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When packaging communication does not tell
everything.
A study of the impact on Purchase Intent.

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ABSTRACT

Title

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In the past, packaging was only meant to protect the product and facilitate transportation. However, the function has changed and is increasingly seen as an essential marketing element. Now, packaging has a greater weight in making distinctions between brands and an enormous influence on consumer choices, especially in capturing attention between various products.

This dissertation focuses on gluten-free pasta and how different types of packaging affect consumers' choice decisions. The stimuli studied are packages that omit information, packages with the right information, and packages with the wrong information.

In order to choose the best stimuli for the study and avoid bias, a focus group was carried out. Next, an online questionnaire was conducted to test the hypotheses built in the literature review. The data collected from the questionnaire were analyzed using SPSS Statistics and are presented in the last chapters of this dissertation.

Through the tests, it is revealed that perceived quality explains the relationship between stimuli and purchase intention and that the moderator, consumer knowledge, does not moderate the relationship between perceived quality and purchase intention and the relationship between packaging and purchase intention.

Keywords

Packaging, Perceived Quality, Consumer Knowledge, Purchase Intention, Gluten-Free, Packaging Information, Visual

SUMÁRIO

Título

“Quando a comunicação nas embalagens não mostra tudo. Um estudo sobre o impacto na intenção de compra.”

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Antigamente, as embalagens tinham o objetivo de proteger o produto e de facilitar o transporte. Contudo, a função das embalagens mudou e cada vez mais são consideradas um elemento essencial do marketing.

Atualmente, têm um maior peso na distinção entre marcas e uma enorme influência nas escolhas dos consumidores, especialmente em captar a atenção entre vários produtos.

Esta dissertação foca-se nas massas sem glúten e em como as diferentes embalagens afetam as decisões dos consumidores. Os estímulos estudados são: embalagens que omitem informação; embalagens com a informação correta, e embalagens com informação errada.

De forma a escolher os estímulos para o estudo e evitar enviesamentos, realizou-se um focus group. De seguida, foi realizado um questionário online de forma a testar as hipóteses da literature review.

Os dados recolhidos através do questionário foram analisados no SPSS Statistics e são apresentados nos últimos capítulos desta dissertação. Através dos testes, pode-se concluir que a qualidade percebida explica a relação entre estímulos e intenção de compra e que o moderador, conhecimento do consumidor, não modera a relação entre a qualidade percebida e intenção de compra e a relação entre embalagem e intenção de compra.

Palavras-Chave

Embalagem, Qualidade Percebida, Conhecimento do Consumidor, Intenção de Compra, Gluten-Free, Informação das Embalagens, Visual

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GLOSSARY

SPSS - Statistical Package for the Social Sciences

GFP – Gluten Free (Penne) Pasta

BGFP – The Best Gluten Free (Penne) Pasta

ANOVA - Analysis of Variance

CHAPTER 1: INTRODUCTION

1.1 Background and problem statement

In today's constantly changing business environment and consumer intentions, packaging is the most important feature of the product. It plays an important role in either establishing identity or establishing differentiation between brands (Schoell et al., 1990).

Past research has shown us various statistics on consumer behavior at moments of purchase: two-thirds of purchases are made on impulse (Belch, George E. & Belch, 1999), and up to 51% of all purchases are unplanned (Phillips & Bradshaw, 1993). On this basis, marketers and brand managers need to give a lot of consideration to packaging.

Furthermore, because of the intense rivalry environment businesses, companies must build a strong brand to set themselves apart from competitors and to draw customers.

In scientific literature, there are various distinct classifications for packaging, depending on the author. According to Srinivasan & Anderson, 1998 when customers purchase and utilize the product, it is essential to combine all the packaging's elements - text, color, structure, images, and people/personalities, in order to give them a visual marketing approach. Though, Vila & Ampuero, 2007 make a division between two types of package elements: "graphic elements (color, typography, shapes used, and images) and structural elements (form, size of the containers, and materials)."

In addition to serving the essential purpose of protecting the goods, packaging also serves the fundamental purpose of disclosing the contents of the package by giving consumers thorough information about the product (Kingdom et al., 2015).

Packaging has been called the "silent salesman" (Pilditch, 1961), as it is seen as the final advertisement tool to inform, persuade, and convince a customer before they make a final purchase decision (D.Wells et al., 2002). The packaging's quality, color, design of wrapper, and other features are essential aspects that influence consumers' purchasing decisions (Ahmed et al., 1450).

That being said, the color and color combination are a crucial part of the design, given it is a noticeable feature that draws customers' attention (Kingdom et al., 2015). The quality of the package is vital since better materials will draw more buyers (Arsalan et al., 2013), and attractive design visuals, like signs and symbols, make the product stand out (Rundh, 2009).

According to Orth & Malkewitz, 2008, buyers often examine package designs to form a brand impression, and this will impact whether they purchase the goods or not. Additionally, higher quality perception also leads to a higher probability of buying intention (Petrick, 2002).

Making a purchase is a difficult activity that depends on several factors, such as where to shop, what brand, how many things to buy, and how much money people want to spend. The consumer should make these series of decisions based on the willingness to satisfy needs (Sheikh Qazzafi, 2019). The consumer buying decision process is constituted of five stages: 1) Problem recognition, 2) Information search, 3) Evaluation of alternatives, 4) Purchase decision, and 5) Post-purchase behavior (Sheikh Qazzafi, 2019).

Consumer knowledge is also an important influence on purchase intention (Kolyesnikova et al., 2010b; Kerstetter & Cho, 2004; Alba & Hutchinson, 1987; Jayachandran et al., 2004). And given that knowledge is more readily available now, customers should make sure they know everything they can, before making a purchase (Nuseir, 2018). As so, customers who have more knowledge are more able to assimilate information and comprehend extensive nutrition declarations and consequently make better and adjusted choices according to their needs.

1.2 Problem Statement

The main objective of this dissertation is to understand the impact that packaging has on purchase intention. Furthermore, consumer knowledge is tested as a moderator and perceived quality as a mediator.

As so, the problem statement can be defined as: **How do perceived quality and consumer knowledge impact purchase intention for different packaging?**

In order to address the above problem statement, the following research questions were developed:

Research questions:

RQ1: Can packaging be an instrument of misleading advertising?

RQ2: Is consumer knowledge a good approach to prevent misleading advertising?

1.3 Relevance

It is unquestionable that all humans receive daily stimuli and influences that are reflected in our personal lives and in the choices that we make.

The topic of this thesis came up during several trips to the supermarket when I wasn't sure what to buy, so I started to analyze people and their behavior and wondered what thoughts go through their minds and what influences their choices.

And many of them, like me, didn't really know which package to choose, they just looked at the packaging of the products and picked the one which showed the best quality and that stood out from the rest.

So, I decided I wanted to confirm my theories and learn more about this topic. As a matter of fact, according to Keizer, 2016, 90% of purchasing choices are influenced by package aesthetics.

The topic of this dissertation was chosen with the objective of studying in depth how packaging impact purchase intent and quality perceived. And, in particular, it also aims to understand how the different information or lack of information on the packaging influence consumer behavior.

In academic terms, this research will be significant in a variety of ways, because although it is known that packaging influences the consumer, it is a little-explored theme.

According to Holmes & Paswan, 2012, the information about the relationship between consumers and packaging is scarce and according to Wang, 2013 there is insufficient information about how visual packaging influences quality perception and purchase intention.

Furthermore, there is very little research on how packaging that omits information influences the consumer's choice, and no research on a package that promotes itself as the best product on the market.

In terms of managerial terms, companies can use the findings and conclusions that this dissertation proposes to reach and apply them as an improvement of the packaging, in particular, which type of packaging is most and least attractive to consumers.

1.4 Research methods

In order to answer the proposed research questions, it was gathered the necessary data.

The primary data was collected through the search of the existing literature, namely papers and academic articles. It was conducted to develop the literature review and to gain a thorough understanding of the variables used in this dissertation. These variables are: packaging, purchase intention, perceived quality, and consumer knowledge.

After having chosen the industry and product category to be studied, gluten-free pasta, it was created a focus group. This helped to understand qualitatively how consumers perceived the packages of pasta and what their preferences were in terms of color, shape, size, level of transparency, and important packaging information. Afterward, three different stimuli were created.

Then, a final online survey was conducted. The questionnaire's primary goal was to collect quantitative data that would answer the research questions. To analyze the answers obtained from the online survey, it was used the Statistical Package for the Social Science (SPSS), version 28.0.

1.5 Dissertation outline

This dissertation is constituted by a total of five chapters, so after this introductory chapter, four more will follow.

The second chapter presents the literature review addressing the variables studied throughout this thesis and the conceptual framework that shows the relationship between the variables.

The third chapter, methodology, intends to give a thorough explanation of the research methods utilized to collect and analyze the data, including the statistical tests that were applied. Furthermore, it also presents the constructs of the questionnaire.

The fourth chapter presents the analysis of the data obtained through the online survey and the discussion of these results. The analysis is based on the methodology described in the earlier chapter. It will permit an answer to the study's research questions by testing the hypotheses and the conceptual framework.

The final chapter exhibit the main findings and conclusions of this dissertation as well as the academic and managerial implications. The study's major limitations are discussed, along with potential areas for further investigation.

CHAPTER 2: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

This chapter presents the literature review addressing the variables under study: packaging, purchase intention, perceived quality, and consumer knowledge. All variables are based on primary data, such as academic journals.

At the end of the chapter, the conceptual framework is provided, giving a broad overview of the relationship between the variables mentioned above and the underlying hypotheses.

2.1 Packaging

Nowadays, there are a lot of offers of the same product in supermarkets. In a single visit, a consumer faces thousands of brands. For example, in a 30-minute supermarket visit, an American shopper will encounter 20,000 products (Belch, George E. & Belch, 1999).

In today's constantly changing business environment and consumer intentions, the packaging is the most important aspect of the product and plays an important role in either establishing identity or establishing differences between brands (Schoell et al., 1990).

First investigations of packaging as a communication tool were made by Butkevičiene et al., 2008; P. et al., 2007; Vila & Ampuero, 2007, and the importance of packaging in marketing communications continues to grow (Kuvykaite et al., 2009).

While historically, the primary function of packaging was defined to protect the product and to safeguard it from the damage that can occur while it is being transported, stored, or used (Wells et al., 2007; Madden et al., 2000; P. et al., 2007), it was also the element that was in direct contact with the product and made it simpler to handle and sell (Vidales & Dolores, 1995). Today's packaging has another role.

Now, packaging serves to grab customers' attention and to provide the necessary information about the product at the point of sale (Kuvykaite et al., 2009). In fact, when buying something, it is crucial from the consumer's point of view because it is the first thing that they notice before deciding whether to buy or not (Vidales & Dolores, 1995).

As a matter of fact, past studies revealed that product packaging is a crucial marketing tool that might affect consumers' perceptions of the quality of the product (Venter et al., 2011) and brand preference (Wang, 2013).

Packaging can also be called the "silent salesman" since it informs us of the benefits and characteristics we will gain if we use that particular product (Pilditch, 1961). It communicates a product's unique value (Underwood, 2003; Silayoi & Speece, 2007; Ateke & James, 2018) and strengthens the company's position in the market (Klimchuk & Krasovec, 2007).

In order to increase the visual stimulus, graphics and color are important packaging elements since they influence how shoppers perceive products (Grossman & Wisenbilt, 1999).

Color choice is one of the most crucial aspects of packaging and brand design. It is also considered a crucial instrument for building and maintaining the brand and shaping the corporate image in the minds of consumers (Madden et al., 2000).

So, companies employ colors in packaging to appeal to customers since they are more drawn to products with colorful packaging (Hussain et al., 2015). Therefore, visual packaging is more important than verbal packaging (Kuvykaite et al., 2009).

In scientific literature, there are numerous distinct classification techniques for package components, depending on the author.

According to Silayoi & Speece, 2007, shape, color, symbol, graphic patterns, pictures, and size are the elements of the packaging. According to Srinivasan & Anderson, 1998 it is necessary to mix all of the packaging's components - text, color, structure, images, and people/personalities - to provide consumers with a visual marketing approach when buying and using the product.

According to Smith & Zook, 2011 when constructing effective packaging, producers and designers should consider the following six factors: form, size, color, graphics, material, and flavor. Likewise, Kotler, 2003 identifies six factors that must be considered while making packaging decisions: "size, form, material, color, text, and brand" (Kuvykaite et al., 2009).

Vila & Ampuero 2007 make a division between two types of package elements: “graphic elements (color, typography, shapes used, and images) and structural elements (form, size of the containers, and materials).” Both Vila & Ampuero, 2007 and Smith & Zook, 2011, do not include verbal package elements (Kuvykaite et al., 2009).

2.2 Packaging influences Purchase Intention

In the literature, it is well known that packaging and its elements affect consumers' purchase decisions (Nawaz & Imamuddin, 2014), making it one of the most powerful tools in today's marketing communications (Adelina & Morgan, 2007).

Making purchases is a difficult process. Throughout the course of a year, the typical consumer will generally only acquire 0.7% of the goods that are on sale in-store, despite offering a selection of more than 30,000 products (Catalina, 2014).

As a result, customers must sift through the enormous selection of goods offered in stores to identify, assess, and compare the items they need. For this reason, packaging serves as a tool for differentiation and helps consumers to choose a product from among a variety of similar ones (Wells et al., 2007).

Since consumers are rarely given a chance to try products in-store, they must base their assessments on the packaging and branding (Zeithaml, 1988).

