The impact of visual elements of package on consumers purchase intent and the mediating role of perceived risk

An analysis on food packaged products.

Dissertation by

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Abstract

Title

The impact of visual elements of package on consumers purchase intent and the mediating role of perceived risk - An analysis on food packaged products.

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Nowadays, packaging has been acknowledged to be an important strategic marketing tool, especially at the purchasing moment, and it plays a key role in influencing consumers' buying behaviour of packaged food products.

The visual design of packaging transmits symbolic meaning to consumers, hereby impacting how the product is evaluated by them.

This dissertation aims to understand the effect of visual elements of packaging; specifically, the effect of incorporating an image of the product or a transparent window on the packaging of the product on purchase intent, giving a special attention to the role of perceived risk.

This dissertation is particularly important regarding low involvement FMCG products, such as packaged salmon and packaged pizza, where packaging is strongly linked with the product in the eyes of the consumer at the point of purchase.

In this dissertation, both primary and secondary data were collected from an online questionnaire and existing literature regarding the topics in study.

The obtained results, described in the last chapters of this study, suggest that food packaged products purchase intention is related with the presence of transparency and product imagery on package as well as by the risk (financial, psychological and functional) associated with the each food category. In addition, according to the dimension of perceived risk, it plays a key role in mediating some relationships between the variables in study.

Resumo

Título

O impacto dos elementos visuais da embalagem na intenção de compra e o papel mediador do risco associado à compra - Uma análise a produtos alimentares embalados.

Autor

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Hoje em dia, a embalagem dos produtos é considerada um elemento estratégico fundamental de *marketing*, sobretudo no momento da sua aquisição; é por isso um fator decisivo no comportamento dos consumidores na sua escolha de produtos alimentares embalados.

O *design* da embalagem confere um significado simbólico aos consumidores desencadeando impacto visual no momento da avaliação do produto que pretendem adquirir, afetando a sua avaliação do produto.

Com este estudo pretende-se compreender o impacto dos elementos visuais da embalagem, sobretudo a incorporação da imagem do produto ou de uma janela transparente permitindo, deste modo, a visualização imediata do produto através da embalagem no momento da aquisição por parte dos consumidores. Mais se deseja salientar a importância do papel do risco (financeiro, psicológico e funcional) associado pelo consumidor nesse processo.

De modo a estudar impacto dos elementos visuais da embalagem e na intenção de compra dos consumidores de produtos embalados, a seguinte dissertação concentra-se em produtos alimentícios, tais como salmão e pizza embalados.

Nesta dissertação, dados primários e dados secundários foram reunidos envolvendo a realização de um questionário online e através da literatura existente.

Os resultados finais, descritos nos últimos capítulos desta dissertação, evidenciam que a intenção de compra de produtos alimentares embalados está relacionada com a presença de elementos transparentes ou imagem do produto na embalagem; e pelo risco associado à compra de cada tipo de produto. Dependendo do tipo de risco, este exerce um efeito mediador em algumas das relações entre as diferentes variáveis em estudo.

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List of Abbreviations and Acronyms

DV Dependent Variable

IV Independent Variable

PI Purchase Intent

FMCG Fast Moving Consumer Goods

SPSS Statistical Package for the Social Sciences

VIF Variance Inflation Factor

PG Package displaying a picture of pizza

PS Pizza's package with a transparent window

SG Package displaying a picture of salmon

SS Salmon's package with a transparent window

"See-Through" (variable) Transparent packaging

"Opaque" (variable) Opaque packaging

"Graphs" (variable) Package displaying an image of the product

PRfunc Perceived Functional Risk measure

PRfin Perceived Financial Risk measure

PRpsy Perceived Psychological Risk measure

Multicollinearity term used to describe the case when the intercorrelation of predictor variables is high.

C-path is the value that represents the effect of the independent variable on the dependent variable without the mediator variable.

C'path is the value that represents the effect of the indirect variable on the direct variable after controlling for the mediator.

Percent mediation (PM) represents, in percentage, the difference between *c* and *c'* in relation to *c*.

Chapter 1. Introduction

1.1 Background

As a result of all the changes in consumers' lifestyle and the growing importance of self-service marketing on a daily basis, companies are adopting diverse techniques to compete with each other in order to attract the customers' attention. Thus, packaging is becoming a primary vehicle of branding and communication (Rettie & Brewer, 2000).

Packaging is defined as "*the container for a product – encompassing the physical appearance of the container and including the design, colour, shape, labelling and materials used*" (Agariya *et al.,*2012). Following the same path, Malkewitz (2006)'s defined package design as all the different elements selected and blended into a holistic design in order to achieve a specific sensory effect.

Besides the basic function of protecting the product, packaging also has the fundamental function of disclosing the package's content (Vieira *et al.,* 2015) by providing adequate and detailed information to the consumers about the product. Furthermore, this marketing tool is also used as a valuable technique to gain competitive advantage and it can have an impact, either positive or negative, on consumer purchasing decisions. As a matter of fact, more than half of the shoppers' final purchase decisions of food and beverages are made at the supermarket. Simmonds & Spence (2017) by Connolly & Davison (1996). Furthermore, the majority of shoppers buy a product only based the front façade of the package; and make the final purchase decision without looking for a substitute product (Urbany, Dickson, & Kalapurakal, 1996).

As stated by Rundh (2005), packaging can capture consumers' attention and influence their perceptions about the particular product contained within the package. On the other hand, packaging allows shoppers to identify and distinguish a particular product from a plenty of similar products (Underwood, Klein, & Burke, 2001), and it can impart visual presence and uniqueness to the product (Silayoi and Speece, 2004). Nevertheless, it is important to highlight that packaging can have both positive and negative impact on the consumers' perceptions of products' quality, as it can either improve the product's image, or it can be a cause of product's failure as it is the first contact between the product and the consumer in the store (Silayoi and Speece, 2007; Simmonds et al., 2018).

When consumers intend to buy a product or a service, the act of purchasing is evaluated as a risky endeavour as they do not have the certainty that the actual results will not differ from their expectations. This perceived risk can affect their likelihood of purchase (Wood and Sheer, 1996; Roselius, 1971). Consequently, consumer behaviour is motivated to reduce the perceived purchase risk (Kim & Lennon, 2000). Therefore, insights on consumer's risk perception will enable marketers to understand, anticipate and satisfy consumer's needs and desires, thereby increasing their purchase intention through optimized packaging design.

According to (Patrick & Peracchio, 2010) despite the increasing awareness of the importance of product packaging, theories to understand how consumers react to the appearance of a product contained within the package are relatively recent. In order to maximize the effectiveness of packaging at the point of purchase, several studies about packaging and its elements, either visual or verbal, and its impact on consumer's perceptions and consequently purchase decisions should be crucial and a relevant issue.

1.2 Problem Statement

This dissertation aims to study the effect of visual elements of package on consumer purchase intentions, with particular emphasis on the following variables: the effect of incorporating visual product imagery (product pictures) and transparent elements on the package, and how these elements affect consumers' perceptions about the product, consequently impacting consumers' purchase intent.

This study will focus on packaged food goods, comparing two categories with distinct levels of perceived risk: packaged pizza and packaged salmon**.**

In order to have a clearer understanding of the problem statement addressed on this dissertation, its specification could be the following: **Is what you see what you get?**

1.2.1 Research Questions

This dissertation provides a theoretical framework to address these packaging doubts and it studies some contingencies under which package design is more or less effective:

the presence of visual imagery or the presence of transparency on package with exposure of the contained product.

The following research questions were developed:

RQ1: How do visual elements of package influence consumers' purchase intention?

RQ2: Does the inclusion of a product's picture on the package contribute to lower purchase intentions than the inclusion of a transparent element on the package?

RQ3: How visual elements of package influences the uncertainty perceived by the consumers at the point of purchase?

RQ4: How does perceived risk impact purchase intention?

RQ5: How does the relationship between visual elements of package and purchase intent vary with different dimensions of perceived risk as mediator variable of these relationships?

1.3 Relevance of Research

As per common knowledge, the majority of consumers before they go to a grocery shop to buy a product, they may not spend much time thinking about a specific brand. Moreover, at the point of purchase consumers are exposed to many similar perishable consumer goods on the shelf (Agariya *et al.,* 2012). Thus, package is a key factor in marketing communications, especially at the point of purchase. Findings suggest that most of the buying decisions are made at the point of sale and they are based on the aesthetics package design elements (Ampuero & Vila, 2006; Keizer, 2016).

In academic terms, the topic of this study constitutes a further investigation of what has been studied in literature and can be considered academically relevant in the deepening of the knowledge with regard to the relationship between the variables relative to visual elements of package, perceived risk and purchase intent. Despite the fact that this topic has been widely studied in previous research projects, this dissertation expands the research on the effectiveness of the presence of an image of the product versus transparency on package in consumer's purchase intent of food packaged products. These findings highlight the importance of including a mediator variable, the perceived risk and how it mediates these relationships across different food product categories.

Regarding managerial relevance, one of the key challenges for managers, marketers and designers is to create sustainable as well as acceptable packaging. Thus, companies can benefit from the results and conclusions that dissertation aims to achieve as they can be used towards a company better use of its marketing resources by develop appropriate and attractive packaging solutions that are able to perform in traditional (and non-traditional) channels and thus increase the number of sales of packaged food products.

1.4 Research methods

In order to answer the research questions in an appropriate way, both primary and secondary data were used in this master thesis. Secondary data have been collected through a detailed research on previous studies, books, academic journals and articles in order to gather an in-depth background knowledge about packaging, with a special focus on: the evolution of packaging, the visual elements of packaging, consumer drivers of packaged goods' purchase intent and how perceived risk mediates the relationship between visual elements of package and consumers buying behaviour.

Regarding primary data, the questionnaire was sent to the biggest number of respondents possible by email and through different channels of social media in order to understand the causal effect between the variables in study.

On the fourth chapter, the obtained answers were analysed with IBM's SPSS statistical software version 23.0. Here, multiple linear regressions, reliability and frequencies analysis as well as a mediation analysis and Cronbach's Alpha coefficient, were performed in order to analyse those responses and understand the relationship between the variables in study. Especially the mediating role of different dimensions of perceived risk - considered in this study - in the relationship between visual elements of package and purchase intent, by performing statistical tests such as ANOVA and Sobel test.

1.5 Dissertation outline

This dissertation will present a total of five chapters. The following chapter contains the literature review. It provides with an in-depth understanding of the hypothesis that this

dissertation proposes to answer and is supported by previous studies. It will explain how each relevant variable have an impact on consumers' purchase intent for packaged goods.

The third chapter comprises the research methodology which will clarify and described the methods used to collect and analyse the data and how each statistical test will be applied to this data.

The fourth chapter, results analysis, presents an analysis of the results obtained from the collected data and verify the legitimacy of each hypothesis proposed along this study.

Finally, the fifth chapter contemplates the main findings and limitations of this study and as well as some recommendations for future researches on the topic in study. It also it provides both academic and managerial suggestions.

