup> November 2017 and the 12<sup>th</sup> December 2017 an online survey questionnaire has been distributed via social media channels and email. The survey comprised three scenarios that were randomly assigned to the respondents. Each branch included 15 questions. The target for the survey were all people who regularly buy washing-up liquid. In order to ensure that all respondents comply with this condition, a control question in the beginning of the survey excluded all participants who buy washing-up liquid less than once a year. Data was collected

through non-probability sampling techniques, convenience and snowball sampling. Non-probability sampling is a reasonable technique whenever the researcher has several resource and time constraints and the population is hard to specify (Saunders et al., 2008). Since the target population was not restricted by nationality or country of residence, the survey was launched in English to make it accessible and understandable for a large amount of people from all nationalities.

In total, 589 responses had been collected, but due to a very high termination rate and several exclusions from the above-mentioned restriction, only 401 answers were valid. The scenarios were evenly assigned to the respondents and finally led to a distribution of 137 respondents to the group exposed to the informative stimuli, 133 respondents to the group exposed to the emotional stimuli and 131 respondents to the control group.

### 3.3.2.2 Measurement

From the prior study, two claims were identified for the experimental approach in the main study – one that was considered the most emotional and one that was considered the most informative according to the results of the study.

Each of the two stimuli was randomly assigned to two different groups of respondents. A control group was exposed to the product without stimuli (Figure 2, Appendix 1). Each respondent had to investigate the product that they were shown before stating the degree of emotions they believe the two most emotional and the two most informative claims have, their pro-environmental attitude, willingness to pay and purchase intention. Some control variables like demographics and questions related to product preferences within the category had also been collected. All items are presented on a 7-point Likert scale. Some constructs had to be adapted from a 5-point Likert scale to a 7-point Likert scale.



Figure 2: Stimuli Presented to the Different Groups of Respondents

In order to identify the respondents' perception about the degree of emotion of the four claims, a construct previously used by Yoo and MacInnis (2005) had been used containing four items ("This claim appeals to my emotion.", "This claim creates a mood.", "This claim appeals to my rationality" and "This claim provides a lot of information."). This procedure ensures that the perceptions about the degree of emotions in the claims (emotional vs. informative) of the respondents matches the perceptions identified in the prior study.

In order to test the purchase intention, a lab shopping environment must have been created, meaning that the respondent must be exposed to at least an image of the product. As product category, household detergents had been chosen. Since plastic has been identified being the most environmental-unfriendly material used for packaging, but is simultaneously the material mainly used for household detergent packages, this category seemed to have an existing lack of waste reduction interventions and thus had been chosen for investigation within this study. So far, waste issues in the category of household detergents were tried to be addressed by reducing the packaging size through concentrated products. Even though this fact is frequently communicated on the detergent packages, conventional products almost never communicate the connection to the positive environmental impact that arises from that. Thus, since respondents do not expect that sustainable packaging is communicated in this category, the effect of the stimuli on the mediators and the purchase intention will not be biased by that.

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

As identified during the literature review, the concept of added value for sustainable packaging can be measured by the shift of willingness to pay comparing a product without communicating sustainable packaging with a product that communicates sustainable packaging. Researchers used different approaches of measuring the consumer's willingness to pay (Bajde et al., 2013; Gregory-Smith, Manika, & Demirel, 2017; Laroche, Bergeron, & Barbaro-Forleo, 2001; Van Doorn & Verhoef, 2011). However, the most appropriate approach for the sake of this study is the direct questioning for the willingness to pay of the product that several studies used before (Cameron & James, 1987; Van Doorn & Verhoef, 2011) propose in their research. Even though

the approach was criticized by some authors due to the fact that the participants indeed do not have to buy the product, but just state their intention to buy (Wertenbroch & Skiera, 2002), Miller, Hofstetter, Krohmer and Zhang (2011) identified that for inexpensive, frequently used and non-durable products, the approach seems to lead to satisfactory results. Since we are applying such product category by investigating household detergents, Van Doorn's and Verhoef's (2011) approach should be appropriate. Additionally, since the purpose of asking for the WTP is not the actual WTP, but the distinction between the experimental conditions (emotional vs. informative vs. no communication), a simple approach should be sufficient (Drolet & Simonson, 2004).

The pro-environmental attitude of the consumer can be measured by a model that had been identified and developed by Dunlap et al. (2000) – called New Environmental Paradigm (NEP). The model has been used and justified by several researchers (Pickett-Baker & Ozaki, 2008). It measures the agreement of respondents regarding environmental statements on a 7-point Likert scale. The 15 items (see table below) are of positive as well as of negative nature regarding environmental attitude and thus deliver a profound and valid picture of the respondent's attitude.

<p><b>Pro-environmental attitude</b></p> <p><b>New Environmental Paradigm (NEP) Scale</b></p> <p>(Dunlap &amp; Van Liere, 1978; Dunlap et al., 2000)</p>
<p>7-point Likert scale of agreement with the eight odd-numbered items and disagreement with the seven even-numbered items indicate pro-NEP responses.</p> <ol style="list-style-type: none"> <li>1) We are approaching the limit of the number of people the earth can support.</li> <li>2) Humans have the right to modify the natural environment to suit their needs.</li> <li>3) When humans interfere with nature it often produces disastrous consequences.</li> <li>4) Human ingenuity will insure that we do NOT make the earth unlivable.</li> <li>5) Humans are severely abusing the environment.</li> <li>6) The earth has plenty of natural resources if we just learn how to develop them.</li> <li>7) Plants and animals have as much right as humans to exist.</li> <li>8) The balance of nature is strong enough to cope with the impacts of modern industrial nations.</li> <li>9) Despite our special abilities humans are still subject to the laws of nature.</li> <li>10) The so-called “ecological crisis” facing humankind has been greatly exaggerated.</li> <li>11) The earth is like a spaceship with very limited room and resources.</li> <li>12) Humans were meant to rule over the rest of nature.</li> <li>13) The balance of nature is very delicate and easily upset.</li> <li>14) Humans will eventually learn enough about how nature works to be able to control it.</li> <li>15) If things continue on their present course, we will soon experience a major ecological catastrophe.</li> </ol>

Table 1: NEP scale to measure pro-environmental attitude

Construct	Scale	# of Items	Literature
Emotional vs. Informative Communication	7-point Likert scale	4	(Yoo & MacInnis, 2005)
Pro-environmental attitude	7-point Likert scale	15	(Dunlap & Van Liere, 1978; Dunlap et al., 2000)
Added Value (WTP)	Open	1	(Van Doorn & Verhoef, 2011)
Purchase Intention	7-point semantic differential scale	6	(Spears & Singh, 2004)

Table 2: Measurement Model

### 3.3.2.3 Data analysis

All quantitative data collected were analyzed using SPSS. Correlation analysis had been conducted to identify the directions and the effect size of the relationships between the independent variables and the dependent variable. In order to identify direct effects of the independent variables on purchase intention and particularly to identify differences of the impact between the emotional and informative communication on the dependent variable, independent sample t-test had been applied. To explain indirect effects between communicating sustainable packaging and the consumer's purchase intent a multiple mediation analysis was conducted using the Hayes' macro PROCESS in SPSS (Hayes, 2013). A model including a mediator as well as a moderator as shown below (Figure 3) had been tested. A mediator (M) typically represents the indirect effect of an independent variable (X) on a dependent variable (Y) and thus helps to explain the relationship between the independent and dependent variables. Additionally, a moderator (W) is expected to explain how X affects Y regarding different specifications for W (Taylor, MacKinnon, & Tein, 2008). Based on the findings from the literature review, the different parameters of the statistical model behave according to Hayes' (2013) PROCESS model 5 (Figure 3). Finally, a k-means cluster analysis was performed to identify demographic patterns for consumers with different pro-environmental attitudes in order to give appropriate managerial recommendations.