In order to guarantee the long-term commercial success of a product, marketers must: (1) capture the attention of the consumer; (2) build good associations and expectations in their minds (such as the anticipation of a fantastic taste) (Simmonds & Spence, 2017).

Packaging is the most crucial aspect of marketing for any product, as this is what draws customers' attention and what communicates with the consumer during the decision-making process. The package is crucial in situations where the customer is unsure what to buy since it persuades them to make purchases (Sauvage, 1996). Depending on the extent of consumer interaction and the amount of time available, the package's influence may be stronger or weaker (Butkevičiene et al., 2008).

According to Welles, 1986, 90% of customers make impulsive purchases after only examining the front of the pack. Consequently, packaging characteristics, especially those on the package's front, are crucial for brands.

Packaging plays a significant role in marketing communications, particularly at the point of sale, and is considered one of the key factors that affect consumers' choices (Kuvykaite et al., 2009).

Packaging design is seen as the final advertisement tool to inform, persuade, and convince a customer before they make a final purchase decision (D.Wells et al., 2002). Furthermore, emphasizing what was said above, according to a study, product packaging also influences between 60% and 70% of final purchase decisions (Dhar, 2007).

After seeing a well-labeled product, consumers tend to buy more of that product. However, visual elements are not the only factors that influence customers (Saeed et al., 2013). The size and the shape of the packaging also play a role in the choice of product, as most people are drawn to products that are easy to use and transport (Silayoi & Speece, 2004).

Also, the packaging's quality, color, wrapping, and other features influence consumers' purchasing decisions (Ahmed et al., 1450).

a) Packaging Color

Color and color combinations are important components of design since it is frequently memorable and attracts buyers' attention. The capacity of consumers to identify the product can be significantly impacted by the color of the package, and each color recalls a distinct connotation: red is utilized to create energy, blue to create trust, green for balance, and white and black to create power (Kingdom et al., 2015).

b) Packaging Material

The packaging's quality is a crucial component. Better materials will draw more buyers than worst materials (Arsalan et al., 2013).

c) Font Style

The packaging's font is a crucial component that draws customers in. The package's small fronts and extensive lettering may provide misleading or false information (Deliya et al., 2012).

d) Design of wrapper

The design and other attractive visuals, like signs and symbols, make the product stand out and draw the customer's attention. Holograms and the use of a variety of materials can persuade customers to touch the packaging, which will motivate them to try the product (Rundh, 2009).

Printed materials contain all the details about a product and all the necessary to identify a brand. This aids consumers in selecting the best option and making a purchase. It is one of the product's most salient characteristics and a crucial marketing mix component (Arsalan et al., 2013).

e) Background image

The background image is the image that a buyer forms in their head to assist them in recognizing a product's brand. Images of the product are crucial since they draw attention to it and make people more familiar with the specific item (Goldberg et al., 1999).

Images of desirable landscapes (such as mountains and beaches) on the packaging can help to inspire a high-class lifestyle (Rundh, 2009).

f) Innovation

Innovation in packaging design raises the perceived value of the product in the eyes of the consumer by making it simple to open, recyclable, easy to store, child-proof, eco-friendly, etc. (Arsalan et al., 2013).

g) Printed Information

Printed information includes all the details about a product's quality, cost, and description that are necessary to distinguish products/brands (Kingdom et al., 2015).

2.3 Misleading Advertisement

In today's fast-paced world, where technology is developing every day, customers cannot escape advertising since they are bombarded with more than 150 commercials every day on television and in the media (Park & Jang, 2012).

Advertising is known to be the most crucial strategy for boosting sales, strengthening product recognition, and raising awareness. It is a common marketing strategy that many businesses use to present the features of their goods to consumers (Nuseir, 2018) with the hope that they will make purchases and consequently increase sales (Esteban & Hernández, 2012).

Some advertisements offer the viewer a false image of a product by suggesting that the product has unique qualities. When businesses use misleading or inaccurate advertising, consumers' decisions are affected because their judgment is unfairly influenced (Nuseir, 2018). Given the frequency of misleading claims in advertising, the key question is whether consumers can recognize incorrect claims before making a purchase (Aslam, 2014).

So, to avoid the situations mentioned above, customers should ensure they learn everything they can about the product they are interested in since knowledge is now easier to access. The adage "buyer beware" still applies, and gathering information is an essential part of the purchasing process (Nuseir, 2018).

2.3.1 Packaging Information

Understanding accurate information, such as nutrition labels, is crucial for everybody. Although it is typically assumed that individuals can read and understand information on labels, this is far from reality (Rothman et al., 2006).

According to the activation theory, nutrition knowledge may have a significant impact on how consumers interpret nutritional information (Andrews et al., 1998).

It is often believed that the typical customer can easily decode all the information on the packaging, such as texts, images, brand elements, and content descriptors. However, prior research indicates that consumers, despite being interested in nutrition information, frequently lack the skills necessary to use the information successfully (Daly, 1976; Jacoby et al., 1977; Moorman, 1990).

In fact, 38% of consumers have trouble interpreting the information on the package (Harper et al., 2007).

Furthermore, low-literacy and less informed consumers, might not be able to fully understand food labels (Alba & Hutchinson, 1987), they are more likely to give up, and therefore run the possibility of being deceived when making choices.

On the other hand, customers who have high literacy and are more informed are more willing to comprehend more. They are more likely to read and process nutrition information with greater nutrition understanding and consequently, use this knowledge efficiently.

So, when important information is omitted or incorrect, it can lead to deceptive inferences (Andrews et al., 1998).

As a result, the following hypothesis is formed:

Hypothesis 1: Consumer knowledge moderates the relationship between packaging and purchase intention.

2.4 Purchase Intention

Consumer behavior is the study of how people, either individuals or groups, purchase, utilize, experiment, discard and decide on products (Perner, 2010) with the objective of satisfying their needs and wants (Chandon et al., 2000). However, it is very difficult to explain consumer purchasing behavior, as it is so closely tied to the human mind (Sheikh Qazzafi, 2019).

The decision-making process for customers is becoming more complicated, as there are more equivalent products within the same group and consumers are more influenced when buying goods (Wells et al., 2007).

Making a purchase is a complex task that involves several variables, for example, where to shop, what brand, how many items, and how much money people want to spend. The consumer should make these series of decisions based on the willingness to satisfy needs (Sheikh Qazzafi, 2019).

The consumer buying decision process is constituted of five stages: 1) Problem recognition, 2) Information search, 3) Evaluation of alternatives, 4) Purchase decision, and 5) post-purchase behavior (Sheikh Qazzafi, 2019).

The buyer can use all five stages to help them decide on a product or can also skip one or more steps. These actions depend on the consumer mindset and on the degree of involvement of the consumer with the product (Kotler et al., 2017). When buying familiar products, the most probable is to skip one or more than one stages in the decision-making process.

Marketers can influence decisions by supplying details that could help consumers to make an informed selection, and also, the way that the products are displayed in-store may increase purchase intention. More attractive and appealing visual demonstrations influence consumers intent to buy (J. Park et al., 2005).

In the literature, purchase intention is usually cited as an indicator of future purchases (Jennings & Seaman, 1990). Morrison, 1979 defined purchase intent as the likelihood of a consumer acquiring a good. It is close to how much the consumer believes that the good they are buying will satisfy their needs and wants the most (Kupiec & Revell, 2001).

This dissertation will focus on purchase intention.

2.5 Perceived Quality

In the literature, perceived quality can be defined as the degree to which a product's functional features can satisfy the customer's needs (Box, 1983).

Consumers often view perceived quality as one of the most important factors when evaluating a product (Zeithaml, 1988) and in decision-making (Jin & Suh, 2005).

In situations where buyers have to choose between numerous products with identical physical qualities, product brand is employed as an "indicator of quality". The product brand shapes the consumer's perception of the product and becomes the primary reason why customers select a certain brand of goods (Aaker, 1991; Davis & Aquilano, 2003).

There are other considerable variables, either intrinsic and extrinsic, that influence the forming impressions of the quality of a product or brands and help to compare qualities between similar products: (a) price; (b) attributes such as taste, aroma, color, style, and size; (c) packaging; (d) manufacturer; (e) advertising; (f) word-of-mouth statements; and (g) past purchase experience (Jacoby et al., 1971).

Among these cues, the price has received the most focus. Shapiro, 1968 states that "price is a powerful piece of information for the consumer... Since the price is concrete and measurable, the consumer views it with much confidence. He trusts it more than most cues concerned with quality."

Furthermore, as consumers cannot experiment with products in the store before buying them, they only depend on extrinsic cues to judge the products (Zeithaml, 1988). This fact increases the importance of packaging in influencing consumer purchase decisions.

How customers perceive a product's quality plays a mediating role between purchasing intention and perceived value (Chan, 1996). So, higher quality perception leads to a higher probability of buying intention (Petrick, 2002).

As a result, the following hypothesis is formed:

Hypothesis 2: Perceived quality mediates the effect of packaging on purchase intention.

2.6 Consumer Knowledge

Consumer experience is defined as a collection of abilities that people have developed over time to gather and analyze information (Kerstetter & Cho, 2004), and it is what is retained through consuming experiences (Clarkson et al., 2013). Consumer knowledge can also be described as the degree of experience, expertise, and familiarity that customers have with a product or service (Kolyesnikova et al., 2010a).

Furthermore, it is the information about a product that consumers learn through exposure to advertising, or product use (Alba & Hutchinson, 2000; Kolyesnikova et al., 2010a; Kerstetter & Cho, 2004; Alba & Hutchinson, 1987), and which they rely on to help them make purchasing decisions.

Thus, consumer knowledge is an important influence on purchase intention (Kolyesnikova et al., 2010b; Kerstetter & Cho, 2004; Alba & Hutchinson, 1987; Jayachandran et al., 2004).

Consumer knowledge grows as customers become more familiar with the product. That being said, experts in a certain product category (Chi et al., 1981) are less likely to be deceived by misleading information (Cowley & Janus, 2004), and are better able to select the ideal product (Azila-gbettor & Adigbo, 2013; Brucks, 1985). Also, it has been demonstrated that as the

relationship with a product category grows, customers build experiential consumption vocabulary (Latour & Latour, 2010).

This presupposes that those who do not have much contact with the product, have lower knowledge and, in consequence, a higher probability of engaging in false information and choosing a product incorrectly.

Consumer behavior researchers are well aware that when consumers make decisions, they often use internal knowledge (Kolyesnikova et al., 2010c), which is a by-product of past experiences (D'Souza et al., 2006). For example, customers assess the quality of a product based on their prior experiences and expectations (Kuang Chi et al., 2009).

This means that consumer attitudes and purchasing intentions are principally influenced by product familiarity (Mullen et al., 1987; Nwulu & Asiegbu, 2015; Bentler & Speckart, 1979), and consumers only turn to external information searches when the internal search fails to create a solution to a problem (Kolyesnikova et al., 2010).

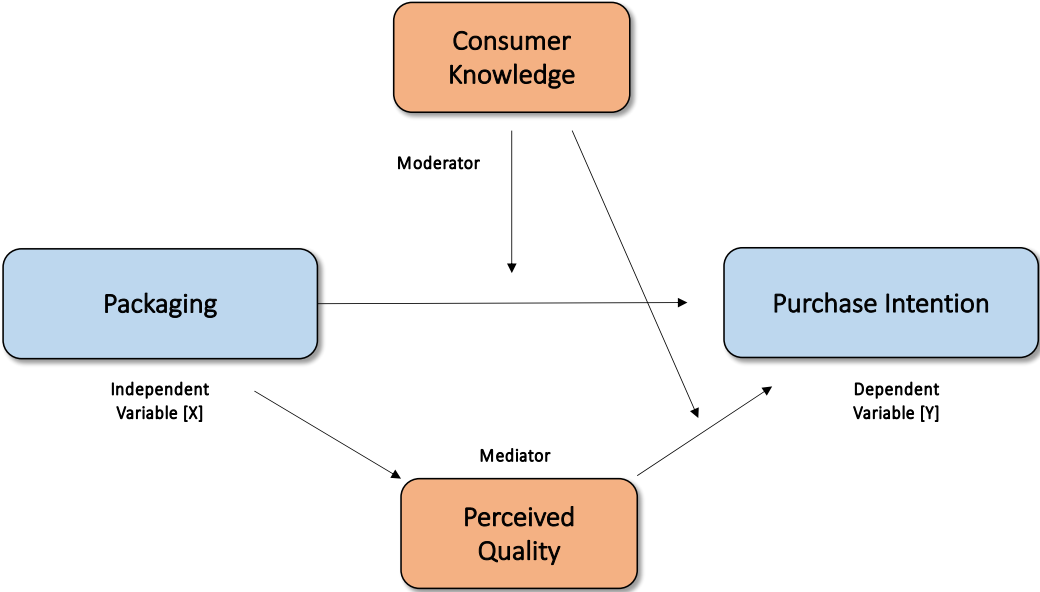
As a result, the following hypothesis is formed:

Hypothesis 3: Consumer knowledge moderates the relationship between perceived quality and purchase intention.

2. 7 Conceptual Framework

The relationship between the variables analyzed in this study is represented in the model shown below (Figure 1).

Figure 1- Conceptual Framework



CHAPTER 3: METHODOLOGY

The purpose of this chapter is to describe the methodology of this thesis. It explains the methods used to analyze the research questions and that will contribute to validating the hypothesis stated in the past chapter.