Chapter 2. Literature Review

The following chapter will provide a detailed analysis of previous academic researches and existing literature to support and justify the hypothesis of this study and establish a context for the dissertation's research questions. It will be applied to the practical case of how packaging design influences consumers purchase intent of packaged goods. Therefore, it begins by explaining the definition and the evolution of the terms in use.

2.1 Packaging Relevance

In nowadays competitive environment, the focus on packaging design as a strategic marketing tool to boost impulsive purchase decisions is increasing due the increase of self-service and changes on consumers' lifestyle. Thus, FMCG companies are always looking for improved methods to increase the shelf presence and the impact of their products in consumers' mind. Following (Schoormans & Robben, 1997) attribution theory, consumers' evaluations either positive or negative, about a product is directly linked with the packaging capability to get their interest and influence their perceptions about it.

(Agariya *et al.,* 2012) define packaging as the wrapping material used to contain, protect, promote, describe, transport, display and identify the goods; and make the product clean and marketable. Some authors affirm that packaging design is used as a marketing communication strategy to influence consumer's purchasing decision alternatively to be only an extension of the product.

According to Kotler and Keller (2012), is only through the package that consumers communicate direct or indirect with the packaged product at the shop before making the final purchase decision. Furthermore, as it also transmits to consumers the desired image of a company: thus it should be considered as an important stage of the branding process (Agariya *et al.,*2012).

2.2 The role of Packaging

The move from convenience groceries to hypermarkets has promoted the propagation of products. Consequently, because of the increasingly number of similar products on the shelf, the role of packaging is becoming more important in a more competitive context.

Over the last few years, studies with focus on the impact of package appearance on consumer attention, categorization and evaluation of the product and its impact on consumer buying behaviour have been done. For several authors, package is also viewed as part of the brand and not only part of the product itself (Ampuero & Vila, 2006).

According to (Silayoi and Speece, 2004), the original function of packaging is be the container for a product and protect it; however, nowadays the role of packaging has changed, and it is used to describe in detail the characteristics of the product; and to promote its sales by enhancing customer's interest and conveying an distinctive value to products (Underwood, Klein, & Burke, 2001); Silayoi and Speece, 2004). It may get consumer's attention to a specific product and brand (Rundh, 2005) from a wide range of similar brands and products. Thus, as declared by Vilnai-Yavetz & Koren (2013), packaging should be perceived as effective, it should be seen as instrumental (because it protects the contents), aesthetic (it should have an attractive appearance), and symbolic (meaning that it communicates directly with the customers by sending them the desired message). Consequently, product packaging not only leads to consumer's purchase intent, but it also increase companies' market share and declines the promotional and advertising costs of the organization.

Findings suggest that 50% of grocery purchases are unplanned, meaning that the impulsive purchase intention have been increasing (Cobb and Heyer cited in Rettie & Brewer, 2000). Due to the tendency of an unique weekly groceries shop and the large number of goods purchased in that unique shop, consumers spend less time to make the final purchase decision and consequently the role of the packaging is becoming more important at this point of the purchase (Rettie & Brewer, 2000).

The package design is the *"salesman on the shelf"* (Pilditch,1972 cited by Rettie & Brewer, 2000); when consumers' purchase decisions are made at the store, package is extremely important when compared to other marketing communication strategies because of its impact on consumer's perceptions and availability. For packaged goods

that are not purchased in their final appearance, such as several food products, the consumer commonly relies on the package to elaborate an opinion on how the product looks like when in its ready-to-eat state (Underwood & Klein, 2002). It is important to highlight that should be high consistency between this marketing communication strategy and the desired image for the brand.

2.3 Elements of Packaging

Regarding the most important components of packaging, different opinions have been expressed relatively to the classification of packaging components in marketing literature.

According to Kotler (2003), producers and designers must take into account six different elements in order to develop an effective and useful package. These elements are its size and colour, the package's form and material, text and brand. Silayoi and Speece (2004; 2007).Moreover, (Underwood, 2003) distinguish package between two categories of elements: visual elements which are the aesthetics part of the package and the product's performance demonstrations (for example its size and shape, the package's colours and graphics) while the product detailed information and technology are related to the informational elements of packaging. As stated by (Silayoi and Speece, 2004; 2007) aesthetics elements are connected with the affective parts of consumers' decision-making process, whereas informational elements are associated to the cognitive aspect of consumers' decision-making process.

Nowadays, evolution in packaging is, to a greater extent, allowing designers to put emphasis on the importance of visual elements of the package by adding transparent elements, which allow shoppers to see the product through the package and not only on the package before buying it.

2.3.1 Visual Elements of Package

Package design involves several elements, but this study will focus only on the visual elements of package – the presence of product imagery and/or transparent elements - aiming to understand the communicative effects on consumer's evaluation and purchase

decision-making. As previously mentioned, the concept of visual elements of package is inherently multidimensional as it includes simultaneously different visual and informative elements that provide complex brand associations (Underwood *et al.,* 2001).

Under the light of (Homer & Gauntt, 1992) visual information on package attracts consumers' attention and creates expectations for the content of the verbal elements presented on product's package. On the other hand, consumers with limited time to do their grocery shopping, further depend on aesthetic and extrinsic attributes of packaging when making their final purchase decision (Wells *et al.,* 2007). Thus, under these circumstances, consumers prefer visual elements with low information value rather than high. Therefore, regarding food packaged goods, a graphic of the food on its ready-to-eat form food on packaging may enhance later perceptions of the food such as how it looks at is ready-to-eat form, smells or tastes, as well as increasing the probability that the shopper will buy the product (MacInnis & Price, 1987).

To sum up, through the package consumers are able to communicate direclty and indireclty with product within the package in one of two ways: throught the presence of transparant elements on package or through a graphic of the product printed on the package.

In hypothetical terms:

Hypothesis 1: *Visual elements of package positively impacts purchase intent.*

2.3.1.1 Visual Elements of Package: Product Imagery

According to MacInnis & Price (1987), product imagery is "*a process by which sensory information is represented in working memory".*
According to (Silayoi and Speece, 2007) product imagery on package an fundamental visual element of packaging design as can create a value differentiation, in other words, it permits differentiate a specific product from the competitors' similar products and usually attracts more attention than verbal advertising. These effects are explained by the fact that people learn quicker and more efficiently when information is provided in pictures rather than words (Underwood *et al.,* 2001). An attractive product picture may

also elicit positive and memorable product associations with the consumer; as it enables consumers to spontaneously create an image on their mind of how a product looks at its final form and do evaluations about its quality, tastes or smell in comparison with a package without product imagery (Underwood *et al.,* 2001). In addition, product imagery also enhance consumer's purchase intentions (Gofman *et al.,* 2009).

However, marketers and designers should be aware that product imagery on packaging should be perceived by consumers as realistic instead of dishonest (Underwood & Ozanne, 1998).

Based on the above theories, the following Hypothesis is presented:

Hypothesis 1a: *Including a picture of the product on package will positively affect purchase intent.*

2.3.1.2 Visual Elements of Package: The presence of transparent elements on package

Nowadays, it is becoming more common the use of transparency on packaging design in order to show the shoppers what's exactly inside the package and let them interact directly with the product.

However, the efficacy of the use of transparency when compared with product imagery on consumer's mind is still little known. Thus, the scope of this study is also to understand how the use of transparent elements on package can influence the consumer perceptions about the product and consequently its impact on consumers purchase intention. Moreover, over the past few years, developments in packaging technology and new opportunities for packaging design (Simmonds & Spence, 2017) has allowed designers to add transparent elements into a wide range of products' packaging design and consequently allowing consumers to see the products through the packaging before the final purchase decision.

According to Deng & Srinivasan (2013), transparency is present from 20% to 77% of all packaging, depending on product category.

Following Billeter, Zhu, and Inman's (2012) attribution theory, transparent packaging leads to greater purchase intent as the products are perceived as more trustworthy when compared to the exact same products presented in non-transparent packaging. In other

words, the use of transparent elements can directly and positively influence consumer's purchase intent, in the perception of brand transparency and product's quality.

It is important to highlight that when the consumer can see the product through the package, the evaluation is declared to be functional instead of symbolic, as it is not based on associations elicited by graphical elements on the packaging. Contrarily, it is based on the actual appearance and texture of the product in order to generate this evaluation (Sogn-Grundvåg & Østli, 2009).

Hypothesis 1b: *The presence of transparent elements on package positively impacts purchase intent.*

The presence of transparency as a crucial element of packaging can lead to an increased purchase intent of packaged products, across different categories, when compared to the presence of product imagery (Simmonds & Spence, 2017). This effect would be explained by the fact that allowing shoppers to evaluate the product through its package, will create a positive perception about on their mind as they will perceived it as more salient (Deng & Srinivasan, 2013) when compared to an image of the product on its ready-to-eat state on package.

Hypothesis 1c: *The inclusion of an image of the product on package will stimulate lower purchase intentions than the inclusion of a transparent element on package.*

2.4 Purchase Intent

According to Morrison (1979), purchase intent is the probability that a shopper will choose to buy a good and it is highly related with the extent to which they consider that the purchased product will satisfy their desires and needs (Kupiec and Revell, 2001). However, consumers' decision-making process is becoming more complex as they have several similar products within the same category and they are affected by internal or external motivations during the buying process.

Purchase intentions have been applied in several articles and studies for predicting actual purchase. Several authors mentioned in this dissertation, who have studied visual elements of package with emphases on the presence or absence of either transparent elements or images of the product on its package, have used purchase intent construct.

2.5. Perceived Purchase Risk

As declared by (Sheau-Fen *et al.,*2012), the willingness to buy a product is associated with the degree of risk perceived by consumers related to a specific product category. In addition, more often than not, consumers have a tendency to avoid any risks as far as purchase decisions are concerned (Batra and Sinha, 2000).

Perceived risk is one of the most important factors in order to understand consumers´ buying behaviour (Bettman, 1973) and it is fundamental for researchers in order to clarify their perceptions of the uncertainty and adverse consequences linked with their final purchase decision. Batra and Sinha (2000) suggest that the *"degree of inconvenience of making a mistake"* is one of the determinants of the level of perceived risk. The perceived risk is frequent to new product purchase and it can comprise perceived functional and financial risk, psychological risk, physical and also social perceived risk (Bhukya & Singh, 2015).

Although, in the literature there are described different types of perceived risks, social risk and physical risk were not considered for this study as packaged products are typically used at home so they are not highly visible to others. On the other hand, physical and functional risks are the same thing regarding groceries as in the case that a specific product does not function properly; it could damage consumers´ health (Semeijn *et al.,* 2004).

Previous studies have concluded that visual elements of package impact how shoppers perceived product's quality and also allow direct comparison among products. Therefore, perceived value has significantly influence on consumers purchase intention of packaged products (Simmonds & Spence, 2017).

Both types of packaging either transparent or non-transparent packaging, communicate a message, however the crucial question is: which of the two packaging options better communicate and transmit the desired message of quality and trust?