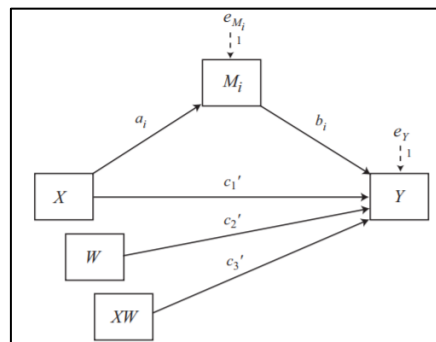


Figure 3: Hayes' PROCESS Model 5 (Mediation & Moderation Model)

## 4 RESULTS

The following chapter aims at presenting the main results from the data analysis based on the quantitative data collected. In the first place, the sample of the research will be analyzed and characterized. After describing the results obtained from the hypothesis testing, chapter 4.2 finally connects the results with the expectations from the literature review and the research questions.

### 4.1 Sample characterization

From all 416 respondents, 15 had been excluded from the survey due to a lack of experience in washing-up liquid purchasing. The characteristics of the other 401 respondents are presented in the table below, split by their assignment to one of the three groups (exposure to emotional claim, informative claim, no claim). The total number of respondents was approx. evenly distributed over groups.

		Emotional Claim	Informative Claim	No Claim	Total
Respondents	<i>Total #</i>	133	137	131	<b>401</b>
Gender	<i>Female</i>	59.4 %	55.5 %	62.6 %	<b>58.6 %</b>
	<i>Male</i>	40.6 %	44.5 %	37.4 %	<b>41.4 %</b>
Age	<i>Under 24</i>	51.1 %	42.3 %	45.8 %	<b>46.4 %</b>
	<i>25-34</i>	33.1 %	32.1 %	38.2 %	<b>34.4 %</b>
	<i>35-44</i>	8.3 %	13.9 %	6.9 %	<b>9.7 %</b>
	<i>45-54</i>	4.5 %	8.0 %	5.3 %	<b>6.0 %</b>
	<i>Over 54</i>	3.0 %	3.6 %	3.9 %	<b>3.2 %</b>
Nationality	<i>German</i>	68.9 %	65.4 %	69.2 %	<b>67.8 %</b>
	<i>Portuguese</i>	10.6 %	11.8 %	6.9 %	<b>9.8 %</b>
	<i>Italian</i>	4.5 %	4.4 %	3.8 %	<b>4.3 %</b>
	<i>French</i>	2.3 %	4.4 %	2.3 %	<b>3.0 %</b>
	<i>Spanish</i>	0.8 %	3.7 %	3.1 %	<b>2.5 %</b>
	<i>Other</i>	12.9 %	10.3 %	14.6 %	<b>12.6 %</b>
Income	<i>Low (Less than 10.000€/year)</i>	39.8 %	35.0 %	37.4 %	<b>37.4 %</b>
	<i>Medium</i>	37.7 %	40.8 %	42.0 %	<b>40.1 %</b>
	<i>High (More than 40.000€/year)</i>	22.5 %	24.2 %	20.6 %	<b>22.5 %</b>
Washing-up liquid knowledge	<i>Mean (Percentage of knowledge)</i>	43.0 %	45.3 %	42.5 %	<b>43.6 %</b>

Table 3: Characteristics of Respondents

Due to non-probability sampling, the majority of respondents were German, younger than 24 and had a low or medium income. Additionally, 60% of the respondents were female and 40%

were male. The population that was supposed to be represented by the sample was not restricted by demographics or psychographics. Thus, the sample had to be diverse in order to accurately picture the population. Since this is not the case, the sample cannot be considered representative.

Nevertheless, table 3 shows that the demographics of the respondents across the three groups exposed to the 3 different stimuli are similar. This indicates that the groups are homogeneous.

#### **4.2 Measure reliability**

Even though all items used in the survey, are approved by previous literature, a Cronbach's alpha for all constructs with more than 1 item had been conducted to check for the reliability of the items used among this sample.

Before being able to run a Cronbach's alpha test, the negative variables (disagreement) had to be recoded into positive variables (agreement) in order to make them comparable. In essence, all constructs that were supposed to be used for the hypotheses testing (pro-environmental attitude and purchase intention) turned out to have a Cronbach's alpha close to or higher than 0.9 i.e. the items are very reliable measures to predict the actual variable (Hair, Black, Babin, & Anderson, 1998).

Nevertheless, the 4-items construct that aimed at confirming the results from the pre-study and at testing if the experimental manipulation had been successful seem not to be a reliable scale for the degree of emotions expressed by the claims. This can be implied since the four questions (testing the 2 most emotional and the 2 most informative claims) – that were based on that construct – only give rise to a Cronbach's alpha of below 0.7 or even below 0.6. Thus, for all 4 questions including 4 items, the construct had to be considered as poor or at least questionable (Hair et al., 1998). In order to improve the construct reliability, two of the items had been taken from the construct, what led to an increase of the Cronbach's alpha to values all higher than 0.8. This indicates, that the 2-items construct for degrees of emotions expressed by the claims can be considered as reliable and thus had been taken for further analysis. Table 4 sums up the Cronbach's alphas for the constructs used.

Construct	Before Item Reduction		After Item Reduction	
	# of Items	Cronbach's $\alpha$	# of Items	Cronbach's $\alpha$
Degree of Emotions in Claim 1	4	<b>0.581</b>	2	<b>0.838</b>
Degree of Emotions in Claim 2	4	<b>0.284</b>	2	<b>0.851</b>
Degree of Emotions in Claim 3	4	<b>0.369</b>	2	<b>0.873</b>
Degree of Emotions in Claim 4	4	<b>0.625</b>	2	<b>0.916</b>
Pro-environmental attitude	15	<b>0.894</b>	-	-
Purchase Intention: Emotional Claim	6	<b>0.914</b>	-	-
Purchase Intention: Informative Claim	6	<b>0.907</b>	-	-
Purchase Intention: No Claim	6	<b>0.916</b>	-	-

Table 4: Cronbach's alphas for constructs used

### 4.3 Manipulation check

A paired-sample t-test was performed to check if the manipulation of the stimuli was successful. Since the whole sample (all three groups) was asked to evaluate the degree of emotions expressed in the two stimuli, a paired-sample t-test was the appropriate test to identify if the mean degree of emotions of the most emotional and the most informative claim are significantly different. The results indicate that the means of the two variables are indeed significantly different from each other ( $t(393)=-13.713$ ,  $p<.001$ ). This means, that the claim that from was expected to be the most emotional one from the pre-study, can be considered as emotional (showing a mean of 5.1 on a 7-point Likert scale, assuming that 7 expresses the highest and 1 the least degree of emotions) and likewise that the claim that was expected to be the least emotional one from the pre-study, can be considered as informative (showing a mean of 3.3). Thus, it can be concluded that the manipulation was successful.

### 4.4 Results from the hypotheses testing

#### 4.4.1 The impact of manipulating sustainable packaging communication on purchase intention

A correlation analysis between the two variables "SPC" (dummy variable with 1 = "Sustainable packaging communicated" and 0 = "Sustainable packaging not communicated") and "Purchase Intention" had been conducted to identify the relation and the direction of the relation between the two i.e. to answer H1a. Since the assumptions for the Pearson Correlation did not hold (variables are not numerical), a Kendall's Tau Correlation was performed which – in contrast to the Pearson Correlation – allows for ordinal variables. The results from the test showed a significant positive relationship between communication sustainable packaging and the purchase intention of the consumer ( $\tau=.124$ ,  $p<.05$ ). Although the relationship is significant,

the correlation seems to be almost not existent, having a correlation coefficient below 0.2. Therefore, H1a cannot be fully supported.