The chapter is organized as follows: first, the research approach is presented, followed by a description of the primary sources, which includes data collection, how the three stimuli were developed, and the measurements used. At the end of the chapter, the research design and data analyses are presented.

3.1 Research Approach

The main objective of this thesis is to understand the impact that packaging has on purchase intention. Furthermore, consumer knowledge is tested as a moderator and perceived quality as a mediator. This relationship is demonstrated in the conceptual framework, which is based on the literature review.

In order to adequately address the research questions stated in the previous chapter, the literature review, both exploratory and explanatory approaches were used in this study.

The exploratory approach is the review of the literature in order to comprehend current events and determine whether any theories that already exist could account for what is being observed (focus group). The explanatory approach describes the reasons for observed situations and the connections between their causes and effects (survey) (Saunders et al., 2009).

A research approach was designed to answer the research questions presented previously (Figure 2).

After the literature review, the category identification and the food industry needed to be selected. As so, the food industry was chosen, with a special focus on gluten-free food, since it is a growing market, either for people who are not allowed to ingest food with gluten or who just choose not to eat gluten (Pellegrini & Agostoni, 2015).

Within the food industry, the target group is pasta. Due to its practicality, flavor, ease of preparation, and nutritional benefits, pasta is becoming more and more well-liked on a global scale. In the past few years, the third category of pasta products, gluten-free (GF), has been

increasingly popular among consumers who want to cut out gluten-based foods from their diets for health reasons (Marti & Pagani, 2013).

Then, to prevent potential researcher bias in selecting the best packaging for pasta, a focus group was created. It permitted to discuss with the participants, their opinion, and preferences about what would be their ideal packaging, in terms of color, shape, size, level of transparency and included information (Figure 3).

The focus group also led to conclude about three stimuli: omitted information, unique that is not unique, and everything ok.

Afterward, a final online survey was conducted. The questionnaire's primary goal was to collect quantitative data that would answer the research questions. To analyze the answers obtained from the online survey, SPSS Software was used.

Figure 2 - Research Approach

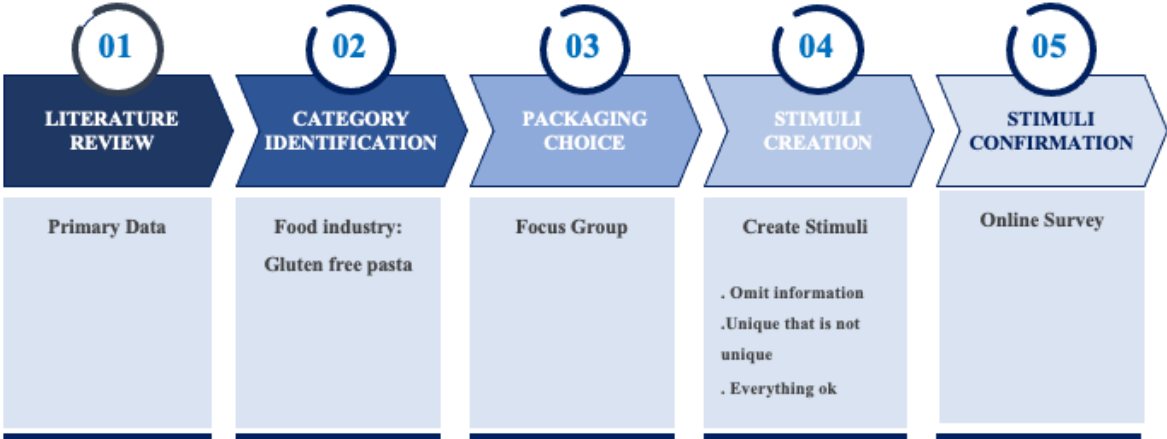


Figure 3 - Focus Group



3.2 Primary Data

3.2.1 Data Collection Focus Group

The focus group was created to prevent research bias and was executed in person and via Zoom, for being a faster and more effective way of communicating with those who are far away.

The focus group was divided into three parts: introduction, questions, and closure (Appendix 1) and it helped to understand qualitatively how consumers perceived the packages of pasta, particularly gluten-free pasta.

This method was performed in a casual and friendly atmosphere, and the participants were of different ages, genders, and academic backgrounds (Appendix 2).

3.2.2 Data Collection Survey

The online survey was released on November 14th and was accessible until the 23rd of the current month, 2022.

The questionnaire was distributed via social media (Facebook, LinkedIn, and WhatsApp), and it was only available in English.

Only 163 out of the 233 responses that were submitted were deemed acceptable after a "cleaning" procedure.

The target audience of the survey is women and men between 18-80 years old since it is a group age which usually goes shopping and that receives external influences and information that will impact their purchase choices.

The data that was obtained was through the non-probability sample technique, which means that not every person in the population has the same chance of answering the survey.

3.2.3 Stimuli Development

To prevent making biased decisions influenced by prior interactions with real brands, a new brand, Montalvão Pastas, was created in the program Canva (Figure 4). The colors used were red and green since they were the suggestions of the focus group respondents.

Figure 4-Montalvão Pastas Logo



The three stimuli were created in the Adobe Photoshop 2023 program. All packages include the brand name and the type of pasta, so the difference between the three stimuli is all about gluten-free information.

In figure 5, the stimuli include the right information, saying that it is gluten-free pasta; in figure 6 the stimuli omits information, does not inform that it is gluten-free, and the figure 7, the stimuli has incorrect information, saying it is the best gluten-free pasta, however, it has not been proved.

Figure 7- Gluten Free Penne



Figure 6- Penne



Figure 5- The Best Gluten Free Penne



3.2.4 Measurement / Indicators

The table below shows the operational model of this dissertation (Table 1) which includes the three constructs chosen to measure the variables of the questionnaire.

It also presents how many questions each variable has, what scale was chosen, the author's name and year of publication of the articles, and the Cronbach alpha.

The best metrics for this dissertation were chosen after a thorough examination of pertinent literature. The Consumer Knowledge and Perceived Quality questions in the online survey were measured using the 7-point Likert Scale, from "Strongly disagree" (1) to "Strongly agree" (7). The Purchase Intention questions were measured using 7- point Bipolar Scale, from “Never” (1) to “Definitely” (7).

Table 1- Operational Model

Framework	Measure	Items	Scale	Reference	Cronbach α
IV	Package	Stimuli	<i>na</i>	<i>na</i>	<i>na</i>
Moderator	Consumer Knowledge	9	7-point Likert Scale	Leisa Reinecke Flynn; Ronald E. Goldsmith, 1999	0.91
Mediator	Perceived Quality	4	7-point Likert Scale	(Bao et al.,2011) (adapted from Grewal et al. (1998) and Keller & Aaker (1992))	0.95
DV	Purchase Intention	5	7-point Bipolar Scale	Spears & Singh, 2004	0.97

3.3 Research Design

The survey consisted of 31 questions, divided into nine blocks and it can only be found in English.

The first block is an introduction to the questionnaire and informs how long it takes to complete it.

The second block is constituted of four general questions. It begins by asking if the participants have ever bought gluten-free pasta or not. If the answer is “No”, it skips directly onto the stimuli questions. If the answer is “Yes”, it continues to the remaining three questions, formed in order to understand the participant's consumption patterns and why and how often they purchase gluten-free products.

Then, each respondent was assigned arbitrarily to one of the three stimuli. The stimuli were chosen randomly for each survey and equally distributed by respondents.

This way, it will show how the different elements of the packaging will change consumer perception and intention.

Afterward, follows four blocks with some questions about the image that was shown: two manipulation questions, four questions about the perceived quality that consumers have of the stimuli they saw, five questions about purchase intention, and nine about consumer knowledge. The last block includes seven demographic questions.

The questionnaire design/flow is presented in appendix 3.

3.4 Data Analysis

The survey was constructed and designed in Qualtrics. The dataset was downloaded from Qualtrics to an Excel file after the survey was closed.

In order to analyze the answers obtained from the online survey, it was used the Statistical Package for the Social Science (SPSS), version 28.0, with the intention of understanding the relationship between the various variables.

First, it was necessary to clean the data, eliminating repeated IPs and uncompleted answers.

Then, to gain a general understanding of the sample, descriptive statistics and frequencies were created, namely sample characterization and consumption habits.

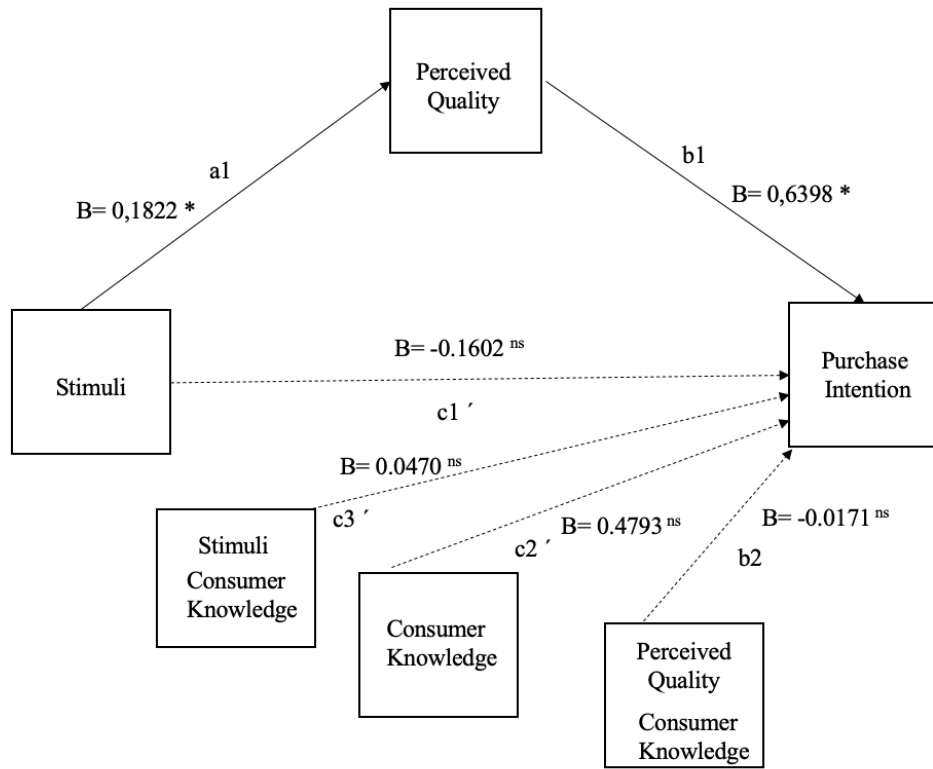
Next, it had to be known whether the results of the questions have a normal distribution, using the Kolmogorov-Smirnov test (because $N > 50$) and since the dependent variable is quantitative, it was done a parametric T-test.

Afterward, it was studied the variables, where it was used the criterion by Loiacono et al., 2002 to analyze the internal consistency of the variables and the Pestana & Gageiro, 2008 criteria to evaluate Cronbach's Alpha. It also used the Bryman & Cramer, 2003 classification criteria to characterize the correlations between variables.

After, as we intend to compare 3 groups regarding quantitative dependent variables (constructs), a one-way ANOVA parametric test was made.

Process Macro by Hayes (Hayes, 2013) was used to test the hypotheses. To test the two moderations, it was applied the model 1 and for the mediation was applied model 4. To test the effect of the full model, model 15 was applied (Figure 8).

Figure 8- Model 15 Mediations and Moderation



CHAPTER 4: RESULTS AND DISCUSSION

The fourth chapter presents the analysis of data obtained through the online survey; each respondent answered randomly to one of three possible stimuli.

The analysis is done based on the methodology described in the earlier chapters. It will permit answering the study's research questions by testing the hypotheses and the conceptual framework.

4.1 Results

4.1.1 Data Preparation

The survey was answered by 233 individuals, 27 of whom were eliminated for having completed less than 70% of the questionnaire, which included questions fundamental to the study, and 43 for having repeated IPs. As a result, the study sample was set at 163 respondents.

4.1.2 Sample Characterization

The 163 valid answers are mostly composed of female respondents (76.07%) and mostly of young age, where 51.53% are between 18 and 24 years and 18.40% are between 25 and 34 years.

As we can also see in Table 2, Bachelor's and Master's degrees are the most frequent education levels among the respondents, representing respectively 43.56% and 39.26%, meaning that the majority of the sample has higher education qualifications.

Regarding the employment situation, the majority are actively employed: 41.10% are employed and 22.09% are working students. There are also 29.45% students and 7.36% unemployed or retired.

In terms of income, the respondents have low to medium incomes, with 27.61% having an income of less than 500€, 19.02% between 500€ and 1000€, 24.54% between 1001€ and 2000€ and 15.34% between 2001€ and 3000€.

Regarding cohabitation, 15.34% of the respondents live alone, whilst 22.09% live with another person and the majority of 50.31% live with 3 to 4 people.

Almost all the respondents are of Portuguese nationality (90.18%), with the remaining 1.84% being German, 1.23% Italian, 0.61% French, and 6.13% of other nationalities.