Transparent packaging can influence consumer's perceptions of perceived risk as it can prompt an increase in perceived product confidence and product quality as it allows shoppers to evaluate the product by its appearance and consequently reduce the perceived uncertainty regarding the product's quality (Sogn-Grundvag and Østli 2009)

which leads to higher purchase intentions. This effect can also be explained by the fact that one of the determinants of purchase intention is confidence, which is the opposite of perceived risk (Park, Lennon, & Stoel, 2005).

On the other hand, the interest of this dissertation about the use of (food) product imagery on as an element of packaging design is related to its effect on consumers' beliefs about the product which influences the perceived purchase risk. Following, (Underwood & Klein, 2002) attribution theory, product imagery performs an informational function that directly impacts consumer beliefs about the product which directly affect consumer's perceived purchase risk, especially in categories for highly experiential products such as food products.

Hypothesis 2a: *There is a negative relationship between perceived functional risk and transparent packaging.*
Hypothesis 2b: *There is a negative relationship between perceived functional risk and product imagery.*

2.5.1 Perceived functional risk

Many empirical studies described functional risk as the ambiguity that the outcome of a decision to buy a specific packaged product will not encounter consumer's beliefs and expectations (Bhukya and Singh, 2015). Accordingly, when consumers are not familiar with the brand or/and the information about product's functionality and/or characteristics presented on package is limited, the perceived risk is higher (Bhatnagar and Ghose, 2004 cited by Pappas, 2016) as there is more insecurity with intrinsic attributes and, consequently higher level of risk regarding product's performance and quality (Erdem and Swait, 2004). As previously stated and according to Underwood and Klein (2002), showing food visuals of the product on package lead to an increase on consumer's positive perceptions of product's quality than when no images of the packaged product on are displayed.

2.5.2 Financial Risk Perception

Financial risk is defined as *"the likelihood of suffering a financial loss due to any hidden costs, maintenance costs or replacement cost due to the lack of warrantee and a faulty product"* (Kiang *et al.,*2011 cited by Pappas, 2016). It is also described as the perception of the likelihood that the product is not worth the price that consumers paid for it (Tsiros & Heilman, 2005). According to (Pappas, 2016) this last designation can be extended to consumer's price-quality schema and it is described as *"the generalised belief across product categories that the level of the price cue is related positively to the quality level of the product"* (Lichtenstein *et al.,* 1993 cited by Pappas, 2016) , which means that consumers rely on price to evaluate product's value in terms of value which has a direct impact on perceived risk and consequently an impact on purchase intent.

2.5.3 Perceived psychological risk

Psychological risk can be defined as the psychological state of consumer's dissatisfaction when they make a wrong purchase decision by buying a low quality product or service and it is associated with consumer's dissatisfaction with possessing or using those products (Ueltschy *el al*. (2004) cited by Bhukya and Singh (2015). A product's image on package can increase consumer self-evaluations and consequently increase the likelihood that consumers will use the image as a product-quality indicator (Krishna *et al.,* 2017) On the other hand, consumer's evaluations and perceptions of product's performance can be influenced by the use of transparency as an element of packaging as it let them observe directly how the product looks like and simultaneously evaluate it.

2.5.4 Perceived Consequences of Purchase mistake

The perceived consequences of a wrong purchase decision of products can differ across different categories, for example a bad purchase decision for baby foods (Batra and Sinha. 2000) may seems riskier when compared with others categories due to the severity of the consequences. Therefore, consumers use external cues such as visual elements of package, to establish their expectations of the packaged goods and thereby

reduce the perceived risk associated with product's characteristics and quality, which leads to an increase in purchase probability (Vilnai-yavetz & Koren, *2013*).

The evaluation of packaging design elements by consumers, either informational or non-informational, changes as the perceived purchase risk increases. Thus, visual elements positively influence the decision–making at the point of purchase and play an important role on perceived purchase risk, especially for low involvement products such as food products (Silayoi and Speece, 2004).

Considering risk as consumer's anticipation of the inconveniences of making a bad purchase decision due to perceived quality and functionaly variance, it can be conjectured that an increse on perceived purchase risk is directly linked to an increase on purchase intent of packaged goods, regardless of the type of packaging desing considered in this studey, either the presene of product imagery or transparent elements on package.

Hypothesis 3a: *There is a negative relationship between perceived functional risk and purchase intent.*

Hypothesis 3b: *There is a negative relationship between perceived financial risk and purchase intent.*

Hypothesis 3c: *There is a negative relationship between perceived psychological risk and purchase intent.*

According to the literature presented above, it was considered that perceived risk (perceived functional, financial and psychological risk) has a direct and negative effect on consumers' buying behaviour. Furthermore, visual elements of package (transparency and product imagery) negatively impact the different dimensions of perceived risk.

On the basis of this rationale, the following Hypotheses are built:

Hypothesis 4a: *Perceived functional risk mediates the relationship between Visual Elements of package and Purchase Intent.*

Hypothesis 4b: *Perceived financial risk mediates the relationship between Visual Elements of package and Purchase Intent.*

Hypothesis 4c: *Perceived psychological risk mediates the relationship between Visual Elements of package and Purchase Intent.*

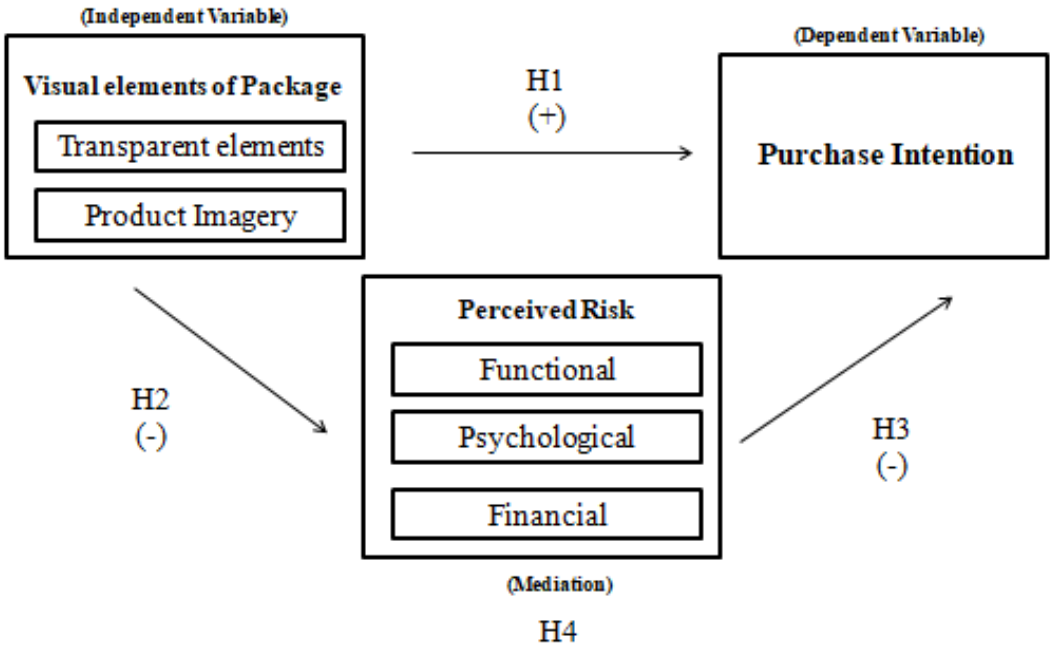


Figure 1: Conceptual Framework of proposed hypotheses.

Chapter 3. Methodology

The aim of the third chapter is to explain in detail the methodology that formed the basis for this study. It includes the analysis of both the primary and secondary data with the intention of reaching conclusions that will help to confirm the hypotheses projected on the previous chapter.

3.1 Conceptual Model and Research Approach Review

The conceptual framework of the presented paper is based on the impact of visual elements of package on consumers purchase intent of Pizza and Salmon as well as the perceived risk associated with these different categories. The variables associated with visual elements of package are the presence of either transparent elements or a graphic of the product on package. The perceived risk variable is expected to perform as a mediator on the relationship between the independent variable, Visual Elements of Package, on the dependent variable (Purchase Intent).

There are three types of methods used for research purposes that provide insights for the structure of the dissertation methodology skeleton: Exploratory, Descriptive and Explanatory (Saunders *et al.,* 2009). On this dissertation, both exploratory and explanatory methods were applied in this study in order to properly respond to the research questions presented on the previous chapter – Literature Review.

Exploratory research refers to the review of the literature, the clarification of concepts and the construction of hypothesis for the problem or situation to study.

The goal of this type of research, which is mostly qualitative, instead of providing conclusive evidences, is to provide a better understanding of the problem in study. On the other hand, explanatory research aims to explain the existence of a certain phenomenon in study and establish a cause-and-effect relationship between the variables. In other words, this method has the purpose to assess how these variables interact, which is the final step of this dissertation (Saunders *et al.,*2009).

In order to elaborate the chapter 2 – the Literature Review – the secondary data was collected though journals, books and academic articles. It presents and describes topics such as the relevance of packaging in FMCG industry, the effects of visual elements of

package (the presence of product imagery and transparency on packages) on consumer´s purchase intent. After being able to have an overview about the concepts included on this study, the primary data was collected and quantitative investigation was presented in order to associate these concepts and find further relevant insights.

3.2 Primary Data

3.2.1 Online Survey

The perceived risk linked with a specific purchase decision, as presented in the first chapter of this study, has a lot of influence on consumers' tendency to purchase packaged goods with regard to different packaging design.

Hence, an online questionnaire was developed with the aim to not only understand in what way the visual elements of packaging influence consumer's final decision to buy a specific food products such as pizza and salmon but also to understand the effect of the different dimensions of perceived risk on consumers' purchase intent across different food categories on the basis of the conceptual model presented in Chapter 1. In the questionnaire, people surveyed were randomly and evenly assigned to one of six scenarios, three involving a number of questions on packaged pizza (symbolizing visual appealing and tasteful kind of food) and the others scenarios containing the same set of questions regarding packaged salmon (symbolizing the healthy foods to eat on a daily basis). In general, junk food is perceived by consumers as more visually appealing, with a better packaging design and better promoted when compared with healthy food (Pires and Agante, 2011) and this is one of the main reasons why in this study, both healthy and unhealthy food categories was studied.

The online survey consisted of 25 questions which were divided in four topics: questions about consumers' purchase regularity within each product category, questions concerning visual elements of packaging and questions to evaluate each different dimension of perceived risk in study. Then participants were asked about their purchase intention of packaged foods and demographic questions.

The questionnaire was available online from 8th to 11th May 2018 and it was distributed by e-mail and social media only in English version. The survey can be found in Appendix I.

Since for this research problem, transparent packaging is being compared with opaque packages displaying a picture of the product, it is important to consider plain opaque packaging (without product imagery and transparency) as a "control" scenario in order to understand the importance of the presence of visual displays of the product on package.