Nevertheless, comparing the mean purchase intention of the group exposed to the claims with the control group, it turns out that the means are significantly different ( $t(399)=3.157, p<.05$ ). The mean purchase intention of the group exposed to SPC has a mean purchase intention of around 5 (i.e. they have a slight intent to purchase the product), whereas the mean purchase intention of the control group is approx. 4 (i.e. indifferent about their intention to purchase the product).

In order to test hypotheses H1b and H1c, two further correlation analyses had been performed. The hypotheses proposed that communicating in an emotional – and in an informative way respectively – has a positive impact on the consumer's purchase intention. Again, the Kendall's Tau Correlation test had been applied for the same reason as before. The results show that communicating sustainable packaging in an emotional way ( $\tau=.12, p<.05$ ) as well as in an informative way ( $\tau=.146, p<.05$ ) have a significant positive impact on the consumer's purchase intention. However, in either way the correlation coefficient is lower than 0.2 and therefore indicates again that there is almost no correlation. Thus, H1b and H1c cannot be fully supported by the data.

H1d implied that communicating in an emotional way has a higher impact on purchase intention than communicating in an informative way. The independent t-test that was conducted to test if the means of the two groups exposed to the two different stimuli are significantly different from each other shows – against expectations – that the mean purchase intention of the group exposed to the informative claim (Mean=4.633) is slightly higher than the mean of the group exposed to the emotional claim (Mean=4.499, Appendix 4). However, the means of the two groups are not significantly different from each other ( $p=.572$ ) and therefore H1d cannot be supported by the data.

#### **4.4.2 The influence of the added value through sustainable packaging for the consumer**

A Kendall's Tau correlation had been performed in order to test if communicating sustainable packaging has a positive impact on the added value through sustainable packaging for the consumer (H3a). Although there is significant positive correlation between SPC and AV, the effect is very low ( $\tau=0.172, p<.001$ ), indicated by a correlation coefficient below 0.2. Thus, H3a is not supported. Nevertheless, the average value for sustainable packaging, when it is

communicated is 2.42€ and thus higher than the average value of 2.00€ when SP is not communicated (Appendix 6).

Moreover, the added value for the consumer was expected to have a positive impact on the consumer's purchase intention (H3b). The Pearson correlation test, that was performed, indeed implies a significant positive correlation ( $r=0.361$ ,  $p<.001$ ). Also, a correlation coefficient of 0.361 indicates that added value has a moderate impact on purchase intention. This indicates that H3b is supported by the data.

#### 4.4.3 Mediation and moderation model (PROCESS model 5)

H2a, H2b and H3c propose that added value mediates the relationship between sustainable packaging and at the same time that pro-environmental attitude moderates the relationship, and thus follow the model 5 of the PROCESS analysis tool developed by Hayes (2013). The result matrix can be found in Appendix 3. The whole sample was taken into consideration for the analysis. The sustainable packaging variable used, was conducted to distinguish between the group that was exposed to the stimuli and the control group as a dummy variable.

The results from this regression based analysis show that all paths from the model are significant (table 5, figure 4) and thus confirm all direct effects to be significant. This implies that communicating sustainable packaging significantly predicates added value and that added value, in turn, is a significant predictor for purchase intention. Nevertheless, for the mediation to be significant, the indirect effect has to be significantly different from zero (bootstrapping values do not cross zero). Since this is the case, added value can be considered as mediator for the relationship between SPC and purchase intention i.e. the indirect effect ( $a_1b_1 = 0.12$ ) can be considered statistically significant. However, since the direct effect of communicating sustainable packaging on purchase intention ( $c_1'=-3.94$ ,  $p<.05$ ) is also significant, added value is only supported to be a partial mediator.

Path	Coefficient	df	t-value	p-value
$a_1$	0.44	389	3.4587	.0006
$b_1$	0.27	386	5.2766	.0000
$c_1'$	3.94	386	-5.6455	.0000
$c_2'$	0.32	386	-2.6434	.0085
$c_3'$	0.86	386	5.9842	.0000

Table 5: Statistics Model 5

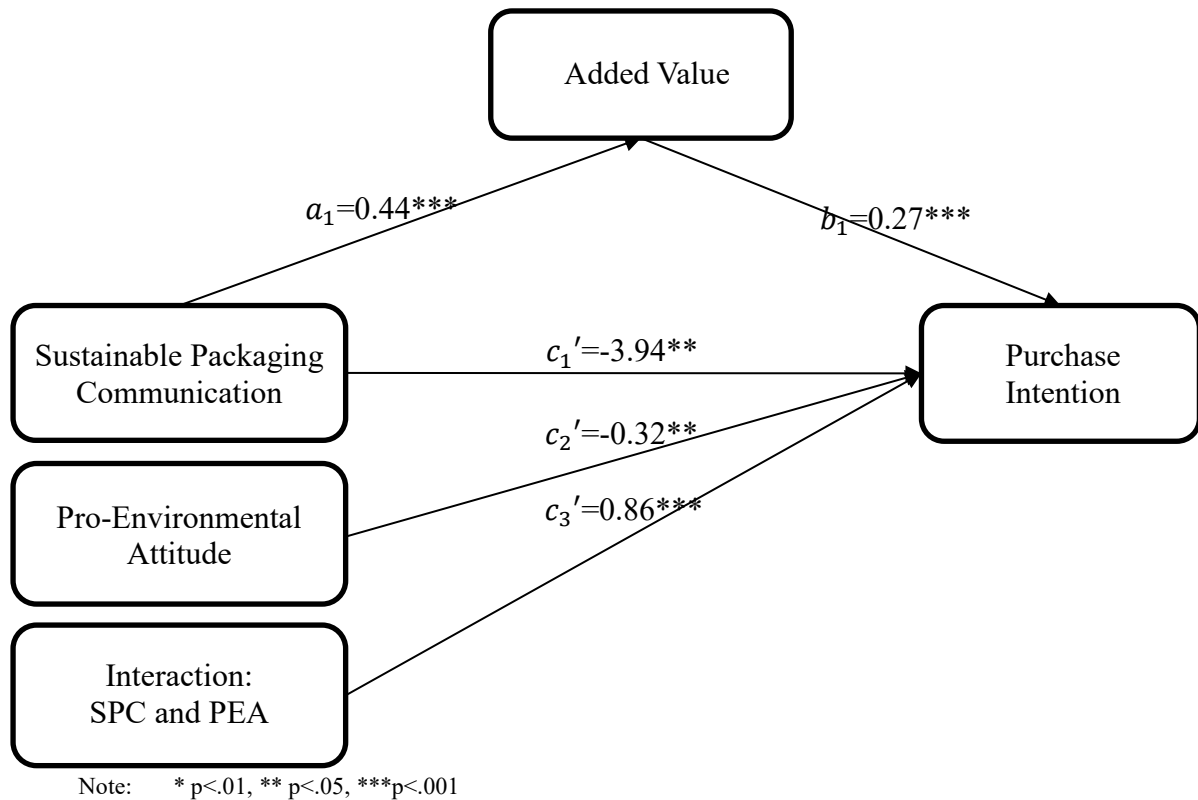


Figure 4: Statistical Model with Regression Coefficients

The interaction between SPC and pro-environmental attitude ( $c_3' = 0.86$ ,  $p < .001$ ) as a parameter of the multiple regression model provided by the PROCESS output gives evidence for a significant moderation. The model coefficients indicate that the interaction between SPC and pro-environmental attitude significantly impacts purchase intention. To get a better understanding of the effect on purchase intention, PROCESS provides conditional effects for different levels of the pro-environmental attitude (mean PEA and  $\pm$  one standard deviation from the mean). For the mean pro-environmental attitude, the effect is positive, but rather weak (PEA=4.99,  $c_1' + c_3 * \text{PEA} = 0.36$ ,  $p < .05$ ). Compared to that, a higher pro-environmental attitude (PEA=5.93,  $c_1' + c_3 * \text{PEA} = 1.16$ ,  $p < .001$ ) leads to a higher positive effect, whereas a lower pro-environmental attitude (PEA=4.06,  $c_1' + c_3 * \text{PEA} = -0.44$ ,  $p < .05$ ) leads to a higher negative effect. Figure 5 below demonstrates the interaction effect on purchase intention. It shows that when sustainable packaging is communicated, the purchase intention is higher if the pro-environmental attitude is high and lower if the purchase intention is low. On the contrary, when sustainable packaging is not communicated, the purchase intention is higher if the pro-environmental attitude is low and lower if the pro-environmental attitude is high.