Table 2- Sample Characterization

Characteristic	n	%
Gender		
Female	124	76,07
Male	39	23,93
Age group		
18-24 years	84	51,53
25-34 years	30	18,40
35-44 years	8	4,91
45-65 years	36	22,09
≥ 65 years	5	3,07
Education level		
High school diploma	23	14,11
Bachelor degree	71	43,56
Master degree	64	39,26
Ph.D degree	5	3,07
Current Occupation		
Students	48	29,45
Student-worker	36	22,09
Employed	67	41,10
Unemployed	6	3,68
Retired	6	3,68
Monthly gross income		
< 500€	45	27,61
500€ - 1000€	31	19,02
1001€ - 2000€	40	24,54
2001€ - 3000€	25	15,34
3001€ - 4000€	6	3,68
4001€ - 5000€	4	2,45
> 5000€	12	7,36
N° household members		
Solo	25	15,34
1-2 persons	36	22,09
3-4 persons	82	50,31
≥ 5 persons	20	12,27
Nationality		
Portuguese	147	90,18

German	3	1,84
Italian	2	1,23
French	1	0,61
Others	10	6,13

4.1.3 Consumption habits

We can observe that out of 163 respondents, 100 respondents have already purchased gluten-free products, which corresponds to 61.35% of the respondents to the study. The remaining 63 (38.65%) have never purchased gluten-free products (Figure 9).

The main reason mentioned by the respondents for purchasing gluten-free products was dietary reasons, an option marked by the majority of 52.00% of the respondents.

Then 23.00% of respondents expressed purchasing these products because they appreciate their taste and texture, 20.00% because of gluten intolerance and 5.00% because of gluten allergy (Figure 10).

Figure 9- Purchase of Gluten Free Products

Figure 10- Reasons for Purchasing the Gluten Free Products

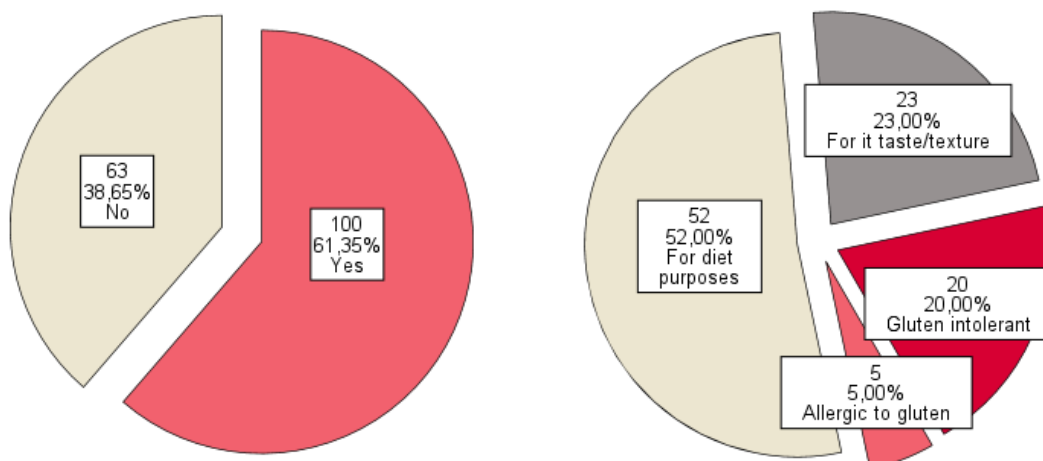


Figure 11 shows the distribution of frequency of purchase of gluten-free products of the respondents to the survey, where it can be seen that 43.00% have a high frequency of purchase, with 21.00% purchasing weekly and 22.00% monthly. A total of 29.00% of the respondents have a very low frequency of purchasing gluten-free products, purchasing them annually.

Figure 11- Purchase Frequency of Gluten Free Products

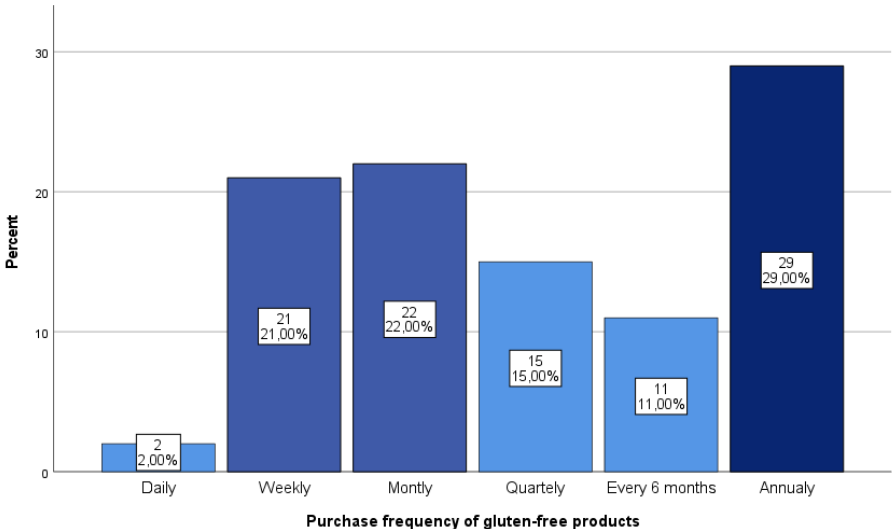
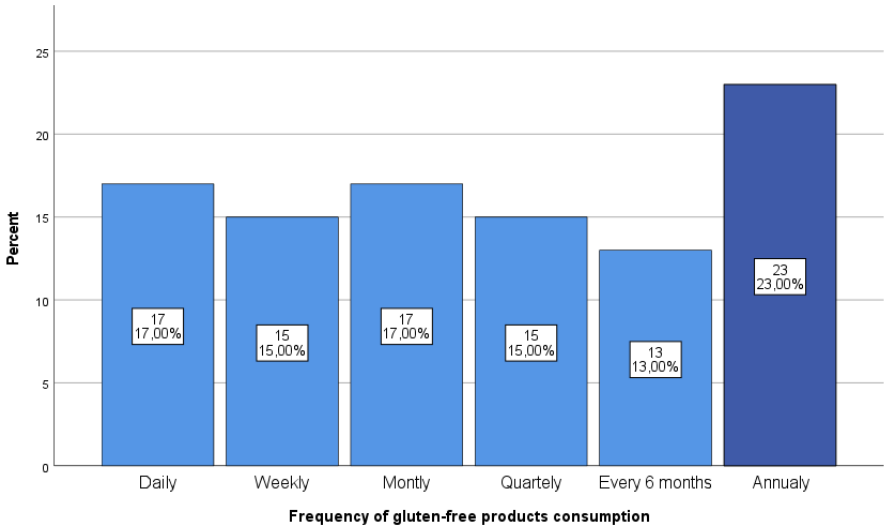


Figure 12 shows that 32.00% of the respondents frequently consume gluten-free products, namely 17.00% daily and 15.00% weekly. Then there is 51.00% who consume gluten-free products with a low frequency, namely 15.00% quarterly, 13.00% every 6 months and 23.00% annually.

Figure 12- Frequency of consumption Gluten Free Products



4.1.4 Understanding of the products

According to the results presented in Table 3, the respondents present an understanding of The Best Gluten-free pasta product between 1 and 7, with the average being 4.12 ($SD=1.32$).

It is further observed that an agreement of 4 was the most frequently observed, namely by 44.79% of the respondents, with 76.08% expressing an agreement of 4, 5 or 6 (Figure 13).

About the Gluten-free product, the respondents present an understanding of the product also between 1 and 7, with the mean being 5.28 ($SD=1.79$).

It is further observed that an agreement of 7 was the most frequently observed, namely by 31.90% of the respondents, with 71.16% expressing an agreement of 5, 6 or 7 (Figure 14).

Table 3- Understanding of the product: The Best Gluten-Free penne pasta and Gluten Free

I understand this product is:	Min.- Máx.	Mode (%)	Mean	Standard Deviation	T	p
... the best gluten-free penne pasta	1-7	4 (44,79)	4,12	1,32	-8,728	<0,001
... gluten free	1-7	7 (31,90)	5,28	1,79		

These results reveal that respondents understand The best gluten-free and Gluten-free products differently ($t_{(162)} = -8.726$; $p < 0.001$), with the understanding of gluten-free ($M=5.28$) being significantly higher than that of The Best Gluten-free ($M=4.12$).

Figure 13- Understanding of the product- The Best Gluten Free Pasta

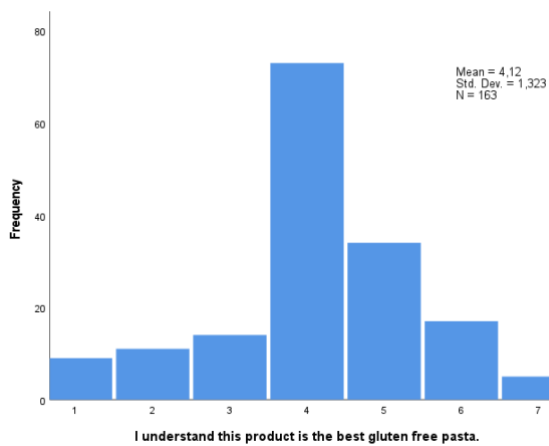
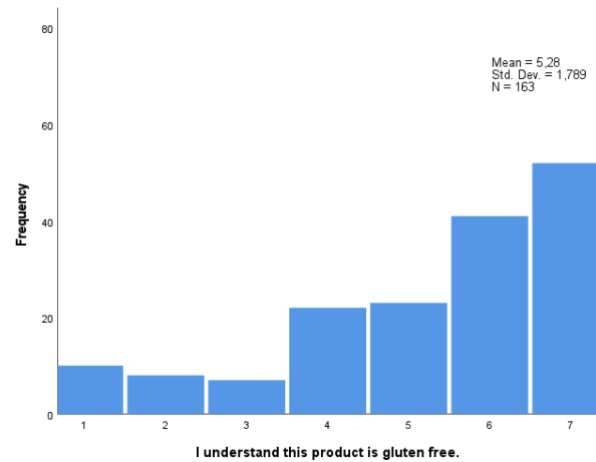


Figure 14- Understanding of the product- Gluten Free



Appendix 4 presents the two paired samples that were asked in the questionnaire to understand if the respondents understood the stimuli. It was mandatory to answer both questions.

Since the dependent variable is of a quantitative type, it was done a parametric T-test for paired samples, that compare the means of both questions.

However, firstly, it had to be known whether the results of the questions have a normal distribution, using the Kolmogorov-Smirnov test (because $N > 50$).

After conducting the Test, it was possible to verify that $p < 0.05$, which means that is not normally distributed.

However, as the sample is large ($n > 30$) we can evoke the central limit theorem TLC, namely for not being observed serious deviations from normality ($|Skewness| < 3$ and $|Kurtosis| < 7$). The distributions can thus be assumed to be approximately normal, and the parametric T-test can be performed.

4.1.5 Constructs: Perceived Quality, Purchase Intention and Consume Knowledge (Q8, Q9, Q10)

The constructs of Perceived Quality, Purchase Intention and Consume Knowledge were constructed by calculating the mean of the answers of the respondents, respectively the set of four questions of Q8, the five questions of Q9 and the nine questions of Q10.

Given that questions Q8.4, Q10.4, Q10.6 and Q10.8 are presented in the negative (e.g., Q8.4: “This pasta with this packaging is of very bad quality”), the respective response scale was inverted.

In the internal consistency analysis of the constructs, it was found that question Q10.6 presents a low corrected item total correlation (0.229), below the criterion 0.40 by Loiacono et al., 2002. According to Loiacono et al., 2002, values higher than 0.4, indicate that the scale does a good discrimination between individuals with low scores on the scale and those with high scores. Consequently, the question was eliminated from the set of the Consume Knowledge construct, basing the calculation on the remaining 8 questions.

This discrimination index is seen in the Corrected item total correlation column in Appendix 5. It gives the correlation of each item with the total result on the scale.

The constructs Perceived Quality ($\alpha=0.815$) and Consumer Knowledge ($\alpha=0.838$) present a good internal consistency and the construct Purchase Intention ($\alpha=0.930$) has a very good internal consistency (Pestana & Gageiro, 2008) (Table 4).

Table 4- *Constructs and Internal Consistency (N=163)*

Constructs	Questions			Alpha de Cronbach	
	Set	n°	Inverted items	Alpha	Author
Perceived Quality	Q8	4	Q8.4	0,815	(Bao et al.,2011) (adapted from Grewal et al. (1998) and Keller & Aaker (1992))
Purchase Intention	Q9	5	---	0,930	Spears & Singh, 2004
Consumer Knowledge	Q10	8 ¹	Q10.4 Q10.6 ¹ Q10.8	0,838 ¹	Leisa Reinecke Flynn; Ronald E. Goldsmith, 1999

1. Set Q10 reduced to 8 questions because Q10.6 has been withdrawn

According to the results presented in table 5, respondents presented scores between 2.50 and 7.00 in Perceived Quality, with a mean of 5.21 ($SD=0.90$).

As for Purchase Intention, they presented scores between 1.00 and 7.00, with an average score of 4.28 ($SD=1.37$). Consumer Knowledge presents results between 1.00 and 6.25 with an average of 3.50 ($SD=1.08$).

Regarding the distribution of results, the Consumer Knowledge results presented a normal distribution ($KS_{(163)}=0,063$; $p= .200$) and the Perceived Quality ($KS_{(163)}=0,110$; $p<0,001$) and Purchase intention ($KS_{(163)}=0,081$; $p= .011$) present an approximately normal distribution, due to the large samples ($N>30$) and did not present serious deviations from a normal distribution ($|SK|<3$ and $|KU|<8$) (Kline, 2009) (Appendix 6).