Thus, people who did the survey, answered to the same scaled-response questions based on the image - accordingly with the scenario - that appeared at the beginning of each survey. These scenarios were random and evenly distributed among respondents, even for the "control" scenarios where there was no product display on package (opaque packaging), for the exact same products. Thus, in this questionnaire, there were six different scenarios each one with a different image that randomly appeared in each survey. That will allow us to quantify the impact of each scenario – packages with graphical representation of the product versus transparent packaging versus opaque packaging - for each food category.

Despite the fact that all the scenarios were and evenly distributed among respondents, if respondents have never bought before one of the two food categories presented in the online survey, they only answered to the questionnaire regarding the food category that they have already bought at least one time before.

Moreover, people who answered the survey, in order to finish it, needed to evaluate the attractiveness of each the packaging design when the three different images of each scenario were simultaneously shown in the (ranking) question. This will let us understand how the different the visual elements of package affect consumer's mind with regard to package's attractiveness.
The questionnaire design/flow is presented in figure 2.

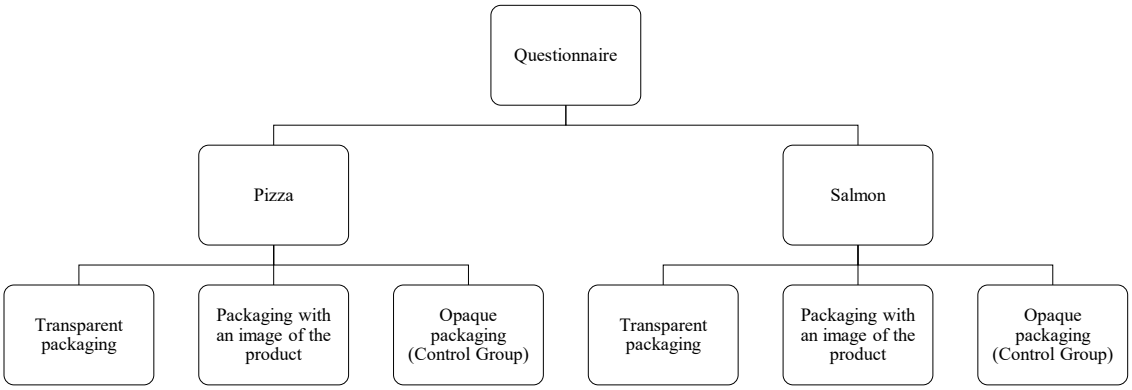


Figure 2: Questionnaire Design.

3.2.2 Construct Measurement

Measurement Model		
Construct	Literature for Scale Items	Nº of Items
Visual elements of package	(Truong *et al.,*2016) (Brakus *et al.,*2009) (Simmonds,Woods and Spence,2018)	6
Perceived risk (Functional, Financial and Psychological)	(Bhukya& Singh, 2015)	6
Purchase intent	(Vilnai-Yavetz&Koren,2013)	3
Demographic Question	(Tsiros and Heilman, 2005)	1

Figure 3: Proposed constructs, number of scale items and relevant literature sources.

Subsequent to a deep review of relevant literature, the most suited measures for this dissertation were selected. In some cases, the constructs were left as their original versions, while in other cases the constructs were either adapted or combined with similar one to better fit the context of this study.

In the table above (Figure 3) are presented the authors' name and the year of the publication of the literature used to do the survey's questions associated with each variable in study and the number of scale items.

The constructs presented in the online survey were measured mainly using statements with 7-point "Likert- type" scales, with a range from "Strongly disagree" to "Strongly agree" and one ranking question of three options between "Do not like the product at all" and "Like the product very much".

3.3 Data Analysis

In order to analyse the answers obtained from the online survey, it was used the Statistical Package for the Social Science (SPSS), version 23.0, with the purpose to understand how visual elements of package influence consumers purchase intent of food packaged products and the mediating role of perceived risk between these variables (Hayes, 2013).

The socio-demographic characterization of the sample was studied by doing descriptive statistics analysis as well as the overall obtained results of each scenario. Additionally, the Cronbach's alpha of each variable, with the exception of perceived psychological risk, was perform and then analysed, in order to check the constructs reliability.

In addition, measures of the median, minimum and maximum value were perform as well as statistical tests such as ANOVA test and Sobel test. Linear multiple regression were also performed. It was take into account, for every statistical tests performed, a significance level of 5%.

A Mediation model (Hayes, 2013) is used in this study in order to estimate the impact, which is indirect, of the variable visual elements of package on the variable purchase intent through an intermediary (mediator) variable which in this dissertation is perceived risk (perceived functional risk, perceived financial risk and perceived psychological risk).

Therefore, for each dimension of perceived risk described in the chapter 2, three mediation models were done in separate.

Chapter 4. Results and Discussion

The fourth chapter presents a detailed analyse of the data obtained from the online questionnaire. This analysis is based on the methodology already described in the previous chapters, which will let to have conclusions concerning the research questions proposed in the first chapter of this study.

4.1 Sample Characterization

In total, 688 respondents answered the online survey. However, 66 respondents claimed to not buy any of the presented categories (neither pizza nor salmon), thus the valid survey answers for this research were 622.

The online questionnaire has a between-subject design and people who answered the survey were randomly and evenly assigned to one of the six frameworks (different packaging design within different product category) presenting a number of questions on the topic of consumers' buying behaviour for one of the two food product subcategories: packaged pizza and packaged salmon.

Accordingly, each scenario got more or less the same number of answers. The "graph" scenario (packages displaying a picture of the product) had 203 answers which is 32,64% of the total valid answers, the "see-through" scenario (package with transparent elements) had 221 answers which is correspond to 35,53% of the total valid answers while the "opaque" scenario had 198 answers which means 31,83% of the total valid answers.

Focuses only on the packaged pizza scenario, 126 respondents answered the survey regarding transparent packaging, 118 respondents in respect to opaque packaging and 131 respondents in regard to packages displaying a picture of the product.

On the other hand, only concerning the packaged salmon scenario, 95 respondents answered the survey regarding transparent packaging, 80 respondents relating to opaque packaging and 72 respondents regarding packages with an image of the product.

Therefore, 375 respondents (60.3%) answered to the questionnaire regarding the packaged pizza category and 247 respondents (39.7%) regarding the packaged salmon

category. This difference can be explained by the fact that despite the fact that the scenarios were randomly and evenly distributed among respondents, if respondents have never bought packaged pizza before, they only answered to the questionnaire regarding the packaged pizza category and vice-versa.

Food Category	Package displaying a picture of the product	Transparent packaging	Opaque packaging	Total
Pizza	34,9% (131)	33,6% (126)	31,5% (118)	60.3% (375)
Salmon	29,1% (72)	38,5% (95)	32,4% (80)	39.7% (247)
Total	32.64% (203)	35.53% (221)	31.83% (198)	100% (622)

Figure 4: Survey respondents per scenario.

Distribution of purchase per category	**n**	**%**
Only one category		
Pizza	166	24,13%
Salmon	39	5,67%
Both Categories	417	60,60%
Neither of the two categories	66	9,60%
Total	688	100%

Figure 5: Survey respondents about the frequency of purchase per food category.

Analysing the data presented in figure 5, it can be verified that the majority of the sample elements (60.60%) already bought both packaged pizza and packaged salmon at the supermarket, followed by 24.13% that bought only packaged pizza and 5.67% only bought packaged salmon, which means that 39 respondents never bought packaged

pizza but already bought packaged salmon. At least, 9.60% of the sample elements never bought both packaged food pizza and salmon.

By conducting descriptive analysis on SPSS version 23.0 it was verified that 57.30% of the respondents are female and 33.10% are male. Regarding the 621 valid answers on the topic of the age of the respondents, the sample elements are between the age of 15 and 82 with the mean of 33 years old and with a standard deviation of approximately 13 years old. Furthermore, significant number of the sample elements stated to have finished either bachelor degree (22.8%) or a Master's degree (52.5%).

Concerning the occupation of people who answered the survey, approximately half of the sample elements (48%) are student-workers and 22.8% are students. From the remaining participants, 8.7% employees working for another person and 1.6% express to be self-employed, a job on their own. From the others participants, 3.9% are retired and 5.4% stated to be in a professional situation that was not mentioned in the survey.

Variable	**n**	**%**
Gender		
Male	228	33,10%
Female	394	57,30%
Education		
Middle School	14	2%
High School	69	10%
Bachelor Degree	157	22,80%
Master Degree	361	52,50%
Doctoral Degree	21	3,10%
Occupation		
Student	157	22,80%
Student-Worker	330	48%
Employee	60	8,70%
Self-Employee Worker	11	1,60%
Retired	27	3,90%
Other	37	5,40%

Figure 6: Demographic characteristics of the sample.

Variable	n	max	min	mean	Std. deviation
Age	621	82	15	33	13

Figure 7: Demographic characteristics of the sample (Age).

4.2 Measures Reliability

In order to verify the constructs' validity of visual elements of packaging, perceived risk and purchase intent, a reliability study was conducted. The study was performed for each of the six scenarios where the constructs were shown**.** Furthermore, in the visual elements of package variable, the item 3 was inverted (reverse coded) in order to perform Cronbach's alpha. After that, the Chronbach's alpha coefficient of each variable was analysed in order to verify the reliability of each measure presented in the online questionnaire. The obtained results are shown in a scale from 0 to 1.

The greater the values, the greater is the homogeneity of the answers, in other words, the internal consistency of the respondent's answers given to the scale-response questions that were presented on the survey.

Some authors such as Nunnally (1978) and DeVellis (1991) both cited by Maroco (2007) state that obtained values larger to or equal than 0.70 evidence high internal consistency. The last mentioned author also considers that if the number of items is low, values that are equal to or larger than 0.60 are still admissible. Thus, the results presented in Figure 8, confirm that all the constructs are valid because all the coefficient alpha values of each variable in study are greater than 0.6.

In addition, for the variable visual elements of packaging dimension, two questions (9 and 17) were not considered in the analysis in order to have a value of the internal consistency of the group of item higher than 0.6.

In regard to perceived functional risk dimension, the Cronbach's alpha of opaque packaging is higher than the "total" Cronbach's alpha.

		Cronbach's Alpha			
Dimension	Number of items	Total	"Graphs"	"See-Through"	"Opaque"
Visual Elements of Packaging	5	0,910	0,908	0,903	0,888
Perceived Financial Risk	2	0,634	0,621	0,653	0,630
Perceived Functional Risk	3	0,757	0,749	0,720	0,791
Purchase Intent	3	0,728	0,655	0,740	0,613

Figure 8: Survey items' reliabilities.

4.3 Results from the Hypothesis Test

With the purpose to test the hypotheses described and explained in the second chapter, descriptive statistics, linear multiple regression and classical mediation model were performed.