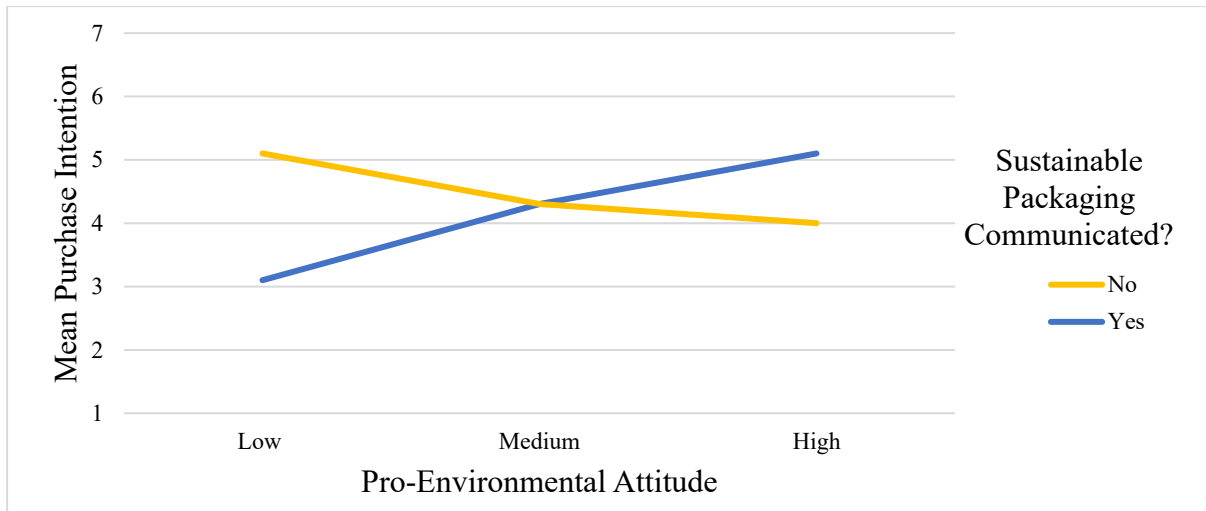


Figure 5: Interaction Effect SPC\*PEA on PI

Consequently, H2a and H2b are supported by the data, what implies that the consumer's PEA can be considered as being a moderator for the relationship between SPC and PI.

#### 4.4.4 Hypotheses testing overview

Hypothesis	Description	Result
H1a	Sustainable packaging communication has a positive impact on the consumer's purchase intention.	Significant, but not validated
H1b	Emotional communication of sustainable packaging has a positive impact on the consumer's purchase intention.	Significant, but not validated
H1c	Informative communication of sustainable packaging has a positive impact on the consumer's purchase intention.	Significant, but not validated
H1d	Emotional communication of sustainable packaging has a higher impact on the consumer's purchase intention than informative communication of sustainable packaging.	Not significant
H2a	Communicating sustainable packaging has a higher effect on purchase intention if the consumer's pro-environmental attitude is high.	Significant and validated
H2b	The purchase intention for the product that does not communicate sustainable packaging is higher if the consumer's pro-environmental attitude is low.	Significant and validated
H3a	Sustainable packaging communication has a positive impact on the consumer's added value for sustainable packaging.	Significant, but not validated
H3b	A higher consumer's added value for sustainable packaging has a positive impact on purchase intention.	Significant and validated
H3c	The relation between sustainable packaging communication and purchase intention is mediated by the added value for the consumer.	Significant and validated

Table 6: Results from Hypotheses Testing

#### **4.5 Further results: Cluster analysis**

To give applicable managerial recommendations, investigations about consumers with different levels of their pro-environmental attitude and different added values for sustainable packaging have been made. In order to do so, a cluster analysis was performed that included all demographic variables, the washing-up liquid knowledge variable and the pro-environmental attitude and added value variables. Since the added value for sustainable packaging in this case, is a relative measure to the control group average, only the data from the two groups exposed to the stimuli were included in the analysis.

The five-cluster solution identified two groups whose members have a very low added value for sustainable packaging, two with an added value that can be considered as medium high and one with an added value that can be considered as high (check Appendix 7 for cluster values).

The results indicate that the two groups with the highest pro-environmental attitude surprisingly do not have the highest added value for sustainable packaging. Though, they are the two largest groups in terms of members and show a medium high added value for sustainable packaging. Additionally, they have a moderate washing-up liquid knowledge, are mainly female and have a relatively high yearly gross income. The two groups only slightly differ in terms of income and their knowledge about washing-up liquid and therefore can be summarized as “The Concerned Mass”.

The group whose members perceive sustainable packaging as a high added value for washing-up liquid, surprisingly only have a relatively low pro-environmental attitude compared to the others. This cluster represents only a small group of women, who have a very high washing-up liquid knowledge, but a rather low income. It can be described as “The Natural Ecos”, since the members are willing to pay much more for sustainable packaging even though their income and their environmental concern are rather low.

The last two groups have a moderately high pro-environmental attitude but consider sustainable packaging as delivering only a slight added value for sustainable packaging. For both groups, a possible explanation for this contradiction could be their low knowledge about washing-up liquid, which possibly led to a random estimation of their value for washing-up liquid. Since the two groups mainly differ in their gender, they can be summarized as “The Ignorant Concerned”.

## **5 CONCLUSIONS AND LIMITATIONS**

As it has been noted, this study aimed at identifying whether or not communicating sustainable packaging has an impact on the consumer's purchase intention and how far the relationship can be explained by the consumers' added value through sustainable packaging and their pro-environmental attitude. By the same token, the impact of communicating in an emotional vs. an informative way was a purpose of this study. The following chapter summarizes the main findings of the study and draws conclusions. Finally, managerial and academic implications will be identified, followed by a record of limitations and proposals for further research.

### **5.1 Main findings & conclusions**

A cross-sectional survey questionnaire had been conducted in order to do a quantitative data analysis on the study's underlying research problem. Participants were exposed to one of three scenarios in which they had to evaluate a washing-up liquid pack that either communicated sustainable packaging in an emotional way or in an informative way or did not communicate sustainable packaging at all (control group). The analysis delivers relevant findings not only for theoretical but also for managerial purposes. In the following, the main findings to the research questions are presented.

#### **5.1.1 Communicating sustainable packaging**

The main purpose of this dissertation was to identify how sustainable packaging should be communicated in order to increase the consumer's purchase intention and eventually increase sales of products with sustainable product attributes and to find factors that could impact this effect. This is particularly important because marketers are afraid to communicate social messages due to the bad image of green marketing and thus limit the potential for more environmental-friendly consumption.