Table 5- Descriptive and Distribution of Constructs ($N=163$)

Construct	Min.-Max	Mean	Std. Deviation	p	Skewness	Kurtosis
Perceived Quality	2,50-7,00	5,21	0,90	<0,001	-,397	-,332
Purchase intention	1,00-7,00	4,28	1,37	0,011	-,318	-,058
Consumer Knowledge	1,00-6,25	3,50	1,08	0,200	,194	-,437

p. p-value of the test of Normality Kolmogorov-Smirnov

The set of constructs Perceived Quality, Purchase Intention and Consumer Knowledge do not present multivariate outliers, presenting Mahalanobis distances between 0.0208 and 14.0859 with associated p-values higher than 0.0028 (Appendix 7).

In Table 6, can be observed significant positive correlations between the 3 constructs under study. The relationship between Perceived Quality and Consumer Knowledge is of low intensity ($r=0.232$) and the relationship between Perceived Quality and Purchase intention ($r=0.468$) and between Purchase intention and Consumer Knowledge ($r=0.472$) is moderate, the latter being the highest (Table 6).

It was used the Bryman & Cramer, 2003 classification criteria to characterize the correlations.

Table 6- Correlation Between Constructs

	Purchase intention	Consumer Knowledge
Perceived Quality	0,468***	0,232**
Purchase intention	---	0,472***

** p<0,01 *** p<0,001

4.1.6 Constructs per stimuli

The respondents responded randomly to one of the 3 possible stimuli whereby 54 people responded to Penne, 58 to gluten-free penne and 51 to The Best gluten-free pasta (table 7).

As we intend to compare 3 groups regarding quantitative dependent variables (constructs), we performed a parametric one-way ANOVA test (Appendix 8).

As it is a parametric test, it is necessary to validate that the dependent variable has a normal distribution in each of the groups (Kolgomorov >0,05) or as it is a large sample (n>30), and because there are no serious deviations from normality (SK < 3 and Ku < 8), the Central Limit Theorem (CCT) can be evoked.

The homogeneity of variances must also be ensured using Levene's test with p>0.05. In the ANOVA F test if p> 0,05, there are no differences in the means between the 3 groups (Appendix 9).

Perceived Quality

From table 7 and Figure 15 it can be seen that the respondents who had The Best Gluten Free Pasta as stimuli had a mean of perceived quality of 5.40 (SD=0.86) the highest among the 3 stimuli.

Respondents who had Penne as stimuli had a mean perceived quality of 5.04 (SD=1.04), the lowest of the 3 stimuli. Respondents with Gluten Free Penne stimuli had a mean perceived quality of 5.20 (SD=0.77).

These results are not significantly different ($F_{(2, 160)}=2.182$; $p= .116$) with no evidence that the perceived quality of the respondents differs according to the stimuli presented.

Purchase Intention

Regarding purchase intention, respondents who had The Best Gluten Free Pasta as stimuli had a mean purchase intention of 4.51 ($SD=1.35$), the highest among the 3 stimuli, similar to perceived quality.

Respondents who had Gluten Free Penne as stimuli had a mean purchase intention of 4.05 ($SD=1.38$), the lowest among the 3 stimuli. Finally, respondents with the Penne stimuli had a mean purchase intention of 4.33 ($SD=1.38$). These means are not significantly different ($F_{(2, 160)}=1.558$; $p= .214$), with no evidence that the respondents' purchase intention differs according to the stimuli presented (table 7) and (Figure 15).

Consumer Knowledge

In terms of consumer knowledge, respondents who had Penne as stimuli had a mean consumer knowledge of 3.64 ($SD=0.93$), the highest among the 3 stimuli, meaning that respondents don't know much about gluten.

Respondents who had Gluten Free Penne as stimuli, had an average consumer knowledge of 3.35 ($SD=1.06$), the lowest among the 3 stimuli.

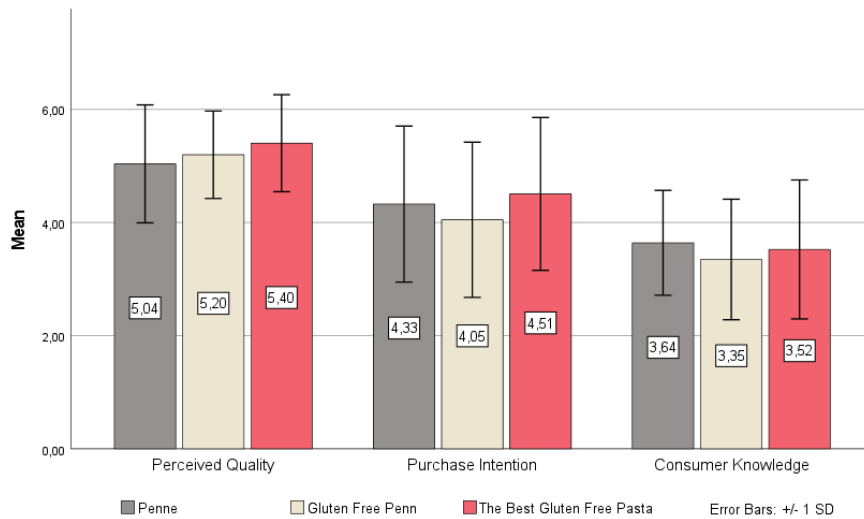
Finally, respondents with The Best Gluten Free Penne stimuli had a mean consumption knowledge of 3.52 ($SD=1.23$). The means presented were not statistically different ($F_{(2, 160)}=1.063$; $p= .348$), with no evidence that respondents' knowledge consumption varies according to the stimuli presented (table 7) and (Figure 15).

Table 7- Constructs per Stimuli

Construct	Stimuli	N	Mean	Std. Deviation	F	p
Perceived Quality	Penne	54	5.04	1.04	2.182	0.116
	Gluten Free Penne	58	5.20	0.77		
	The best Gluten Free Pasta	51	5.40	0.86		
Purchase intention	Penne	54	4.33	1.38	1.558	0.214
	Gluten Free Penne	58	4.05	1.38		
	The best Gluten Free Pasta	51	4.51	1.35		
Consumer Knowledge	Penne	54	3.64	0.93	1.063	0.348

Gluten Free Penne	58	3.35	1.06
The best Gluten Free Pasta	51	3.52	1.23

Figure 15- Means: Perceived Quality, Purchase Intention and Consumer Knowledge per Stimuli



4.1.7 Results from the Hypotheses Test

Hypothesis 1: Consumer knowledge moderates the relationship between packaging and purchase intention.

In order to evaluate if consumer knowledge moderates the relationship between packaging and purchase intention, it was conducted a moderation test, according to Andrew F. Hayes (Hayes, 2013) (PROCESS - model 1).

As Packaging is an independent variable qualitative with 3 categories, 2 dummy variables were constructed, named Gluten Free Pasta and The Best Gluten Free Pasta, with reference to the category Penne.

A statistically significant model was obtained ($F_{(5, 157)}=9.7545$; $p < 0.001$), which explains 23.70% of the variation in purchase intention ($R^2= 0.2370$).

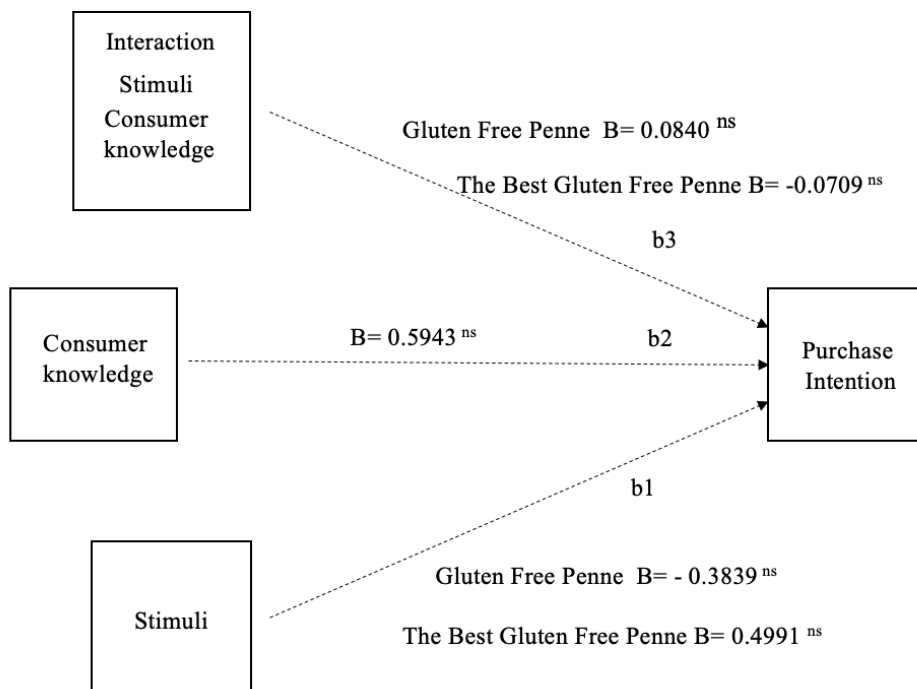
However, the packaging does not show a statistically significant effect on purchase intention in any of the categories (GFP $B= -0.3839$; $p = .6564$ and BGFP $B=0.4991$; $p = .5607$), nor are

there any statistically significant interaction effects between packaging and consumer knowledge for any of the categories (Int_GFP B=0.0840; $p = .7220$ and Int_BGFP B=-0.0709; $p = .7569$).

It can thus be stated that consumer knowledge does not moderate the relationship between packaging and purchase intention.

SPSS outputs for the moderation model detailed above can be found in appendix 10.

Figure 16- Moderation: Dummy Variables H1



^{ns} non significant *** Significant at $p < 0.1\%$, ** Significant at $p < 1\%$, * Significant at $p < 5\%$

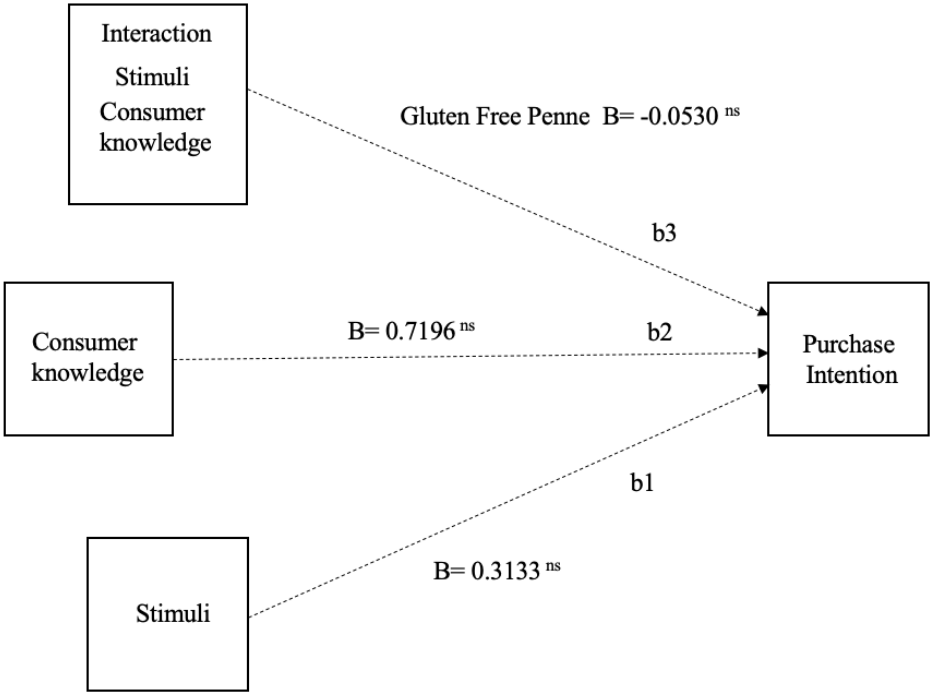
Replicating the model without addressing the independent variable package by dummy variables, it was also obtained a statistically significant model ($F_{(3, 159)}=15.7506$; $p < 0.001$), which explains 22.91% of the variation in purchase intention ($R^2=0.2291$).

The results reveal that there is no statistically significant effect of packaging on purchase intention ($B=0.3133$; $p = .4589$), nor a statistically significant interaction effect between packaging and consumer knowledge ($B=-0.0530$; $p = .6390$).

It is thus reaffirmed that consumer knowledge does not moderate the relationship between packaging and purchase intention.

SPSS outputs for the moderation model detailed above can be found in appendix 11.

Figure 17- Moderation H1



^{ns} non significant *** Significant at $p < 0.1\%$, ** Significant at $p < 1\%$, * Significant at $p < 5\%$

Hypothesis 2: Perceived quality mediates the effect of packaging on purchase intention.

In order to evaluate if perceived quality mediates the relationship between packaging and purchase intention, it was conducted a mediation test, according to Andrew F. Hayes (Hayes, 2013) (PROCESS - model 4).

As Packaging is an independent variable qualitative with 3 categories, 2 dummy variables were constructed, named Gluten Free Pasta and The Best Gluten Free Pasta, with reference to the category Penne.

A statistically significant model was not obtained ($F_{(2, 160)} = 2.1821; p = .1162$), which explains only 2.66% of the variation in purchase intention ($R^2 = 0.0266$).

Only package BGFP, compared with the reference Penne, has a positive, statistically significant effect on perceived quality (BGFP $B=0.3649$; $p = .0385$). Also compared to the reference Penne, GFP has no statistically significant effect on perceived quality (GFP $B=0.1612$; $p=.3426$). (NOTE: path a2).