4.3.1 Descriptive Statistics

In order to infer conclusions regarding the research questions presented on chapter 2, we could compare and analyse the different mean values obtained for purchase intent (with 3 items), visual elements of packaging (with 5 items), perceived financial risk (with 2 items), perceived psychological risk (with 1 item) and perceived functional risk (with 3 items) when measuring different contexts concerning the same constructs. Thus, it is important to start by doing a descriptive analysis in order to calculate the mean of all items and then be able to compare them. The means for each scenario are measured using statements with 7-point "Likert- type" scales, which can be seen in the following

figures. Moreover, they represent the average punctuation that the sample elements attributed for each scenario.

Item	design	n	min	max	mean	Std. deviation
This product makes a strong impression on my visual sense or other senses.	Total	622	1	7	4,33	1,738
	Graphs	203	1	7	4,39	1,567
	See- Through	221	1	7	4,86	1,613
	Opaque	198	1	7	3,68	1,835
I find this product interesting in a sensory way.	Total	622	1	7	4,25	1,714
	Graphs	203	1	7	4,31	1,541
	See-Through	221	1	7	4,81	1,588
	Opaque	198	1	7	3,59	1,797
This product does not appeal to my senses.	Total	622	1	7	4,31	1,783
	Graphs	203	1	7	3,65	1,680
	See-Through	221	1	7	3,14	1,721
	Opaque	198	1	7	4,33	1,748
Valid N (listwise)		622				

Figure 9: Descriptive statistics for Visual Elements of packaging.

Regarding the items that are part of the visual elements of package, it is verified that respondents evidence preference for the food products within transparent packages, followed by food products within packages displaying an image of the product.

Item	design	n	min	max	mean	Std. deviation
If I buy this product, I like to be sure that I get the best value for the money I spend.	Total	622	1	7	5,73	1,203
	Graphs	203	1	7	5,72	1,137
	See-Through	221	1	7	5,71	1,257
	Opaque	198	1	7	5,75	1,212
I think buying this product does not imply a waste of my money.	Total	622	1	7	4,49	1,441
	Graphs	203	1	7	4,32	1,411
	See-Through	221	1	7	4,81	1,397
	Opaque	198	1	7	4,31	1,464
Valid N (listwise)		622				

Figure 10: Descriptive statistics for each dimension of Perceived Financial Risk.

Concerning the items that are part of the perceived financial risk, the results that are included in figure 10 allow to verify that the majority of respondents perceived the product as not worth the price they would pay for it when the product was presented in an opaque package when compared to transparent packaging. Moreover, in the eyes of the respondents, the probability that the packaged product's quality is not equivalent with its price was higher when the product was presented inside a package with an image of the product when compared to packages with transparency as an element of packaging design.

Item	design	n	min	max	mean	Std. deviation
I think this product won't provide the promised benefits.	Total	622	1	7	4,00	1,466
	Graphs	203	1	7	4,14	1,473
	See-Through	221	1	7	3,77	1,397
	Opaque	198	1	7	4,10	1,511
I think this product does not have the best ingredients.	Total	622	1	7	3,96	1,419
	Graphs	203	1	7	4,21	1,375
	See-Through	221	1	7	3,74	1,521
	Opaque	198	1	7	3,94	1,305
I think this product is low quality.	Total	622	1	7	3,67	1,466
	Graphs	203	1	7	3,79	1,438
	See-Through	221	1	7	3,40	1,460
	Opaque	198	1	7	3,85	1,465
Valid N (listwise)		622				

Figure 11: Descriptive statistics for each dimension of Perceived Functional Risk.

According to the figure 11, respondents evidence higher levels of uncertainty that the product's performance will not encounter their expectations when the product was inside a package displaying a graphic of the food product on its ready-to-eat form (compared to transparent packaging). However, it was also verified a greater number of positive expectations in relation to product's quality for those products that were presented within opaque packaging (3.94) when compared with packages with product imagery (4.21). Thus, images of food on package do not affect the perception of more favourable evaluations as it was expected. It could be said that such food imagery should not be perceived by consumers as dishonest. This could be a possible explanation for these unexpected results.

Item	design	n	min	max	mean	Std. deviation
I will be unhappy if this product does not give the expected results.	Total	622	1	7	5,44	1,262
	Graphs	203	1	7	5,30	1,252
	See-Through	221	1	7	5,48	1,231
	Opaque	198	1	7	5,55	1,300
Valid N (listwise)		622				

Figure 12: Descriptive statistics for each dimension of Perceived Psychological Risk.

For perceived psychological risk items, it was observed through the following item "I will be unhappy if this product does not give the expected results", that respondents would be disappointed if they made a wrong purchase decision by buying a poor product. The results state that perceived psychological is higher when opaque packaging was shown in the survey; it causes consumers to avoid purchasing products within opaque packages.

Item	design	n	min	max	mean	Std. deviation
I would be glad to try the food in this package.	Total	622	1	7	4,3	1,554
	Graphs	203	1	7	4,37	1,495
	See-Through	221	1	7	4,28	1,591
	Opaque	198	1	7	4,23	1,576
I believe that most people would like to buy this product.	Total	622	1	7	4,86	1,581
	Graphs	203	1	7	4,96	1,46
	See-Through	221	1	7	5,06	1,426
	Opaque	198	1	7	4,53	1,804
I would purchase this product.	Total	622	1	7	4,4	1,545
	Graphs	203	1	7	4,48	1,446
	See-Through	221	1	7	4,62	1,516
	Opaque	198	1	7	4,06	1,622
Valid N (listwise)		622				

Figure 13: Descriptive statistics for Purchase Intent.

Regarding purchase intention variable, the results that are included in figure 13 permit to verify that packages that with transparency as an element of packaging design (when being compared to packages displaying an image of the product) were perceived by those who answer the survey as to be more trusty and consequently enhance consumer's purchase intent.

4.3.2 The effect of visual elements variables over packaged products purchase intent

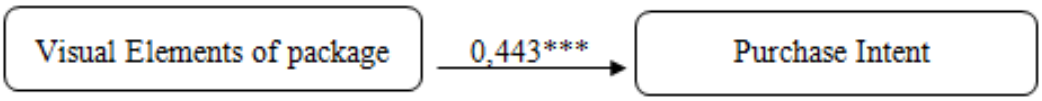
Hypothesis 1: *Visual elements of package positively impacts purchase intent.*

The following linear regression model was performed between the two variables, purchase intent and visual elements of packaging:

$$\widehat{PI}_i = \beta_1 + \beta_2 VI_i \quad i=1,...,622,$$

Where: PI – Purchase Intent
VI – Visual elements of packaging

It allowed to know that the slope of the model β_2 is positive and; as shown in the figure 14, that the regression coefficient is +0.443 with $p < 0.001$. The model is statistically significant ($F(1;620) = 304{,}312$; $p < .001$) by doing the ANOVA.
Looking at the variable visual elements of packaging, the coefficient shows that for every unit increased in visual elements of package, the purchase intent for food (packaged) products (pizza and salmon) will increase 0.443 units all other variables remaining constant. By doing Durbin–Watson statistic test, it can be concluded that in this model residuals are not autocorrelated. In addition**,** in the appendix IV it can be observed normality and homocedasticity.
Consequently, **Hypothesis 1 is verified.**



*** Significant at p<0.1%, ** Significant at p<1%, * Significant at p<5%

Figure 14: Variable Relationship for Visual Elements of Package (H1).

Hypothesis 1a: *Including a picture of the product on package will positively affect purchase intent.*

Hypothesis 1b: *The presence of transparent elements on package positively impacts purchase intent.*

In order to understand the effect of the inclusion of a picture of the product or the presence of transparent elements on package or even the impact of opaque packaging on consumer's purchase intent of food (packaged) products, dummies variables were introduced in the regression model above. In addition, it was also introduced the product category - packaged pizza or packaged salmon - as a dummy variable which is coded as 0 (zero) for pizza and 1 (one) for Salmon. Thus, the impact of each product category can be studied.

Thus, the regression equation can be written as:

$$\widehat{PI}_i = \beta_1 + \beta_2 VI_i + \beta_3 Type_i + \beta_4 PG_i + \beta_5 PS_i + \beta_6 SG_i + \beta_7 SS_i \text{ i=1,...,622}$$

Where: PG – Package displaying a picture of pizza
PS – Pizza's see-through packaging
SG - Packages displaying a picture of salmon
SS – Salmon's See-through packaging.

In order to explain in detail the model above described as in one model there are these models:

Opaque packaging for pizza:

(Type=0, PG=0, PS=0, SG=0, SS=0) $\widehat{PI}_i = \beta_1 + \beta_2 VI_i$ i=1,...,622

Product imagery for Pizza:

(Type=0, PG=1, PS=0, SG=0, SS=0)) $\widehat{PI}_i = (\beta_1 + \beta_4) + \beta_2 VI_i$ i=1,...,622

Transparent packaging for Pizza:

(Type=0, PG=0, PS=1, SG=0, SS=0) $\widehat{PI}_i = (\beta_1 + \beta_5) + \beta_2 VI_i$ i=1,...,622

Opaque packaging for salmon:

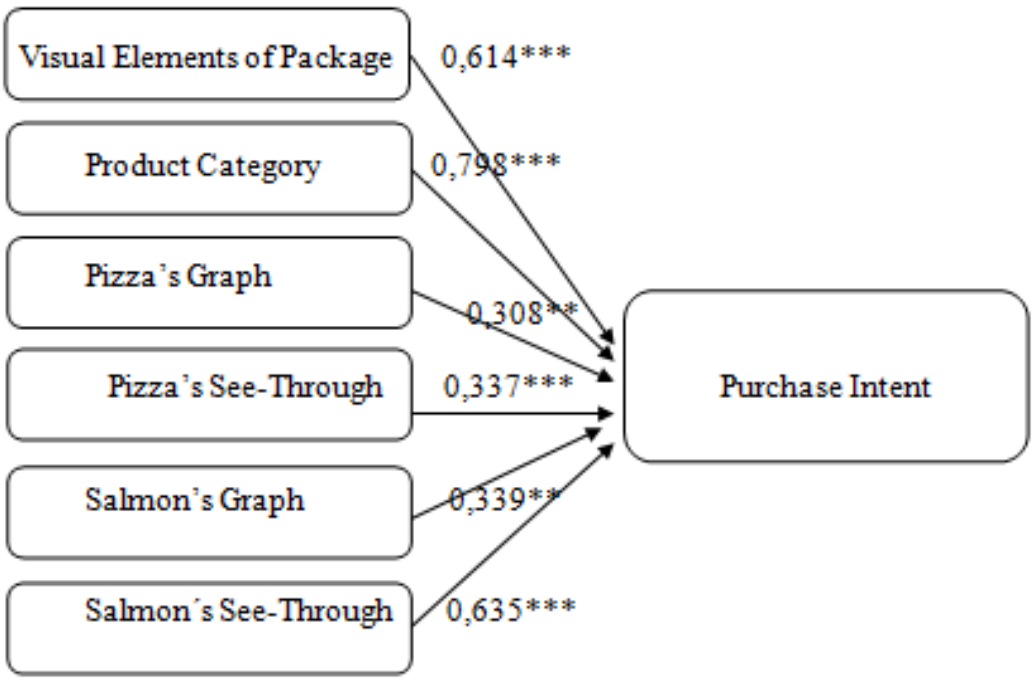
(Type=1, PG=0, PS=0, SG=0, SS=0) $\widehat{PI}_i = (\beta_1 + \beta_3) + \beta_2 VI_i$ i=1,...,622

Product imagery for Salmon:

(Type=1, PG=0, PS=0, SG=1, SS=0) $\widehat{PI}_i = (\beta_1 + \beta_3 + \beta_6) + \beta_2 VI_i$ i=1,...,622

Transparent packaging for Salmon:

(Type=1, PG=0, PS=0, SG=0, SS=1) $\widehat{PI}_i = (\beta_1 + \beta_3 + \beta_7) + \beta_2 VI_i$ i=1,...,622



*** Significant at p<0.1%, ** Significant at p<1%, * Significant at p<5%

Figure 15: Variable Relationship for each product category and each packaging design (H1a and H1b).