Therefore, the first research question aimed at identifying if communicating sustainable packaging has a positive or a negative impact on purchase intention and in what way it should be communicated. The results indicate that communicating sustainable packaging in fact has no direct effect (only very low) on purchase intention – although the effect is significant. However, in average the purchase intention is significantly higher for those cases in which sustainable packaging has been communicated than for those in which sustainable packaging has not been communicated. This already indicates that the relationship between communicating SP and purchase intention is impacted by other variables that could explain an indirect effect or could represent a moderator role as research questions two and three propose.

In order to identify whether communicating in an emotional or in an informative way would be more effective, an independent t-test had been performed. From the results, it can be concluded that there is no difference in the consumer's purchase intention whether sustainable packaging is communicated in an emotional way compared to communicating in an informative way (Appendix 5). Moreover, communicating in either way has no direct effect on purchase intention since the correlations are barely existent. Although, the effect is low, in average the purchase intention for communicating sustainable packaging in an informative is surprisingly slightly higher than communicating in an emotional way.

Summarizing the results for the first research question, it can be concluded that communicating sustainable packaging has no direct impact on the purchase intention of the consumer and that the way it is communicated does not influence the consumer in this intention

### **5.1.2 The impact of the consumer's pro-environmental attitude**

The second RQ focused on the impact of the pro-environmental attitude of the consumer on the relationship between communicating sustainable packaging and purchase intention. Literature (Chapter 2.3 Consumers' pro-environmental attitude) has shown that pro-environmental attitude could be a potential moderator for the above-mentioned relationship. In fact, the consumer's pro-environmental attitude turned out to overtake a moderation role since the interaction between sustainable packaging communication and pro-environmental attitude had a significant effect on the purchase intention. The regression model proposes that whenever sustainable packaging was communicated, a higher pro-environmental attitude leads to a higher effect on purchase intention and a lower pro-environmental attitude leads to a lower effect on purchase intention respectively. In contrast to that, whenever SP is not communicated, a lower pro-environmental attitude causes a higher effect on the consumer's purchase intention and a higher pro-environmental attitude causes a lower effect.

### **5.1.3 The impact of the consumer's added value for sustainable packaging**

Since we know from the results from the first research question that communicating sustainable packaging seems not to have a direct effect on purchase intention, it was interesting to investigate and reasonable to believe that the relation is explained by a mediator. Also, literature proposes that the added value that sustainable packaging creates may be a mediator and thus should be able to explain the relationship. Investigating the direct effects from communicating SP on the added value and from added value on purchase intention, it turns out that both effects are significant but only very low. The correlation results show that communicating sustainable

packaging has a positive impact on the added value through sustainable packaging. The effect is rather low, since other variables are likely to impact a consumer's added value for sustainable packaging than simply the fact that it is communicated, and the consumer is aware of it. Possible variables could be ecological knowledge, health consciousness, perceptions about the brand, category or product that were not tested in this study (e.g. Jerzyk, 2016; Ng, Butt, Khong, & Ong, 2014). The pro-environmental attitude though, was tested to have no significant impact on the AV, even though this could be a reasonable assumption. Moreover, a higher added value for sustainable packaging moderately increases the likelihood that the consumer buys the product.

PROCESS was used to test whether or not the consumer's added value is a mediator and indeed, the consumer's added value through sustainable packaging can be considered a significant mediator. This implies that the consumer's added value through sustainable packaging explains the relationship between communicating sustainable packaging and the likelihood that the consumer buys the product. In detail, communicating sustainable packaging leads to a higher purchase intention because the consumer's added value for sustainable packaging is higher and if SP is not communicated the purchase intention is lower because the consumer's added value for SP is lower

However, added value is only a partial mediator, since the multiple regression model shows that PI is not only explained by the indirect effect through the added value but also by the direct effect of sustainable packaging communication

## **5.2 Managerial implications**

Marketers working with products from detergent categories could take the results of this study into consideration when taking decisions. If they want to make use of their social responsibility efforts i.e. using their efforts as a marketing instrument by providing packaging that is environmental-friendly, it is important for them to consider other variables that may impact the consumers purchase intention. They would have to regard that just communicating sustainable packaging will not impact the consumer's purchase intention. They have to understand that if they want to improve the consumer's the purchase intention by communicating sustainable packaging, their target group must be those people who perceive sustainable packaging as an added value to the regular product attributes.

Additionally, since consumers with a high pro-environmental attitude have a higher purchase intention when sustainable packaging is communicated, but consumers with a low pro-environmental attitude have a higher purchase intention when sustainable packaging is not communicated, marketers have to take care to what group their customers belong. If the product is new to the marketers should decide if the consumers with a higher or a lower pro-environmental attitude brings the highest profit. Since the WTP is higher for the product providing sustainable packaging, there is potential for higher margins in this segment.

In contrast to that, the segment with a higher pro-environmental attitude might be smaller than the one with a lower pro-environmental attitude and thus could limit sales. If the product is already on the market it is crucial to find out whether the products' customers have a high or a low pro-environmental attitude. Only if your customers have a high pro-environmental attitude, sustainable packaging should be communicated. The results from the cluster analysis indicate, that if your target customers have a medium washing-up liquid knowledge, are female with a high income they are likely to have a high pro-environmental attitude and thus would positively impact your outcome.

### **5.3 Academic implications**

Mainly research about sustainable product attributes and features was done in categories in which consumers are already familiar with the problem of waste and recycling namely milk packs and plastic bottles for beverages. Not yet, sustainable product attributes had been tested in the detergent category, even though the waste of plastic in the category is immense. This study fills this research gap.

Also, studying purchase intention as a proxy for purchase decision in the context of sustainable product features has been rare. Previous research rather focused on willingness to pay, values or relative importance of and for sustainable product attributes (Auger, Burke, Devinney, & Louviere, 2003; Auger et al., 2008; Sriram & Forman, 1993; Van Doorn & Verhoef, 2011) or studied the impact of product attributes others than social attributes on purchase behavior.

### **5.3 Limitations and further research**

As this study is part of a master dissertation, it is restricted by a limited timeframe and money. Therefore, it shows some limitations that the reader should be aware of and that may deliver recommendations for further research.

Firstly, the sample that was used for data collection cannot be considered as representative, since non-probability sampling led to a random distribution of demographics that do not represent the population. Additionally, the sample size is relatively low. The exploratory nature of the study divided the total number of 401 responses into three sub-groups so that for each sub-group only 131, 133 and 137 respondents were found. For further research, the study could therefore be repeated with a more representative sample and a larger number of respondents.

Secondly, the application area of the study is limited since only one category had been investigated. Thus, no conclusions can be made about if communicating sustainable packaging has a general impact on purchase behavior or if the category has an impact on the output. Van Doorn & Verhoef (2011) previously identified that categories in fact impact the relationship between communicating organic claims and the consumer's willingness to pay. Therefore, it is likely that purchase intention is also impacted by the category and thus should be included in further studies.

Thirdly, this study used purchase intention as a proxy for the consumer's purchase decision. Although Fishbein and Ajzen (1975) propose that purchase intention is a good estimator for purchase intention (compared to attitude), a range of researchers believe that particularly in the context of sustainability, the gap between the consumer's purchase intention and behavior is relatively large (Kollmuss & Agyeman, 2002; Ohtomo & Hirose, 2007). Therefore, it is not recommended to draw direct conclusions about purchase behavior from the findings of this study. In order to overcome this limitation, using field data would be an interesting option to study the consumer's behavior regarding sustainable packaging communication.

In general, sustainable packaging communication – as a field of study – still leaves a lot of space for further research. So far, it has not been investigated how other social product attributes like healthiness, country of origin etc. interact with sustainable packaging. It would also be interesting to identify how the brand and the brand image impacts the relationship between communicating sustainable packaging and the consumer's purchase decision.