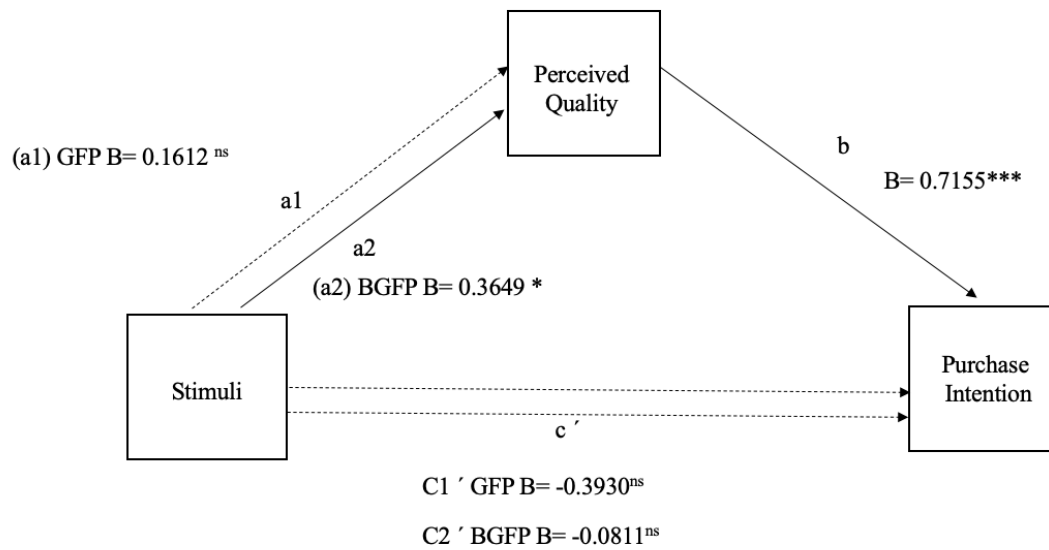
Perceived quality has a positive, statistically significant effect on purchase intention ($B=0.7155$; $p < 0.001$). (NOTE: path b).

In terms of direct effect, neither GFP nor BGFP packages show a statistically significant effect on purchase intention (GFP $B= -0.3930$; $p = .0892$ and BGFP $B=-0.0811$; $p=.7355$), assuming to be in the presence of full mediation for BGFP. (NOTE: C1' and C2' pathways).

Considering that for the BGFP package versus Penne the indirect effect is statistically significant ($B=0.2611$; CI95% [0.000; 0.5665]), it can thus be stated that perceived quality mediates the relationship between packaging and purchase intention when considering the BGFP package versus Penne. (NOTE: path ab).

SPSS outputs for the moderation model detailed above can be found in appendix 12.

Figure 18- Mediation: Dummy Variables H2



^{ns} non significant *** Significant at $p < 0.1\%$, ** Significant at $p < 1\%$, * Significant at $p < 5\%$

c'. Direct Effect ab. Indirect Effect

Replicating the model without addressing the independent variable package by dummy variables, a statistically significant model was obtained ($F_{(1, 161)} = 4.3698$; $p = .0382$), which explains 2.64% of the variation in purchase intention ($R^2 = 0.0264$).

The stimuli has a positive, statistically significant effect on perceived quality ($B = 0.1822$; $p = .0382$). (NOTE Path a).

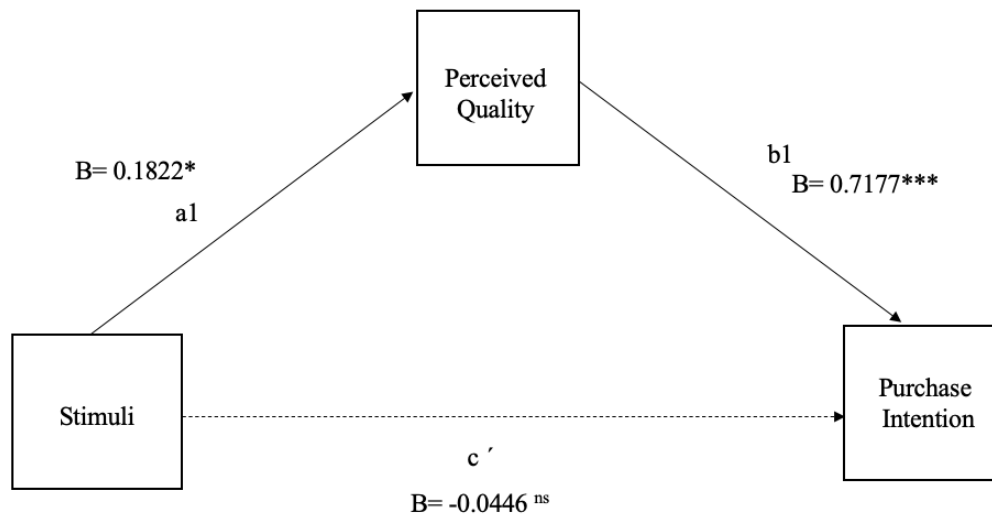
Perceived quality has a positive, statistically significant effect on purchase intention ($B = 0.7177$; $p < 0.001$) (NOTE: path b).

The stimuli has no statistically significant effect on purchase intention ($B = -0.0446$; $p = .7125$), assuming the presence of total mediation. (NOTE: C' paths).

Considering that the indirect effect is assumed to be statistically significant ($B = 0.1308$; CI 95% [0.009; 0.2825]), (NOTE: path ab).

It can be stated that perceived quality totally mediates the relationship between packaging and purchase intention, that is, the effect of the package on purchase intention is not direct, but via perceived quality.

Figure 19- Mediation H2



^{ns} non significant *** Significant at p<0.1%, ** Significant at p<1%, * Significant at p<5%

c'. Direct Effect ab. Indirect Effect

SPSS outputs for the moderation model detailed above can be found in appendix 13.

Hypothesis 3: Consumer knowledge moderates the relationship between perceived quality and purchase intention.

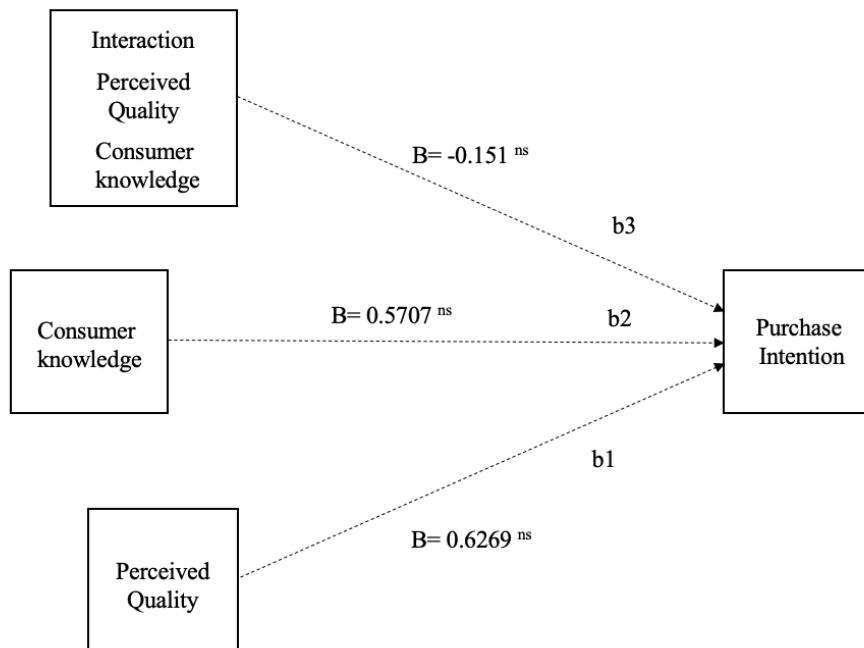
In order to evaluate if consumer knowledge moderates the relationship between packaging and purchase intention, it was conducted a moderation test, according to Andrew F. Hayes (Hayes, 2013) (PROCESS - model 1). As the independent variable qualitative Packaging with 3 categories, 2 dummy variables were constructed, namely GFR and BGFP, with reference to the category Penne.

A statistically significant model was obtained ($F_{(3, 159)}=29.6345; p <0.001$), which explains 35.86% of the variation in purchase intention ($R^2=0.3586$).

However, the perceived quality does not show a statistically significant effect on purchase intention ($B= 0.6269; p = .0376$), the consumer knowledge also does not show a statistically

significant effect on purchase intention ($B= 0.5707$; $p = .2120$) nor are there any statistically significant interaction effects between perceived quality and consumer knowledge ($B= -0.0151$; $p = .8563$). It can thus be stated that consumer knowledge does not moderate the relationship between perceived quality and purchase intention.

Figure 20- Moderation H3



^{ns} non significant *** Significant at $p<0.1\%$, ** Significant at $p<1\%$, * Significant at $p<5\%$

SPSS outputs for the moderation model detailed above can be found in appendix 14.

Full Model: Mediation and Moderation

In order to analyze the full model, it was employed the PROCESS model 15 (Hayes, 2013).

A statistically significant model was obtained ($F_{(1, 161)}=4.3698$; $p<0.001$), which explains 26% of the variation ($R^2=0.0264$).

In the analyses of the full model, it was confirmed the results obtained previously.

Stimuli has a positive statistically significant effect on perceived quality ($B=0.1822$; $p= .0382$).

However, stimuli do not have a statistically significant effect on purchase intention ($B=-0.1602$; $p = .6873$).

Perceived quality has a positive, statistically significant effect on purchase intention ($B=0.6398$; $p = .0375$). Consumer knowledge has not a statistically significant effect on purchase intention ($B=0.4793$; $p = .3394$).

Also, there are any statistically significant interaction effects between stimuli and consumer knowledge (Int_1 $B=0.0470$; $p = .6556$) and any statistically significant interaction effects between perceived quality and consumer knowledge (Int_2 $B=-0.0171$; $p = .8390$).

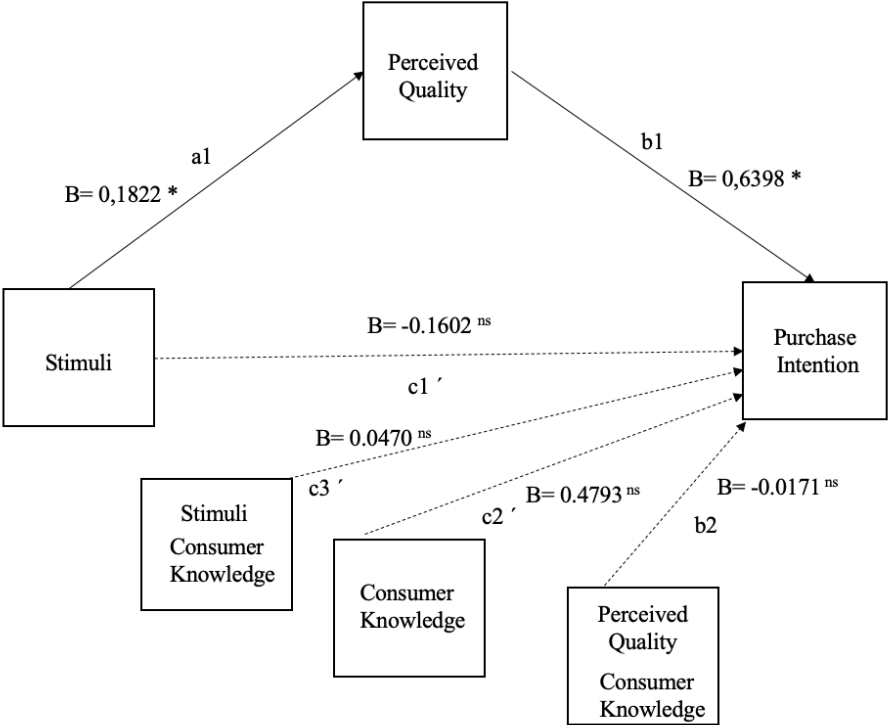
In terms of direct effect, it can be concluded that the stimuli has not a statistically significant effect on purchase intention.

In terms of indirect effect, it can be concluded that the stimuli influences perceived quality and this influences the purchase intention. Therefore, perceived quality explains the relationship between stimuli and purchase intention

There is no moderation of mediation, but there is mediation.

SPSS outputs for the full model detailed above can be found in appendix 15.

Figure 21- Full Model: Mediators and Moderators



^{ns} non significant *** Significant at $p < 0.1\%$, ** Significant at $p < 1\%$, * Significant at $p < 5\%$

c' . Direct Effect ab . Indirect Effect

CHAPTER 5: CONCLUSIONS AND LIMITATIONS

This final chapter exhibits this dissertation's main findings and conclusions as well as the academic and managerial implications.

In last, the study's major limitations will be discussed, along with potential areas for further investigation.

5.1 Main Findings & Conclusions

Each research question will be adequately addressed in order to respond to the problem statement that was previously formed.

The answers to the research questions are based on the key findings of the tests that were performed in the previous chapter and are complemented with the literature review, so both qualitative and quantitative data are used.

RQ1: Can packaging be an instrument of misleading advertising?

Misleading advertising can be studied through two variables of this thesis, packaging and consumer knowledge.

Packaging:

As was previously stated in the literature review, the packaging is often used as a form of advertising (D.Wells et al., 2002). It has been called the "silent salesman" (Pilditch, 1961), as it is seen as the final advertisement tool to inform and persuade a customer before they make a final purchase decision (D.Wells et al., 2002).

We also know that two-thirds of purchases are made on impulse (Belch, George E. & Belch, 1999), so consequently, packaging characteristics, especially those on the package's front, are crucial for brands. So, when important information is omitted or incorrect, it can lead to deceptive inferences (Andrews et al., 1998).