The model is statistically significant as (F(6;615) =53,565 ; p < .001) by doing the ANOVA test. Moreover, it was also confirmed that 34.3% of the dependent variable (purchase intention) variance can be explained by the visual elements of package within the different product categories (independent variable). It can be concluded that in this model residuals are neither heterocedastic nor autocorrelated and can be considered having a normal distribution. In this model, there are no signs of multicolinearity since VIF is always under 10.

Based on the obtained results, it can be concluded that the product category, such as salmon or pizza for this study, has a noteworthy impact on consumer's buying behaviour of packaged food products regarding the type of packaging design (visual elements of package). On the other hand, either the presence of transparent elements or an image of the product on package positively impacts consumer's purchase intent of salmon and pizza. However, this impact is higher for salmon than pizza.

In other words, in order to capture consumer's interest and attention, the use of packages displaying a picture of the product and packages with a transparent window might be seen as an efficient strategic marketing tool.

In conclusion, both **hypothesis 1a and 1b can be confirmed** and it can be said that respondents prefer to observe and communicate with the product, either through, or on, the packaging has a positive and noticeable effect on their purchase intentions.

Hypothesis 1c: *The inclusion of an image of the product on package will stimulate lower purchase intentions than the inclusion of a transparent element on package.*

Taking a close look at figure presented above (figure 15), it can be concluded that transparent packaging promotes higher purchase intentions of packaged food products when comparing with packages displaying a picture of the product: the coefficients of transparent packaging ("See-Through") in both product categories are higher than in food package imagery ("graph").
In regard to pizza dimension, the effect of the use of transparency ("see-through") on package is more (0,337-0,308=0,029) 0,029 units than the effect of packaging design with a "Graphic" of the product in consumers purchase intent. On the other hand, in respect of salmon, the effect of using transparency ("see-through") on package is more (0,635-0,339=0,296) 0,296 units when comparing with the effect of the use of food imagery on package in consumers purchase intent.
Once again, in this model residuals are neither heterocedastic nor autocorrelated and can be considered having a normal distribution. In this model, there are no signs of multicolinearity since VIF is always under 10.

Consequently, **Hypothesis 1c can be confirmed.**

4.3.3 The effects of visual elements of package variables on perceived functional risk

Hypothesis 2a: *There is a negative relationship between perceived functional risk and transparent packaging.*

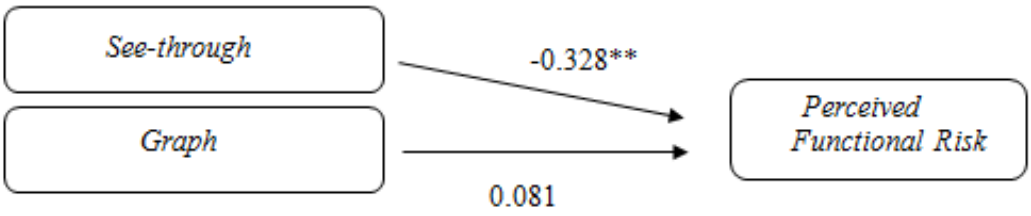
Hypothesis 2b: *There is a negative relationship between perceived functional risk and product imagery.*

In order to confirm the veracity of these hypotheses, the following regression analysis was performed between the variables in study.

$$\widehat{PRfunc_i} = \beta_1 + \beta_2 Graph_i + \beta_3 See-through_i \quad i=1,...,622,$$

Where: PRfunc is the Perceived Functional Risk measure.
Graph is product imagery on product packaging.
See-through is transparent packaging.

Dummy variables were defined in order to study the following hypotheses. Thus, packages displaying an image of the product ("graphs") defined by 1 (one) and 0 (zero) otherwise. The same with "see-through" packaging design which is 1 (one) for transparent packaging and 0 (zero) otherwise.



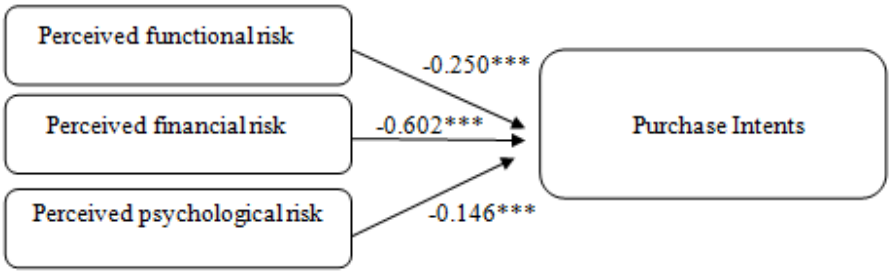
*** Significant at p<0.1%, ** Significant at p<1%, * Significant at p<5%

Figure 16: Variable relationship for Total Sample (H3a e H3b).

The model is statistically significant (F(2;620) =7,237 =304,312 ; p < .001) by doing the ANOVA. It was verified that the type of packaging (transparent packaging or packaging displaying a picture of the product) explains 2.3% of perceived functional risk variation. Furthermore, there is a significant negative impact of transparent packaging ("see-through") in the variable perceived functional risk (p<0.01). However, there is no impact of packaging displaying a picture of the product in perceived functional risk as (p>0.05). In this model, there is no sign of multicolinearity since VIF is always under 10.

In conclusion, **hypothesis 2b is not verified**. However, **the hypothesis 2a can be confirmed** and it can be said that transparent packaging decrease perceived functional risk. Once again, in this model residuals are neither heterocedastic nor autocorrelated and can be considered having a normal distribution.

4.3.4 The effects of the different types of perceived risk on packaged products purchase intent



*** Significant at p<0,1% , ** Significant at p<1% , * Significant at p<5%

Figure 17: Variable Relationship for total Sample (H4a, H4b and H4c).

Hypothesis 3a: *There is a negative relationship between perceived functional risk and purchase intent.*

The regression equation can be written as:

$$\widehat{PI}_i = \beta_1 + \beta_2 PRfunc_i \quad i=1,...,622,$$

Where: PRfunc is the Perceived Functional Risk measure

PI is the Purchase Intent measure.

The model is statistically significant (F(1;620) =44,979***; p< .001) by doing the ANOVA. It was demonstrated that only 6.8% of the Purchase Intent variation can be explained by the Perceived Functional Risk. Moreover, there is a significant negative impact of perceived functional risk in purchase intent because (p<0.01).

In this model residuals are neither heterocedastic nor autocorrelated and can be considered having a normal distribution.

The results shown above provide enough statistical evidences to **confirm the hypothesis 3a.**

Hypothesis 3b: *There is a negative relationship between perceived financial risk and purchase intent.*

The regression equation can be written as:

$$\widehat{PI}_i = \beta_1 + \beta_2 PRfin_i \quad i=1,\ldots,622,$$

Where: PRfin is the Perceived Financial Risk measure

PI is the Purchase Intent measure.

The model, as shown in figure 17, is statistically significant (F(1;620) =235,85*** ; p < .001) by doing the ANOVA. In addition, 27.6% of the Purchase Intent variation can be explicated by the Perceived Financial Risk. Furthermore, there is a significant negative impact of perceived financial risk in purchase intent as (p<0.01).

In conclusion, **hypothesis 3b is verified**. In this model residuals are neither heterocedastic nor autocorrelated and can be considered having a normal distribution.

Hypothesis 3c: *There is a negative relationship between perceived psychological risk and purchase intent.*

The regression equation can be written as:

$$\widehat{PI}_i = \beta_1 + \beta_2 PRpsy_i \quad i=1,\ldots,622,$$

Where: PRpsy is the Perceived Psychological Risk measure

PI is the Purchase Intent measure.

By doing the ANOVA, it can be verified that this model is statistically significant (F(1;620) =16,556*** ; p < .001**).** Thus, it can be said that perceived psychological risk explains 2.6% of purchase intent variation. In addition, there is a significant negative impact of perceived psychological risk in purchase intent as (p<0.01). In this model residuals are neither heterocedastic nor autocorrelated and can be considered having a normal distribution. The **Hypothesis 3c is verified**.

4.3.5 The mediating effect of risk on the relationship between visual elements of package and purchase intent

Subsequent to the regression analysis and after understanding the different effects of each visual element of packaging considered in this study and as well as the effects of

each dimension of perceived purchase risk contemplated in this study on the Purchase Intent of food packaged products, a Mediation analysis was performed to assess whether the positive effects of product imagery and transparent elements on package on consumer's purchase intent are mediated by perceived risk, in other words, the intention is to analyse if there is a mediation effect of the three dimensions of Perceived Purchase Risk on this relationship.

Hypothesis 4a: *Perceived functional risk mediates the relationship between Visual Elements of package and Purchase Intent.*
Hypothesis 4b: *Perceived financial risk mediates the relationship between Visual Elements of package and Purchase Intent.*
Hypothesis 4c: *Perceived psychological risk mediates the relationship between Visual Elements of package and Purchase Intent.*

Subsequent to add a mediator variable (perceived risk) in the relationship between visual elements of package (independent variable) and purchase intent (dependent variable), the effect of the first variable (IV) on the second variable (DV) should decrease: This is what is supposed to happen when the mediation analysis is performed.

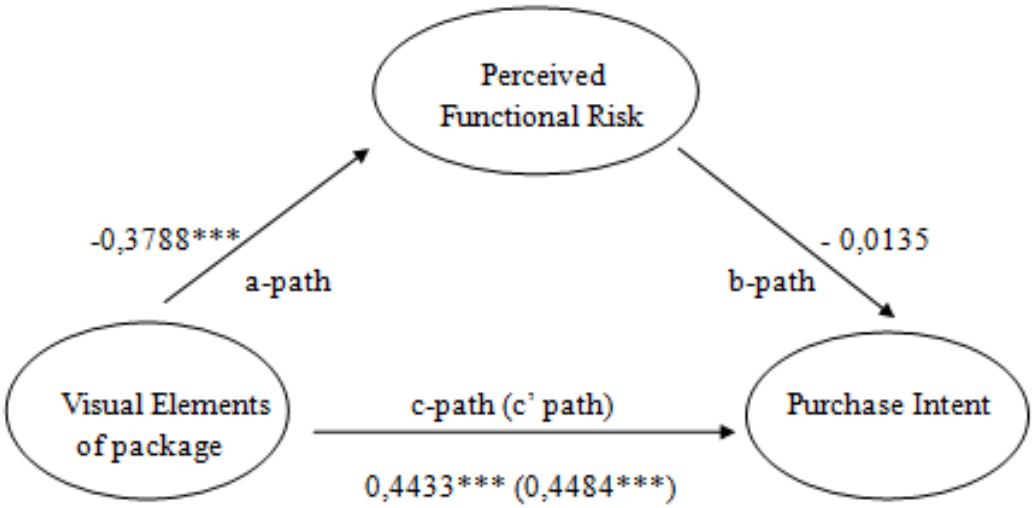
According to the mediation analysis the result, identified as the indirect effect, has statistical significant when c'-path is smaller than c-path, confirming the presence of a mediation effect.