Moreover, this study identified that whether sustainable packaging is communicated in an emotional or an informative way does not significantly impact the purchase intention of the consumer. Possibly, the communication "tone" does not have an impact, but the occasion and location when and where the consumer is exposed to the message does. This assumption would be interesting to prove and thus delivers potential for future research.

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## APPENDICES

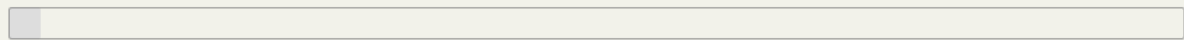
### *Appendix 1: Survey questionnaire*

#### **Block 1: Control questions**

##### Q38: Knowledge about washing-up liquid

On a scale from 0 to 100, please state how much you know about washing-up liquid. Imagine that 0 means that you don't know anything about washing-up liquid and 100 means that you know everything about it.

0      10      20      30      40      50      60      70      80      90      100



##### Q43: Washing-up liquid buying behavior

Within one year, how often do you usually **buy** washing-up liquid for your household?

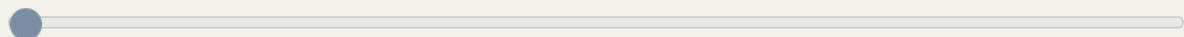
Never	Once a month	Twice a month	Three times a month	Four times a month
0	12	24	36	48



##### Q37: Washing-up liquid usage behavior

Within one month, how often do you usually **use** washing-up liquid?

Never	8	Every second day	23	Daily
0		16		31



**Block 2: Purchase Intention/ Added Value (per stimuli)**



**Emotional claim**



**Informative claim**



**No claim (CG)**

**Q29/ Q31/ Q35: Purchase Intention**

Imagine you are standing in front of the household detergent shelf of your supermarket and you need to choose a washing-up liquid. You find this product shown above and have a deep look at it.

Please indicate your level of agreement to the following statements referring to the product shown above.

	I strongly disagree	I disagree	I somewhat disagree	I neither agree nor disagree	I somewhat agree	I agree	I strongly agree
"I have a very high purchase interest."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"I definitely intend to buy it."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"I definitely do NOT intend to buy it."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

"I would definitely buy it."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"I have a very low purchase interest."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q24/ Q22/ Q27: Added Value

What would be your **maximum willingness to pay** for the product shown above?

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

In €

**Block 3: Pro-environmental attitude**

Q3: Pro-environmental attitude

Please indicate how far you agree with the following statements.

	I strongly disagree	I disagree	I somewhat disagree	I neither agree nor disagree	I somewhat agree	I agree	I strongly agree
"We are approaching the limit of the number of people the earth can support."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"Humans have the right to modify the natural environment to suit their needs."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"Humans are severely abusing the environment."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"Human ingenuity will insure that we do NOT make the earth unlivable."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
"When humans interfere with nature it often produces disastrous consequences."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

"Plants and animals have as much right as humans to exist."

"The so-called "ecological crisis" facing humankind has been greatly exaggerated."

"The balance of nature is strong enough to cope with the impacts of modern industrial nations."

"The earth has plenty of natural resources if we just learn how to develop them."

"Despite our special abilities humans are still subject to the laws of nature."

"Humans will eventually learn enough about how nature works to be able to control it."

"The balance of nature is very delicate and easily upset."

"The earth is like a spaceship with very limited room and resources."

"Humans were meant to rule over the rest of nature."

"If things continue on their present course, we will soon experience a major ecological catastrophe."

## **Block 4: Degree of Emotions in Claims**

### Q1: Most emotional claim according to pre-study

Please indicate how far you agree with the following statements regarding the following claim: **"With our eco-friendly package you have nothing to loose. Our world has everything to gain. Thank you!"**.

I strongly disagree 1	I disagree 2	I somewhat disagree 3	I neither agree nor disagree 4	I somewhat agree 5	I agree 6	I strongly agree 7
--------------------------------	-----------------	-----------------------------	--------------------------------------	--------------------------	--------------	-----------------------------

"This claim appeals to my emotion."

"This claim appeals to my rationality."

"This claim provides a lot of information."

"This claim creates a mood."

### Q17: Second most emotional claim according to pre-study

Please indicate how far you agree with the following statements regarding the following claim: **"Biodegradable package. Love our planet!"**.

I strongly disagree 1	I disagree 2	I somewhat disagree 3	I neither agree nor disagree 4	I somewhat agree 5	I agree 6	I strongly agree 7
--------------------------------	-----------------	-----------------------------	--------------------------------------	--------------------------	--------------	-----------------------------

"This claim provides a lot of information."

"This claim creates a mood."

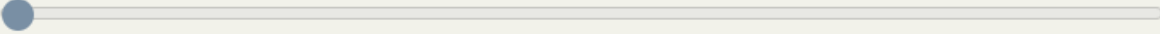
"This claim appeals to my rationality."

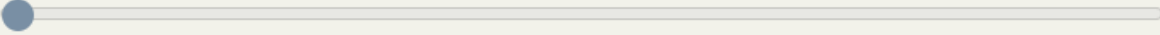
"This claim appeals to my emotion."

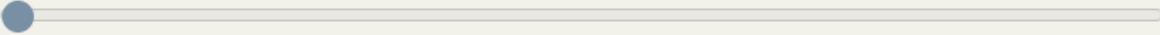
Q18: Second most informative claim according to pre-study


Please indicate how far you agree with the following statements regarding the following claim: **"This bottle uses 60% less plastic. It is partly recycable or compostable."**

I strongly disagree 1	I disagree 2	I somewhat disagree 3	I neither agree nor disagree 4	I somewhat agree 5	I agree 6	I strongly agree 7
--------------------------	-----------------	--------------------------	-----------------------------------	-----------------------	--------------	-----------------------

"This claim provides a lot of information."  


"This claim appeals to my emotion."  


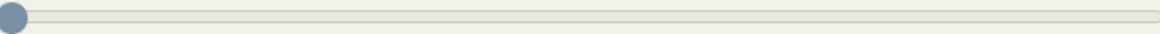
"This claim creates a mood."  


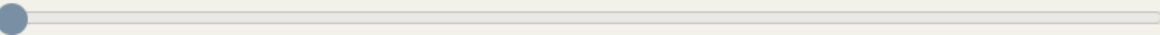
"This claim appeals to my rationality."  



Q19: Most informative claim according to pre-study


Please indicate how far you agree with the following statements regarding the following claim: **"Our package offers a 78-82% water, energy + plastic savings vs. a usual bottle"**.

I strongly disagree 1	I disagree 2	I somewhat disagree 3	I neither agree nor disagree 4	I somewhat agree 5	I agree 6	I strongly agree 7
--------------------------	-----------------	--------------------------	-----------------------------------	-----------------------	--------------	-----------------------

"This claim provides a lot of information."  


"This claim appeals to my rationality."  


"This claim appeals to my emotion."  


"This claim creates a mood."  


**Block 5: Demographics**

**Q13: Age**

What is your age?

Under 12 years

13 - 17 years

18 - 24 years

25 - 34 years

35 - 44 years

45 - 54 years

55 - 64 years

65 - 74 years

75 years or older

**Q15: Gender**

What is your sex?

Male

Female

#### Q44: Nationality

What is your nationality?

Portuguese

German

Italian

Spanish

French

Other:

#### Q14: Educational Level

What is the highest education level you have received?

Less than high school degree

High school graduate or similar

Bachelor Degree

Master Degree/ MBA or similar

Doctoral Degree/ PhD

Q17: Yearly Income

What is your approx. yearly gross income?