The three stimuli that were studied in this dissertation were the package with the correct information (gluten-free pasta), the package with the wrong information (the best gluten-free pasta) and the package with omitted information (penne).

The literature affirms that product packaging has a huge effect on the consumer and can influence between 60% and 70% of final purchase decisions (Dhar, 2007).

However, we cannot confirm this statement with the results of the tests.

The test performed with dummy variables showed that in terms of direct effect, none of the packages GFP and BGFP presents a statistically significant effect on the purchase intention (GFP $B = -0.3930$; $p = .70892$ and BGFP $B = -0.0811$; $p = .7355$).

The test performed without the dummy variables showed the same result, that the package does not show a statistically significant effect on purchase intention ($B = -0.0446$; $p = .7125$).

Past studies also revealed that product packaging is a crucial marketing tool that might affect consumers' perceptions of the quality of a product (Venter et al., 2011).

This can be confirmed in the tests performed. In the test executed with dummy variables, only package BGFP, compared to the reference Penne, has a positive, statistically significant effect on perceived quality (BGFP $B = 0.3649$; $p = .0385$). And in the test without the dummy variables, the package has a positive, statistically significant effect on perceived quality ($B = 0.1822$; $p = .0382$).

The literature review also stated that higher quality perception also leads to a higher probability of buying intention (Petrick, 2002).

In the test addressing the dummy variables, it is confirmed that perceived quality has a positive, statistically significant effect on purchase intention ($B = 0.7155$; $p < 0.001$), and we can also confirm this information in the test that does not address the dummy variables ($B = 0.7177$; $p < 0.001$).

This statement can also be confirmed by the results presented in table 7. We can see that the stimuli with the highest perceived quality is the BGF ($M = 5.40$) and it is also the one with the highest purchase intention ($M = 4.51$). As so, the package that is perceived as having the highest quality is the one with the highest purchase intention.

After analyzing the results of the test that does not address the dummy variables demonstrated above, it can be concluded that perceived quality mediates the relationship between packaging and purchase intention and that the effect of the package on purchase intention is not direct, but rather via perceived quality.

Furthermore, this means that all the stimuli, where it is included the one with incorrect information and the one with omitted information, lead to a perception of quality, which in turn leads to purchase intention.

Hence, it can be concluded that packaging can be an instrument of misleading advertising.

Similarly, in the test addressing the dummy variables, perceived quality mediates the relationship between packaging and purchase intention when considering the BGFP package versus Penne.

Therefore, it is again demonstrated that the packaging can be an instrument of misleading advertising, as the packaging with the wrong information BGFP (compared with the reference Penne), lead to a perception of quality, which in turn leads to purchase intention.

Despite the statistical tests shown above, it is necessary to consider that the stimuli may not have been well perceived. In Table 3, we can see the respondents' understanding of the stimuli. These results reveal that respondents understand The Best Gluten-Free and Gluten-Free products differently, with the understanding of gluten-free products ($M=5.28$) being significantly higher than that The Best Gluten-Free products ($M=4.12$).

Consumer knowledge:

In the literature, it is said that for consumers not to be misled, they should try to know as much as possible about the product (Nuseir, 2018).

However, in the tests, we can see that consumer knowledge has no influence and no statistical significance between the package and purchase intention. Therefore, it is not a good indicator that can prevent the package from being an instrument of misleading consumers.

In the test performed with dummy variables, there are no statistically significant interaction effects between packaging and consumer knowledge for any of the categories (Int_GFP $B=0.0840$; $p = .7220$ e Int_BGFP $B=-0.0709$; $p = .7569$) and it can also be confirmed in the test performed without the dummy variables ($B= -0.0530$; $p = .6390$).

It can thus be stated that consumer knowledge does not moderate the relationship between packaging and purchase intention.

RQ2: Is consumer knowledge a good approach to prevent misleading advertising?

Consumer knowledge is what is retained through consuming experiences (Clarkson et al., 2013) and what will be used for future choices.

In the literature review, it was stated that consumers who have a better level of knowledge (Chi et al., 1981), are less likely to be deceived by misleading information (Cowley & Janus, 2004), and are better able to select the ideal product (Azila-gbettor & Adigbo, 2013; Brucks, 1985).

Furthermore, it is also affirmed that consumer knowledge is an important influence on purchase intention (Kolyesnikova et al., 2010b; Kerstetter & Cho, 2004; Alba & Hutchinson, 1987; Jayachandran et al., 2004). As so, for consumers not to be misled, they should try to know as much as possible about the product (Nuseir, 2018).

However, the tests performed do not support these statements.

As it was demonstrated above, consumer knowledge does not moderate the relationship between packaging and purchase intention.

And, likewise, consumer knowledge does not moderate the relationship between perceived quality and purchase intention. Consumer knowledge does not show a statistically significant effect on purchase intention ($B= 0.5707$; $p = .2120$) nor are there any statistically significant interaction effects between perceived quality and consumer knowledge ($B=-0,0151$; $p =.8563$).

To conclude, consumer knowledge is not a good approach to prevent misleading advertising, because it neither increases nor decreases the correlations, it has no statistically significant effect on any variable.

5.2 Managerial / Academic Implications

Although it is known that packaging influences the consumer, it is a little explored theme.

This thesis is innovative for adding consumer knowledge as a moderator and perceived quality as a mediator of the relationship between packaging and purchase intention.

As a matter of fact, and academically speaking, this dissertation will contribute to filling the lack of investigation of how differently consumers perceive packages, and how these packages affect in diverse ways the perceived quality and purchase intention.

Additionally, this thesis will contribute to the lack of study on how consumers perceive a package that is denominated as being the best in the market, even though it has not been proven.

From the managerial point of view, this dissertation can help managers and marketers, to sell their products in a more efficient way by enhancing some aspects of the product packaging.

This way it can generate some desire in the consumer's mind, increase the consumer's willingness to buy the product and consequently increase revenues.

In fact, the most important conclusion that can be drawn from the study is that perceived quality leads to a greater purchase intention. This shall be the best decision that companies should follow and apply so that the products are associated with being of high quality.

In the case of pasta companies, it can be through the product itself, for its flavor and texture or for another considerable variable, either intrinsic or extrinsic, that influences the forming impressions of the quality of a product (Jacoby et al., 1971).

In fact, investing more in the visual aspect of a product or in the product itself may mean that is no longer necessary to invest in other forms of advertising, lowering costs.

5.3 Limitations and Further Research

This dissertation has some limitations that future studies should take into account.

Firstly, due to the nature of the investigation, there were limitations on time and resources.

Secondly, given that the sample size is relatively small, only 163 valid answers were remaining

after the cleaning data process, a bigger sample size would be crucial to ensure that each sample population was well represented. So, instead of the data being obtained through a non-probability sample technique, it should have been obtained through a probability sample technique.

Furthermore, the majority of responses in the study were mostly constituted by young people, with female predominance and people with higher qualifications. To get around this constraint, the study could be redone with a more representative sample of the population and a wider range of participant profiles, specifically to have responses from men, older people and people with lower qualifications.

Thirdly, those who answered the questionnaire only saw one of the three stimuli and could not make a comparison between the packages.

Fourthly, the area of the study is limited, it was performed with just one product, gluten-free pasta. Further research may include other products from the same food industry or from another industry.

Fifth, the respondents have only seen the package in digital format and not physical. It may influence their perception, since seeing the packaging in person, can alter consumer responses and choices.

Sixthly, the mediator, perceived quality, is subjective since it is how each person perceives a product. Results may change if another sample is selected.

Lastly, in the study, other factors which affect consumers' decision-making, like price and brand, were not considered. As we can see in the literature, price is one of the most important and decisive elements at the moment of purchase.

Similarly, the brand also has major importance in consumers' decisions, usually, the product brand is employed as an "indicator of quality". In this study, one fictitious brand was developed to prevent any biases from existing brands.

Future research could include these two variables to understand the impact a real brand has on perceived quality and how price influences consumers' choices.

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APPENDICES

Appendix 1- Focus Group - Discussion Guide

Part 1 - Introduction
<p>My name is Maria, and I am a master student in Business at Católica Lisbon.</p> <p>This interview is being conducted for the purpose of a Master Thesis in the Marketing field. It will help me understand qualitatively how Portuguese consumers perceived the packages of pasta, especially gluten free pasta.</p> <p>You were chosen because you have the appropriate profile and might offer helpful details and insightful opinions that could lead to additional findings.</p> <p>There is no right or wrong questions. Thank you very much in advance.</p>
Part 2 - Questions
<p>Q1) Do you eat gluten free pasta? If yes, why?</p> <p>*Show various packaging of gluten free pasta*</p> <p>Q2) Among the packages you are looking at, which do you like the most and why? Can be mentioned design, colors, format, information, etc.</p> <p>Q3) Would you still have chosen the packaging you found most appealing if it didn't have the gluten-free information on it?</p> <p>Q4) If you have to buy a gluten free pasta, you just look among those that say they are gluten free</p> <p>Q4.1) Or even if you see an appealing packaging without the gluten free information, you check to see if it is gluten free.</p> <p>Q5) When the packaging doesn't show all the information, what do you think they may be occulting?</p> <p>Q6) What you look for when you see the information on a gluten-free packing?</p> <p>Q7) If you had to choose between a package that says, “Gluten Free” and one that says “The Best Gluten Free pasta”, which one would you choose?</p> <p>Q8) Do you have any suggestion/question?</p>

Part 3 - Closure

Thank participants for their contribution.

Appendix 2- Focus Group - Participants Demographics

#	Gender	Nationality	Education	Age
1	Female	Portuguese	Master's degree	25
2	Female	Portuguese	Bachelor's degree	55
3	Male	Portuguese	Bachelor's degree	57
4	Female	Portuguese	Master's degree	28
5	Male	Portuguese	Master's degree	22
6	Female	Portuguese	Master's degree	23
7	Female	Portuguese	Bachelor's degree	22
8	Male	French	Bachelor's degree	23
9	Male	Brazilian	Bachelor's degree	22
10	Female	Portuguese	Master's degree	23

Appendix 3- Online Survey

Introduction

Q1 – Dear Participant,

The following questionnaire is part of my Master Thesis at Católica-Lisbon School of Business and Economics.

It will take approximately 3 minutes to be completed and it is important that you answer honestly. All the information will be treated confidentially.

In case of any doubt, please do not hesitate to send an e-mail to:
s-mqsfigueiredo@ucp.pt.

Thank you in advance for your time and collaboration!

Block 1 – General Questions

Q2 – Have you ever bought gluten-free products?

- Yes (1)
- No (2)

“Yes” – the questionnaire continues to Q3

“No”- the questionnaire continues to the Block 2, where it can appear Q6, Q11 or Q12.

Q3- Why did you purchased gluten-free products?

- Allergic to gluten (1)
- Gluten intolerant (2)
- For diet purposes (3)
- For it taste/texture (4)

Q4 – How often do you buy gluten-free products (for you, family or friends)?

- Daily (1)
- Weekly (2)
- Montly (3)
- Quartely (4)
- Every six months (5)
- Annually (6)

Q5 – How often do you eat gluten-free products?

- Daily (1)
- Weekly (2)
- Montly (3)
- Quartely (4)
- Every six months (5)
- Annually (6)

Block 2 – Randomization and attribution of one stimulus



Q6 – Please imagine yourself at the supermarket looking for a gluten-free pasta for you or for a family member.



Q11 – Please imagine yourself at the supermarket looking for a gluten-free pasta for you or for a family member.



Q12 – Please imagine yourself at the supermarket looking for a gluten-free pasta for you or for a family member.

Block 3 - Manipulation Question

Q7 - Please indicate your level of agreement with the following statements:

- I understand this product is the best gluten-free pasta (1)
- I understand this product is gluten-free (2)

Block 4 – Perceived Quality -

Q8 - Please indicate your level of agreement with the following statements:

- This pasta with this packaging is of high quality (1)
- This pasta with this packaging is reliable (2)
- This pasta with this packaging is superior product (3)
- This pasta with this packaging is of very bad quality (4)

Block 5– Purchase Intention

Q9 - Please describe your purchase intention about the product that you just saw.

- Never/definitely (1)
- I definitely do not intend to buy/ I definitely intend to buy (2)
- I have very low purchase interest/ I have very high purchase interest (3)
- I probably not buy it / I probably buy it (4)
- I definitely not buy it/ I definitely buy it (5)

Block 6 – Consumer knowledge

Q10 - Please indicate your level of agreement with the following statements:

- I know pretty much about this product. (1)
- I know how to judge the quality of this product. (2)
- I think I know enough about this product to feel pretty confident when I make a purchase. (3)
- I do not feel very knowledgeable about this product. (4)
- Among my circle of friends, I'm one of the "experts" on this product. (5)
- Compared to most other people, I know less about this product. (6)
- I have heard of most of the new products that are around. (7)
- When it comes to this product, I really don't know a lot. (8)
- I can tell if this product is worth the price or not. (9)

Block 7– Demographics

Q13 – What is your gender?

- Male (1)
- Female (2)

Q15 - To which age group do you belong to?

- 18-24 years old (1)
- 25-43 years old (2)
- 44-55 years old (3)
- 56-74 years old (4)
- 75 years old or older (5)

Q15 – What is your nationality?

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

Q16 – What is the highest education level you have completed?

- High school diploma (1)
- Bachelor's degree (2)
- Master's degree (3)
- Ph.D degree (4)

Q17 – What is your current occupation?