Furthermore, different types of mediation analysis can be found: firstly, if by adding the mediation variable in the model, the value goes down there is a full mediation. In the second place, if the mediation variable has an impact in some, but not all in the relationship there is a partial mediation. In other words, there is also a direct relationship between the IV and the DV instead of only exist a significant value between the dependent variable and the added mediator variable.

However, in this dissertation, other method of testing the significance of a mediation effect known as Sobel test (Sobel,1982) was performed, where a Z-test was conducted to analyze if the result of c path - c'path is statistically significant and different from zero.

At last, the percent mediation can be performed in order to measure the mediation effect's magnitude.

Hypothesis 4a: *Perceived functional risk mediates the relationship between Visual Elements of package and Purchase Intent.*



*** Significant at p<0.1%, ** Significant at p<1%, * Significant at p<5%

Figure 18: The mediating effect of perceived functional risk in the relationship between visual elements of package and purchase intent.

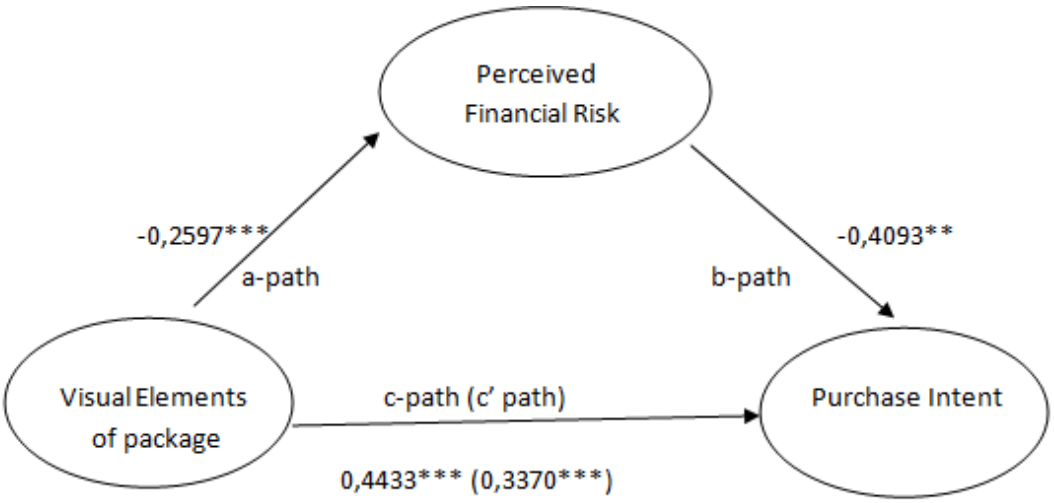
The *a-path* and *b-path* are, respectively, the estimation of the visual elements of package effects on the perceived functional risk and the estimation of the functional perceived risk on purchase intent.

The results presented on the figure above reveals that there is no meditation effect of perceived functional risk in the relationship between visuals elements of package and purchase intent, because c'(0.4484) is higher than c (0.4433) but both are statistically significant (p<0.005).

To conclude, a significant indirect effect of visual elements of package on purchase intent having in consideration perceived functional risk has the mediator variable is not observed (IE= -0.0051, 95% CI = [-0.0363; 0.0294]). This result is also not confirmed by the Sobel test (Z=-0.3735, p=0.7088).

Thus, based on the information described above, **the hypothesis 4a is not verified.**

Hypothesis 4b: *Perceived financial risk moderates the relationship between Visual Elements of package and Purchase Intent.*



*** Significant at p<0.1%, ** Significant at p<1%, * Significant at p<5%

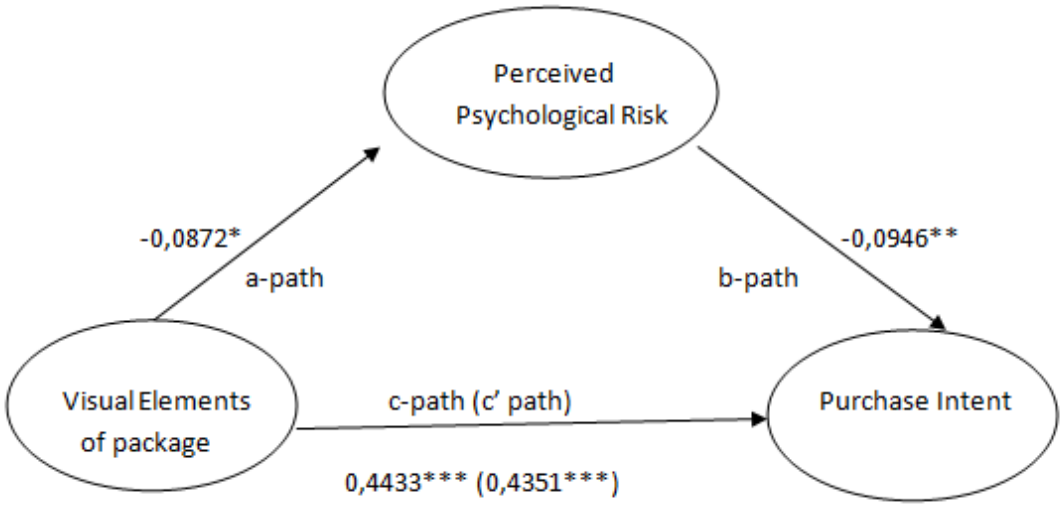
Figure 19: The mediating effect of perceived financial risk in the relationship between visual elements of package and purchase intent.

Regarding the perceived financial risk variable as a mediator in the relationship between visuals elements of package and purchase intent, the mediation analysis' results indicate perceived financial risk has mediating effect in relationship between the IV and the DV because *c'* with the value 0.3370 is lower than the value of c (0.4433). However, p<.001 which reflects that c and c' are both statistically significant and that the total effect is less than the direct effect. When analysing the results of Sobel test (Z=7.5178, p<0,001) or the indirect effect value (IE= 0.1063, 95% CI = [0.0777; 0.1375]) is confirmed that the difference between these coefficients (c and c') is also statistically significant.

Lastly, the mediating effect of perceived financial variable represents 23.98% (PM=0.2398) of the total effect of visual elements of package on purchase intention variable.

As a result, **Hypothesis 4b is validated.**

Hypothesis 4c: *Perceived psychological risk moderates the relationship between Visual Elements of package and Purchase Intent.*



*** Significant at p<0.1%, ** Significant at p<1%, * Significant at p<5%

Figure 20: The mediating effect of perceived psychological risk in the relationship between visual elements of package and purchase intent.

Lastly, in respect to perceived psychological risk, results reveal there is a meditation effect of perceived psychological risk in the relationship between visuals elements of package and purchase intent, because c'(0.4351) is less than c (0.4433) but both are statistically significant (p<.001). The disparity between both coefficients is also statistically significant, based on the indirect effect value (IE= 0.0082, 95% CI = [0.0012; 0.0220]).

However, it is not supported by the Sobel test (Z=1.9324, p=0.0533>0.05). Furthermore, the mediator could only account for 1.85% of the total effect, PM=0.0185.

These results **do not confirm Hypothesis 4c.**

Chapter 5. Conclusions and Limitations

There were two main objectives for this research: Primarily, it aims to understand the influence of transparency and product imagery as elements of packaging design on consumer buying behaviour with particular emphasis on packaged food products. Thus, study focused on food products and analysed two particular product categories, which packaging is strongly linked with the product in the eyes of the consumer at the point of purchase, namely pizza and salmon.

The second goal of this research was to study the mediation effect of purchase risk on the relationship between visual elements of package and purchase intent according to the studied food product categories.

First of all, it was done an online survey in order to obtain the necessary data through the respondents' answers about their willingness to purchase a specific product according to its packaging design across three different packaging designs and contextualized in accordance with each product category. Then, in order to study the survey's outcome, multiple linear regressions where performed in order to understand the effect of visual elements of package on consumer's purchase intent. As already explain in the third chapter, the methodology, survey's participants were random and evenly distributed among respondents where they were asked questions about their packaging design preferences regarding the visual elements of package towards buying pizza or salmon.

5.1 Main Findings and Conclusions

5.1.1 The effect of visual elements of package on consumer's purchase intent

To begin with the analysis of the entire sample, and confirming the effects studied in the literature regarding visual elements of package, the results of the study state that enable the shopper to see directly or indirectly the product, either through, or on the package, boost the purchase intent of packaged food products. The type of visual element of packaging was found to influence respondent's buying behaviour, with higher purchase intentions in response to the presence of transparency than to product imagery on packaging.

Despite the fact that transparent packaging appears advantageous across the different product categories in study, the effect on consumer's purchase intention seems to differ across each category as this impact is higher for salmon (0,635***) than pizza (0,337***).

		Verdict	
		Pizza	Salmon
(H1)	Visual elements of package positively impacts purchase intent	✔	✔
(H1a)	Including a picture of the product on package will positively affect purchase intent.	✔	✔
(H1b)	The presence of transparent elements on package positively impacts purchase intent.	✔	✔
(H1c)	The inclusion of an image of the product on package will stimulate lower purchase intentions than the inclusion of a transparent element on package	✔	✔

Figure 21: Status of Hypotheses H1.

Regarding the hypotheses proposed in the second chapter, on the topic of the effect of visual elements of package in study on perceived functional risk, their conclusions are displayed in Figure 22.

In support of the third research hypothesis of this study, transparent packaging evokes high perceived functionality and symbolic associations of product quality. However, as noted above, Hypothesis 3b was not supported. Thus, it is possible to conclude that in this study, respondents did not use the package pictures as an evaluative cue that would change beliefs and functional evaluations.

		Verdict
(H2a)	There is a negative relationship between perceived functional risk and transparent packaging.	✔
(H2b)	There is a negative relationship between perceived functional risk and product imagery.	x

Figure 22: Status of Hypothesis H2.

These results might be due to the use of manipulated and dishonest images of the product on its ready-to-eat form which can prompt less favourable evaluations about the product or negative product's beliefs, contrary to what was expected form the literature review.