Less than €10,000

€10,000 to €19,999

€20,000 to €29,999

€30,000 to €39,999

€40,000 to €49,999

€50,000 to €59,999

€60,000 to €69,999

€70,000 to €79,999

€80,000 to €89,999

€90,000 to €99,999

€100,000 to €149,999

€150,000 or more

**Appendix 2: Final order of claims according to their degree of emotion**

<b>Order</b>	<b>Original claim</b>	<b>Adapted claim*</b>
1 (Most emotional)	"You have nothing to lose, our world has everything to gain. Thank you!"	"With our eco-friendly package you have nothing to lose, our world has everything to gain. Thank you!"
2	"Love our planet."	"Biodegradable package. Love our planet."
3	"Packaging the world can live with"	"Packaging the world can live with"
4	"CLEAN THE OCEAN enables the customer to behave sustainable by using a biodegradable household cleaner. And it helps them to display their green attitude and to become evangelists by using the empty bottles as vases."	"Behave sustainable by using a biodegradable household cleaner. How your green attitude and become an evangelist by using the empty bottles as vases."
5	"Reusing is better than recycling."	"Reusing is better than recycling."
6	"With the help of local beach clean-up groups and volunteers, we are making the impossible possible: we've taken plastic from the beach and turned it into bottles."	"With the help of local beach clean-up groups and volunteers, we are making the impossible possible: we've taken plastic from the beach and turned it into bottles."
7	"Refills make good sense"	"Refills make good sense"
8	"We are committed to the use of ingredients that are naturally derived and the best and safest for all of us and our future."	"We are committed to the use of ingredients that are naturally derived and the best and safest for all of us and our future."
9	"Less packaging waste. Less production and transportation impact on the environment. Recyclable."	"Less packaging waste. Less production and transportation impact on the environment. Recyclable."
10	"But its packaging and its sales idea make it unique: It's the only household cleaner that also cleans beaches and oceans. To reduce plastic waste it comes in porcelain bottles that may be used as vases when empty. And a large amount of the revenue goes to the CLEAN OCEAN PROJECT, which removes plastic waste from coastlines and the sea."	"The only household cleaner that also cleans beaches and oceans. To reduce plastic waste we deliver porcelain bottles that may be used as vases when empty."
11	"If ever Walmart customer bought just one compact laundry"	"If every Walmart customer bought just one compact laundry"

	detergent we'd reduce packaging waste by over 50 million pounds."	detergent we'd reduce packaging waste by over 50 million pounds."
12	"Our refill pouches save on plastic, water and energy"	"Our refill pouches save on plastic, water and energy"
13	"Bottle made with Ocean Plastic"	"Bottle made with Ocean Plastic"
14	"Our containers divert cardboard and plastic from our landfills and oceans."	"Our containers divert cardboard and plastic from our landfills and oceans."
15	"Now you can save the planet while saving money"	"Now you can save the planet while saving money by using our 2x concentrated detergent."
16	"Concentrated detergent. Small bottle, big clean!"	"Concentrated detergent. Small bottle, big clean!"
17	"Natural laundry detergent packs"	"Natural laundry detergent packs"
18	"Reduced water content = Concentrated cleaning goodness"	"Reduced water content = Concentrated cleaning goodness"
19	"This product is made at a zero manufacturing waste to landfill site"	"This product is made at a zero manufacturing waste to landfill site"
20	"2x concentrated - Use less!"	"2x concentrated - Use less!"
21	"Bottle made of more than 95% recycled plastic"	"Bottle made of more than 95% recycled plastic"
22	"100% biodegradable"	" Our packages are 100% biodegradable"
23	"This package reduces waste by 78% versus standard detergents in rigit plastic containers."	"This package reduces waste by 78% versus standard detergents in rigit plastic containers."
24	"This laundry bottle uses 60% less plastic. The outer shell is recycable or compostable."	"This laundry bottle uses 60% less plastic. It is partly recycable or compostable."
25 (Most rational)	"Our refill pouches offer a 78-82% water, energy + plastic savings vs. a bottle"	"Our package offers a 78-82% water, energy + plastic savings vs. a bottle"

\* Claims had been adapted in order to be understandable for the participants without context and to not be biased by the brand

### ***Appendix 3:Result Matrix PROCESS Model 5***

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Release 2.16.3 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D. [www.afhayes.com](http://www.afhayes.com)

\*\*\*\*\*

Model = 5  
 Y = PI  
 X = SPC  
 M = WTP  
 W = NEP

Sample size  
391

\*\*\*\*\*  
Outcome: WTP

Model Summary

R	R-sq	MSE	F	df1	df2	p
,1727	,0298	1,4135	11,9628	1,0000	389,0000	,0006

Model

	coeff	se	t	p	LLCI	ULCI
constant	1,8638	,1055	17,6666	,0000	1,6564	2,0712
SPC	,4441	,1284	3,4587	,0006	,1916	,6965

\*\*\*\*\*  
Outcome: PI

Model Summary

R	R-sq	MSE	F	df1	df2	p
,4743	,2249	1,4036	28,0074	4,0000	386,0000	,0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	5,2320	,6124	8,5429	,0000	4,0279	6,4362
WTP	,2699	,0511	5,2766	,0000	,1693	,3705
SPC	-3,9352	,7200	-5,4655	,0000	-5,3508	-2,5196
NEP	-,3197	,1209	-2,6434	,0085	-,5574	-,0819
int_1	,8605	,1438	5,9842	,0000	,5778	1,1432

Product terms key:

int\_1    SPC            X        NEP

\*\*\*\*\* DIRECT AND INDIRECT EFFECTS \*\*\*\*\*

Conditional direct effect(s) of X on Y at values of the moderator(s):

NEP	Effect	SE	t	p	LLCI	ULCI
4,0624	-,4395	,1797	-2,4460	,0149	-,7928	-,0862
4,9940	,3622	,1304	2,7771	,0058	,1058	,6186
5,9257	1,1639	,1940	6,0001	,0000	,7825	1,5453

Indirect effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
WTP	,1198	,0436	,0499	,2204

\*\*\*\*\* ANALYSIS NOTES AND WARNINGS \*\*\*\*\*

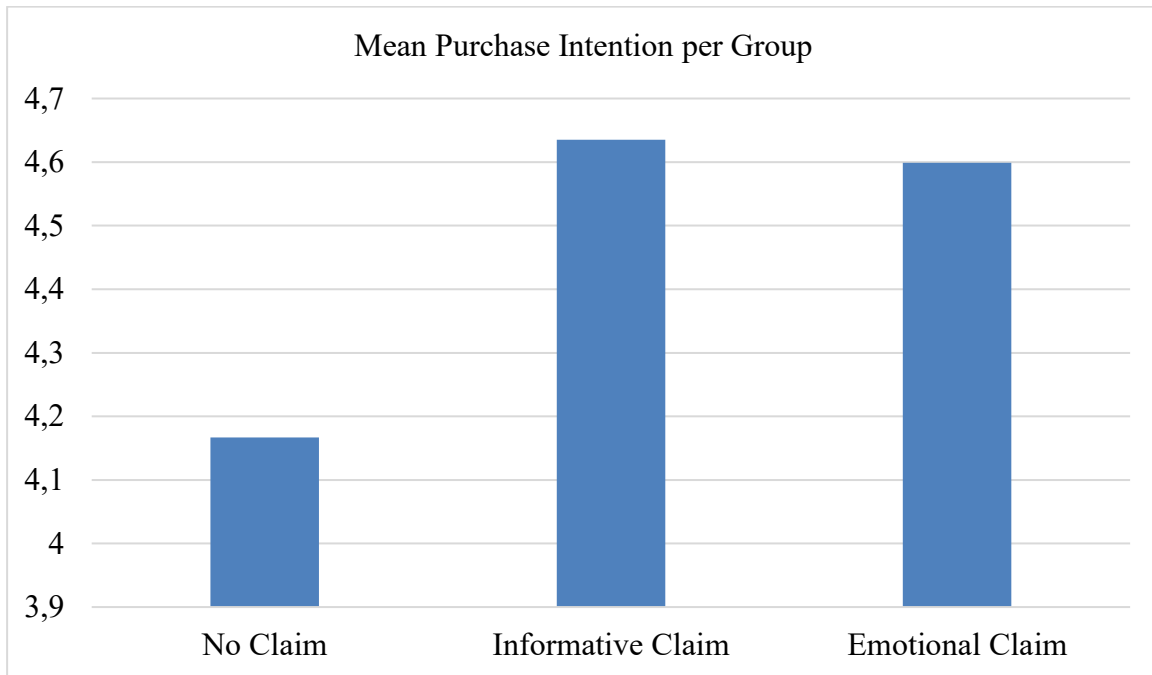
Number of bootstrap samples for bias corrected bootstrap confidence intervals:  
5000