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

Q18 – How many household members?

- Solo (1)
- 1-2 persons (2)
- 3-4 persons (3)
- 5 or more persons (4)

Q19 – What is the gross monthly income (before tax) of your household?

- Less than 500€ (1)
- 500€ - 1000€ (2)
- 1001€-2000€ (3)
- 2001€-3000€ (4)
- 3001€-4000€ (5)
- 4001€-5000€ (6)

- More than 5000€ (7)

Block 8 – Final Message

Thank you for your time spent taking this survey.
Your response has been recorded.

Appendix 4- Tests of Normality - Kolmogorov- Smirnov

	Tests of Normality				
	Kolmogorov- Smirnov ^a			Skewne	Kurtosi
	Statisti			ss	s
	c	df	Sig.		
I understand this product is the best gluten free pasta	,254	163	<,001	-,390	,447
I understand this product is gluten free	,228	163	<,001	-,993	,058

a. Lilliefors Significance Correction

Appendix 5- Internal Consistency of the Variables

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q8.1 This pasta with this packaging is of high quality.	15,75	7,594	,649	,760
Q8.2 This pasta with this packaging is reliable.	15,69	8,155	,597	,785
Q8.3 This pasta with this packaging is superior product.	15,90	7,175	,735	,718
Q8.4 This pasta with this packaging is of very bad quality.	15,16	8,197	,561	,801

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q9.1 Never-Definitely	16,94	32,404	,767	,922
Q9.2 Definitely do not intend to buy - Definitely intend to buy	17,20	30,545	,869	,904
Q9.3 Very low purchase interest - Very high purchase interest	17,26	30,442	,832	,910
Q9.4 Probably not buy it - Probably buy it	17,06	28,947	,817	,915
Q9.5 Definitely not buy it - Definitely buy it	17,20	30,940	,799	,917

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q10.1 I know pretty much about this product.	28,69	63,807	,649	,792
Q10.2 I know how to judge the quality of this product.	28,34	62,461	,662	,789
Q10.3 I think I know enough about this product to feel pretty confident when I make a purchase.	28,08	64,148	,638	,793
Q10.4.inv I do not feel very knowledgeable about this product.	28,27	68,606	,435	,817
Q10.5 Among my circle of friends, I'm one of the "experts" on this product.	29,09	63,190	,589	,799
Q10.6.inv Compared to most other people, I know less about this product.	28,00	74,284	,229	,838
Q10.7 I have heard of most of the new products that are around.	28,55	65,965	,530	,806
Q10.8.inv When it comes to this product, I really don't know a lot.	28,79	65,438	,612	,797
Q10.9 I can tell if this product is worth the price or not.	27,85	69,316	,403	,820

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q10.1 I know pretty much about this product.	24,74	56,146	,681	,804
Q10.2 I know how to judge the quality of this product.	24,39	55,473	,665	,805
Q10.3 I think I know enough about this product to feel pretty confident when I make a purchase.	24,12	56,565	,666	,806
Q10.4.inv I do not feel very knowledgeable about this product.	24,31	61,747	,416	,837
Q10.5 Among my circle of friends, I'm one of the "experts" on this product.	25,13	56,385	,581	,817
Q10.7 I have heard of most of the new products that are around.	24,59	58,762	,533	,823
Q10.8.inv When it comes to this product, I really don't know a lot.	24,83	58,818	,590	,816
Q10.9 I can tell if this product is worth the price or not.	23,89	61,654	,418	,837

Appendix 6- Normality of the Distribution of the Variables - Kolmogorov-Smirnov

Tests of Normality					
Kolmogorov-Smirnov^a					
	Statistic	df	Sig.	Skewness	Kurtosis
Q8 Perceived Quality	,110	163	<,001	-,397	-,332
Q9 Purchase intention	,081	163	,011	-,318	-,058
Q10 Consumer Knowledge	,063	163	,200*	,194	-,437

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Appendix 7- Distance of Mahalanobis

	Mahalanobis Distance	Prob_MAH 2
Minimum	,0208	,0028
Maximum	14,0859	,9992

Appendix 8- Assumptions Parametric Test One-way ANOVA

Tests of Normality						
Kolmogorov-Smirnov^a						
	Package	Statistic	df	Sig.	Skewness	Kurtosis
Perceived Quality	Penne	,100	54	,200*	-,412	-,500
	Gluten Free Penne	,159	58	<,001	-,348	-,816
	The best Gluten Free Pasta	,130	51	,032	-,156	-,772
Purchase intention	Penne	,130	54	,023	-,621	,408
	Gluten Free Penne	,072	58	,200*	-,010	-,054

	The best Gluten Free Pasta	,094	51	,200*	-,380	-,002
Consumer Knowledge	Penne	,096	54	,200*	,152	-,289
	Gluten Free Penne	,096	58	,200*	,395	-,574
	The best Gluten Free Pasta	,079	51	,200*	,126	-,455

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Appendix 9- Test of Homogeneity of Variance

Test of Homogeneity of Variance	Levene Statistic	df1	df2	Sig.
Q8 Perceived Quality	2,164	2	160	,118
Q9 Purchase intention	,051	2	160	,951
Q10 Consumer Knowledge	2,681	2	160	,072

Appendix 10 - Moderation H1 - Model 1

Run MATRIX procedure:

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

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model : 1

Y : PI

X : Stimuli

W : Knowl

Sample

Size: 163

Coding of categorical X variable for analysis:

Stimuli	X1	X2
1.000	.000	.000
2.000	1.000	.000
3.000	.000	1.000

OUTCOME VARIABLE:

PI

Model Summary

R	R-sq	MSE	F	df1	df2	p
.4868	.2370	1.4823	9.7545	5.0000	157.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.1621	.6778	3.1900	.0017	.8234	3.5008
X1	-.3839	.8613	-.4457	.6564	-2.0850	1.3173
X2	.4991	.8559	.5831	.5607	-1.1916	2.1897
Knowl	.5943	.1805	3.2924	.0012	.2378	.9508
Int_1	.0840	.2356	.3565	.7220	-.3814	.5493
Int_2	-.0709	.2286	-.3101	.7569	-.5223	.3806

Product terms key:

Int_1 : X1 x Knowl
Int_2 : X2 x Knowl

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

	R2-chng	F	df1	df2	p
X*W	.0027	.2815	2.0000	157.0000	.7550

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

Level of confidence for all confidence intervals in output:

95.0000

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

Appendix 11- Moderation H1 (2) - Model 1

Run MATRIX procedure:

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

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model : 1

Y : PI

X : Stimuli

W : Knowl

Sample

Size: 163

OUTCOME VARIABLE:

PI

Model Summary

R	R-sq	MSE	F	df1	df2	p
.4786	.2291	1.4789	15.7506	3.0000	159.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.5091	.9669	1.5608	.1206	-.4005	3.4187
Stimuli	.3133	.4220	.7424	.4589	-.5202	1.1468
Knowl	.7196	.2588	2.7810	.0061	.2086	1.2307
Int_1	-.0530	.1127	-.4700	.6390	-.2756	.1696

Product terms key:

Int_1 : Stimuli x Knowl

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

	R2-chng	F	df1	df2	p
X*W	.0011	.2209	1.0000	159.0000	.6390

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

Level of confidence for all confidence intervals in output:

95.0000

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

Appendix 12- Mediation H2 - Model 4

Run MATRIX procedure:

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

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2022). www.guilford.com/p/hayes3

Model : 4

Y : PI
 X : Stimuli
 M : P_Qual

Sample
 Size: 163

Coding of categorical X variable for analysis:

Stimuli	X1	X2
1.000	.000	.000
2.000	1.000	.000
3.000	.000	1.000

OUTCOME VARIABLE:

P_Qual

Model Summary

R	R-sq	MSE	F	df1	df2	p
.1629	.0266	.8025	2.1821	2.0000	160.0000	.1162

Model

	coeff	se	t	p	LLCI	ULCI
constant	5.0370	.1219	41.3181	.0000	4.7963	5.2778
X1	.1612	.1694	.9518	.3426	-.1733	.4958
X2	.3649	.1749	2.0862	.0385	.0195	.7104

OUTCOME VARIABLE:

PI

Model Summary

R	R-sq	MSE	F	df1	df2	p
.4844	.2346	1.4683	16.2457	3.0000	159.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	.7220	.5633	1.2817	.2018	-.3905	1.8345
X1	-.3930	.2298	-1.7103	.0892	-.8469	.0608
X2	-.0811	.2398	-.3384	.7355	-.5547	.3925
P_Qual	.7155	.1069	6.6909	.0000	.5043	.9267

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

**

Relative direct effects of X on Y

	Effect	se	t	p	LLCI	ULCI
X1	-.3930	.2298	-1.7103	.0892	-.8469	.0608
X2	-.0811	.2398	-.3384	.7355	-.5547	.3925

Omnibus test of direct effect of X on Y:

R2-chng	F	df1	df2	p
.0159	1.6488	2.0000	159.0000	.1956

Relative indirect effects of X on Y

Stimuli -> P_Qual -> PI

	Effect	BootSE	BootLLCI	BootULCI
X1	.1154	.1281	-.1216	.3841
X2	.2611	.1428	.0000	.5665

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

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

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

Appendix 13- Mediation H2 (2) - Model 4

Run MATRIX procedure:

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

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

Model : 4

Y : PI
X : Stimuli
M : P_Qual

Sample

Size: 163

OUTCOME VARIABLE:

P_Qual

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	.1626	.0264	.7977	4.3698	1.0000	161.0000	.0382

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.8475	.1864	26.0077	.0000	4.4794	5.2155
Stimuli	.1822	.0872	2.0904	.0382	.0101	.3544

OUTCOME VARIABLE:

PI

Model Summary

	R	R-sq	MSE	F	df1	df2	p
	.4684	.2194	1.4881	22.4854	2.0000	160.0000	.0000

Model	coeff	se	t	p	LLCI	ULCI
constant	.6337	.5806	1.0915	.2767	-.5129	1.7804
Stimuli	-.0446	.1207	-.3692	.7125	-.2829	.1938
P_Qual	.7177	.1076	6.6668	.0000	.5051	.9303

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

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI
-.0446	.1207	-.3692	.7125	-.2829	.1938

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
P_Qual	.1308	.0713	.0009	.2825

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

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

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

Appendix 14- Moderation H3 - Model 1

Run MATRIX procedure:

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

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

Model : 1
Y : PI
X : P_Qual
W : Knowl

Sample
Size: 163

OUTCOME VARIABLE:

PI

Model Summary

R	R-sq	MSE	F	df1	df2	p
.5989	.3586	1.2304	29.6345	3.0000	159.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	-.7012	1.5966	-.4392	.6611	-3.8546	2.4522
P_Qual	.6269	.2990	2.0970	.0376	.0365	1.2173
Knowl	.5707	.4554	1.2531	.2120	-.3287	1.4701
Int_1	-.0151	.0831	-.1814	.8563	-.1791	.1490

Product terms key:

Int_1 : P_Qual x Knowl

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

	R2-chng	F	df1	df2	p
X*W	.0001	.0329	1.0000	159.0000	.8563

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

Level of confidence for all confidence intervals in output:
95.0000

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

Appendix 15- Full Model - Model 15

Run MATRIX procedure:

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

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

Model : 15
Y : PI
X : Stimuli
M : P_Qual
W : Knowl

Sample
Size: 163

OUTCOME VARIABLE:

P_Qual

Model Summary

R	R-sq	MSE	F	df1	df2	p
.1626	.0264	.7977	4.3698	1.0000	161.0000	.0382

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.8475	.1864	26.0077	.0000	4.4794	5.2155
Stimuli	.1822	.0872	2.0904	.0382	.0101	.3544

OUTCOME VARIABLE:

PI

Model Summary

R	R-sq	MSE	F	df1	df2	p
.5996	.3595	1.2444	17.6220	5.0000	157.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	-.4179	1.7316	-.2413	.8096	-3.8381	3.0024
Stimuli	-.1602	.3972	-.4033	.6873	-.9446	.6243
P_Qual	.6398	.3049	2.0981	.0375	.0375	1.2420
Knowl	.4793	.5002	.9583	.3394	-.5086	1.4673
Int_1	.0470	.1051	.4469	.6556	-.1606	.2545
Int_2	-.0171	.0839	-.2035	.8390	-.1827	.1486

Product terms key:

Int_1 : Stimuli x Knowl
 Int_2 : P_Qual x Knowl

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

	R2-chng	F	df1	df2	p
X*W	.0008	.1997	1.0000	157.0000	.6556
M*W	.0002	.0414	1.0000	157.0000	.8390

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

Conditional direct effects of X on Y

Knowl	Effect	se	t	p	LLCI	ULCI
2.3750	-.0487	.1723	-.2825	.7780	-.3890	.2916
3.3750	-.0017	.1142	-.0150	.9881	-.2272	.2238
4.6250	.0570	.1525	.3735	.7093	-.2443	.3583

Conditional indirect effects of X on Y:

INDIRECT EFFECT:

Stimuli -> P_Qual -> PI

Knowl	Effect	BootSE	BootLLCI	BootULCI
2.3750	.1092	.0654	.0006	.2615
3.3750	.1061	.0601	.0007	.2387
4.6250	.1022	.0619	.0005	.2437

Index of moderated mediation:

	Index	BootSE	BootLLCI	BootULCI
Knowl	-.0031	.0194	-.0469	.0338

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

Level of confidence for all confidence intervals in output:
95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
5000

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

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