Level of confidence for all confidence intervals in output:  
95,00

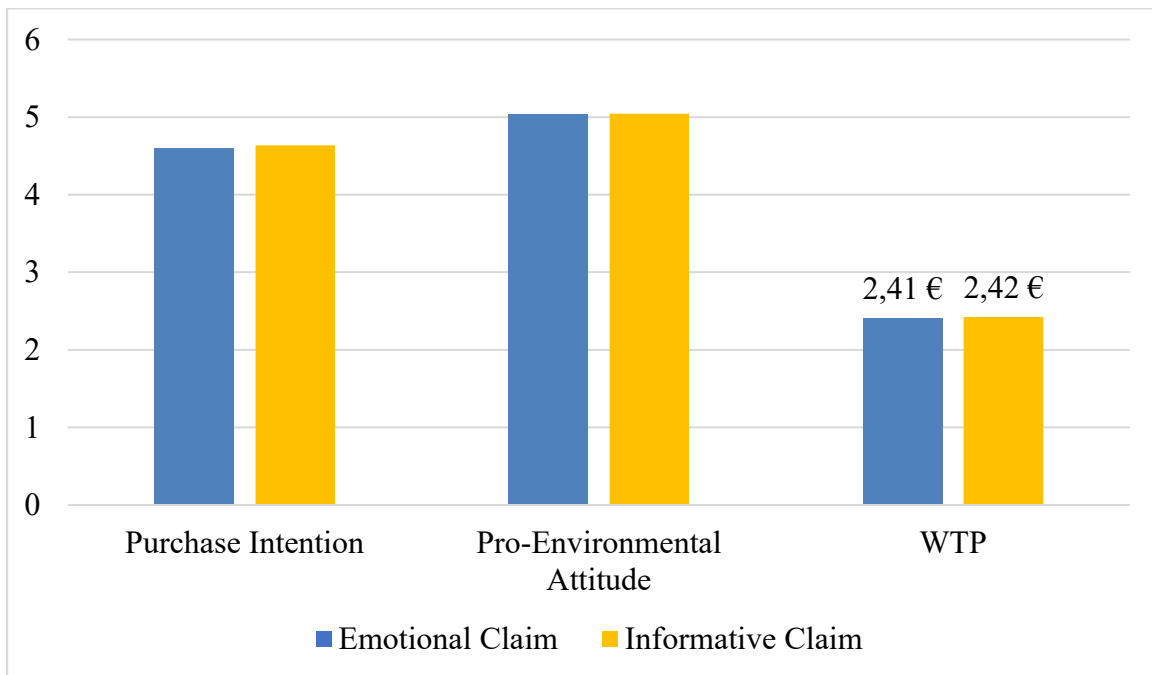
NOTE: Some cases were deleted due to missing data. The number of such cases was:  
3

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

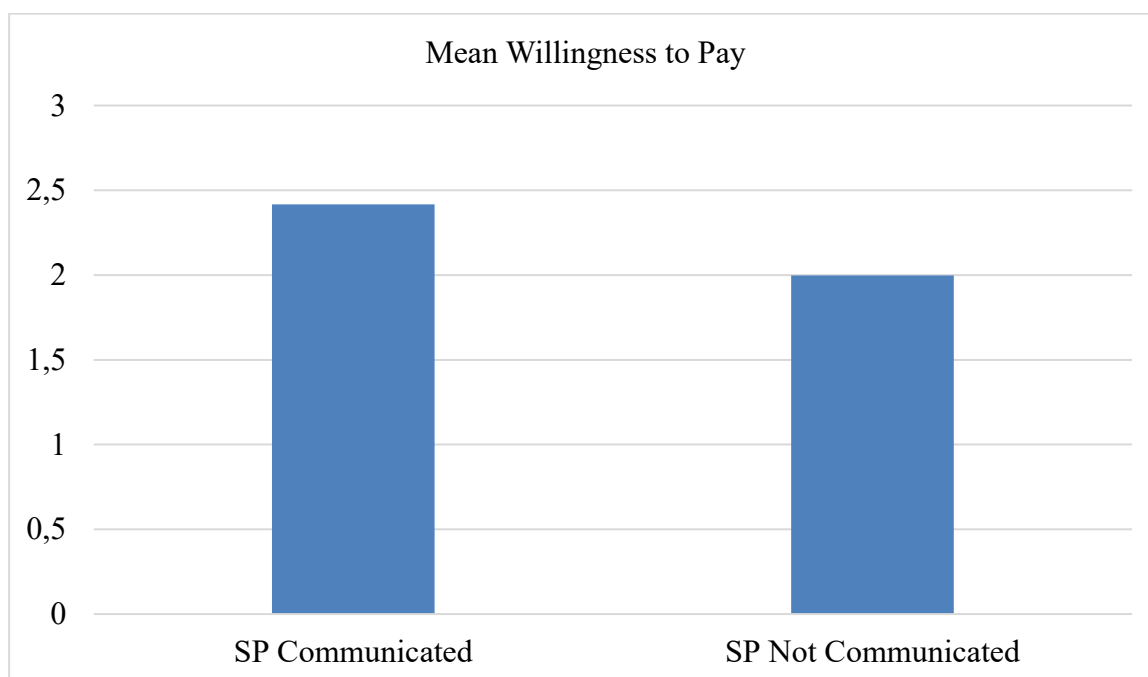
**Appendix 4: Mean Purchase Intention per Group**



**Appendix 5: Comparison PI, PEA and WTP per Group**



**Appendix 6: Mean Willingness to Pay if SP (Not) Communicated**



**Appendix 7: Cluster Analysis Results**

Cluster	1	2	3	4	5
# Cluster Members	79	76	53	5	55
Cluster Name	“The Concerned Mass”	“The Concerned Mass”	“The Ignorant Concerned”	“The Natural Ecos”	“The Ignorant Concerned”
Mean Added Value	0.58 €	0.54 €	0.15 €	1.39 €	0.27 €
Mean Pro-Environmental Attitude	5.15	5.05	5.00	4.44	4.97
Mean Washing-Up Liquid Knowledge	49.27 %	68.25 %	12.96 %	96.00 %	31.82 %
Major Age	25 – 34 years	25 – 34 years	25 – 34 years	25 – 34 years	25 – 34 years
Major Gender	Female	Female	Male	Female	Female
Major Educational Level	Bachelor Degree	Bachelor Degree	Bachelor Degree	Bachelor Degree	Bachelor Degree
Major Income Level	30,000 - 39,999 €	20,000 – 29,000 €	20,000 – 29,000 €	10,000 – 19,999 €	20,000 – 29,000 €