		Verdict
(H3a)	There is a negative relationship between perceived functional risk and purchase intent.	✔
(H3b)	There is a negative relationship between perceived financial risk and purchase intent.	✔
(H3c)	There is a negative relationship between perceived psychological risk and purchase intent.	✔

Figure 23: Status of Hypotheses H3.

Comparing the results for both dimensions of perceived risk, they revealed to directly and negatively impact consumers' purchase intention toward packaged products, especially the perceived financial risk which contributes to the variance of consumer's intention to purchase packaged products in 60 percent. As well, perceived functional risk also confirmed to have a significant effect on the relationships between the IV and the DV. These results can be explained by the reason of the well-known price-quality association.

5.1.2 The mediating role of perceived risk

		Verdict
(H4a)	Perceived functional risk mediates the relationship between Visual Elements of package and Purchase Intent.	x
(H4b)	Perceived financial risk mediates the relationship between Visual Elements of package and Purchase Intent.	✔
(H4c)	Perceived psychological risk mediates the relationship between Visual Elements of package and Purchase Intent.	x

Figure 24: Status of Hypotheses H4.

After performing the mediation analysis, the obtained results revealed that perceived financial risk explicates the relationships between visual elements of package and consumers' intention to purchase packaged products. Strictly speaking, the presence of transparency and product imagery on packaging causes lower perceived financial risk, leading to higher purchase intentions. Therefore, perceived financial risk explicates the relationship between visual elements of package and food packaged products purchase intent because it conveys the effect of the first on the latter. Contrary, for perceived functional risk, the results do not support a mediating effect of perceived functional risk

in the relationship between visual elements of package and purchase intent. Lastly, the results revealed that there is no mediator effect for perceived psychological risk between the IV on the DV.

In addition, the results described above can also be interpreted in the following way: As packaged food has been viewed as a low involvement product, purchase decision is less on careful examination of its functional attributes and more on the visual elements of packaging. For packaged foods such as pizza and salmon that usually are not in its final form when inside the package, there are uncertainly and perceived risk involved, which can lead to negative effects on purchase intentions. Thus, consumers use external cues such as transparency or imagery to establish their expectations of the product and consequently reduce the perceived risk. As transparent packaging allows consumers to see and evaluate directly the product through the package - contrarily to product imagery which can be perceived as dishonest or misleading - it leads to higher purchase intentions and higher perceived functionality than packages displaying an image of the product.

5.2 Academic/ Managerial Implications

The presented dissertation will help to fill the gap in research about transparency versus product imagery, when no other visual elements were taken into consideration, on package across different categories. Several authors have studied the importance of packaging design, including several elements, both verbal and visual, but this study adds the role of risk (psychological, financial and functional) as a mediator of the relationship between the elements of packaging and food packaged products purchase intent. Thus, the results of this study contribute for a further understanding of consumer's buying behaviour with regard to visual interpretations as well as the important role of the different dimensions of risk in influencing directly and indirectly consumers' willingness to purchase packaged products.

In terms of managerial implications, the results and conclusions of this study should be a wake-up call to manufactures. Furthermore, these results and conclusions are particularly important for new and innovative products, which are still unknown to consumers, as this study demonstrates that transparency should at least be considered wherever feasible and that product imagery should always be perceived as credible in

the eyes of consumers in order to boost FMCG company's sales. Thus, it shows that marketing managers must achieve a balance between the need for packages to attract and persuade consumers -simultaneously - with the need to communicate in a truthful, understandable and legitimate form. Some packaged products, are more willingness to be judged by its packaging design, such as food products, where the product is usually not in its final form. Thus, consumers create an impression of the product in its prepared state based on the visual elements of package. Therefore, managers should be aware of the communicative power of packages and understand that the impact of package design is inherently subjective.

5.3 Limitations and Further Research

Several limitations of this study must be taken into account for future research. In the first place, even though the questionnaire obtained 822 valid responses, this satisfactory number was divided in 221 valid answers with respect to the first scenario, 198 valid answers in relation to the second one and 203 for the third scenario. This can be explained by the fact that respondents randomly answered to one of the six scenarios. For further research, it would be very important to have a larger sample size order to be more representative of each sample population.

Secondly, respondents did not communicate with the physical packaging and did not take into account, to their final evaluation, any important informational element that was not presented on the front part of the package because the research consisted of online experimentation and despite the fact that this study had a designer collaboration, some images shown in the online survey could have been misunderstood.

Thirdly, visual elements of package in this study were measure based on judgments that were not directly link to product imagery and transparency, instead were predicted to involve visual perceptions as a whole. Thus, further research should word a survey items more specifically so as to better capture the link between product imagery and transparency and the other variables in study.

Fourth, this study tested only two types of packaged food products – salmon and pizza; however the outcomes could have been different with other categories, not necessarily linked with food.

Lastly, it would be important to do a similar investigation but taking into account and simultaneously different product categories, especially with different levels of perceived risk.

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Chapter 7. Appendices

7.1 Appendix I: Online Survey Guideline

Introduction

My name is Maria Inês Santos and the following questionnaire is a key part of my Master Thesis at Católica-Lisbon School of Business and Economics.

This questionnaire will take approximately 5 minutes to be completed and it is important that you answer honestly. All the information will be treated confidentially.

Thank you in advance for your time and cooperation!

Block 1 - Target Selection

Q2. Have you ever bought packaged pizza at the supermarket?

- Yes
- No

Q3. Have you ever bought packaged salmon at the supermarket?

- Yes
- No

Block 2 - Purchase Frequency

Q75. How often do you purchase packaged salmon, on average, per month?

- never
- one time
- two times
- three times
- four or more times

Q40. How often do you purchase packaged pizza, on average, per month?

- never
- one time
- two times
- three times
- four or more times

Block 3 - Packaged Pizza

Q4. Imagine that you are in the supermarket looking for a packaged pizza to buy.

According to the picture below, please indicate to which extent you disagree or agree with the following sentences.

Q5. Imagine that you are in the supermarket looking for a packaged pizza to buy.

According to the picture below, please indicate to which extent you disagree or agree with the following sentences.

Q6. Imagine that you are in the supermarket looking for a packaged pizza to buy.

According to the picture below, please indicate to which extent you disagree or agree with the following sentences.

Q7. Please indicate to which extent you disagree or agree with the following sentences.

- This product makes a strong impression on my visual sense or other senses.
- I find this product interesting in a sensory way.
- This product does not appeal to my senses.
- Overall, I like this product.

Q8. The packaging is attractive.

Q9. How much do you like the product shown overall?

<u>Please drag one image in each one of the boxes</u>, arranging the images according to the labels above each box.

Q10. Please indicate to which extent you disagree or agree with the following sentences.

- I think this product won't provide the promised benefits.
- If I buy this product, I like to be sure that I get the best value for the money I spend.
- I think buying this product does not imply a waste of my money.
- I think this product does not have the best ingredients.
- I think this product is low quality.
- I will be unhappy if this product does not give the expected results

Q11. Please indicate to which extent you disagree or agree with the following sentences.

- I would be glad to try the food in this package.
- I believe that most people would like to buy this product.
- I would purchase this product.

<u>Block 4 - Packaged Salmon</u>

Q12. Imagine that you are in the supermarket looking for a packaged salmon to buy.

According to the picture below, please indicate to which extent you disagree or agree with the following sentences.

Q13. Imagine that you are in the supermarket looking for a packaged salmon to buy.

According to the picture below, please indicate to which extent you disagree or agree with the following sentences.

Q14. Imagine that you are in the supermarket looking for a packaged salmon to buy.

According to the picture below, please indicate to which extent you disagree or agree with the following sentences.

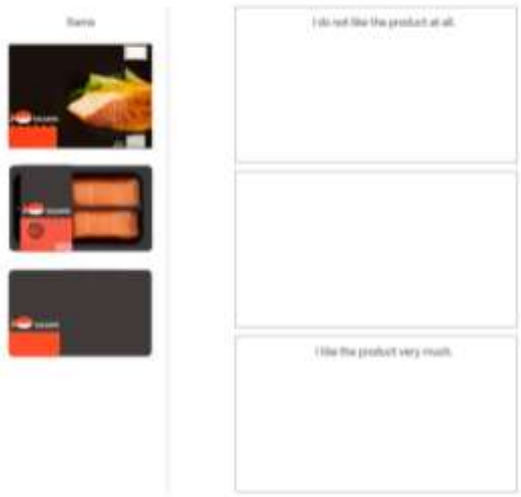
Q15. Please indicate to which extent you disagree or agree with the following sentences.

- This product makes a strong impression on my visual sense or other senses.
- I find this product interesting in a sensory way.
- This product does not appeal to my senses.
- Overall, I like this product.

Q16. The packaging is attractive.

Q17. How much do you like the product shown overall?

<u>Please drag one image in each one of the boxes</u>, arranging the images according to the labels above each box.



Q32. Please indicate to which extent you disagree or agree with the following sentences.

- I think this product won't provide the promised benefits.
- If I buy this product, I like to be sure that I get the best value for the money I spend.
- I think buying this product does not imply a waste of my money.
- I think this product does not have the best ingredients.
- I think this product is low quality.
- I will be unhappy if this product does not give the expected results

Q33. Please indicate to which extent you disagree or agree with the following sentences.

- I would be glad to try the food in this package.
- I believe that most people would like to buy this product.
- I would purchase this product.

<u>Block 5 - Demographic Variables</u>

Q43. Gender

- Male
- Female

Q44. Age

Q45. Level of Education

- Middle School
- High School
- Bachelor Degree
- Master Degree
- Doctoral Degree

Q46. Occupation

- Student
- Student Worker
- Employee
- Self-Employed worker
- Retired
- Other

7.2 Appendix II: SPSS Output - Demographic

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	228	33,1	36,7	36,7
	Female	394	57,3	63,3	100,0
	Total	622	90,4	100,0	
Missing	System	66	9,6		
Total		688	100,0		

Level of Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Middle School	14	2,0	2,3	2,3
	High School	69	10,0	11,1	13,3
	Bachelor Degree	157	22,8	25,2	38,6
	Master Degree	361	52,5	58,0	96,6
	Doctoral Degree	21	3,1	3,4	100,0
	Total	622	90,4	100,0	
Missing	System	66	9,6		
Total		688	100,0		

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	157	22,8	25,2	25,2
	Student Worker	330	48,0	53,1	78,3
	Employee	60	8,7	9,6	87,9
	Self-Employed Worker	11	1,6	1,8	89,7
	Retired	27	3,9	4,3	94,1
	Other	37	5,4	5,9	100,0
	Total	622	90,4	100,0	
Missing	System	66	9,6		
Total		688	100,0		

Descriptive Statistics – Age

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Age	621	15	82	32,79	12,818	1,061	,098	-,066	,196
Valid N (listwise)	621								

Graph (Package with an image of the product)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	otherwise	419	60,9	67,4	67,4
	Graph	203	29,5	32,6	100,0
	Total	622	90,4	100,0	
Missing	System	66	9,6		
Total		688	100,0		

See-Through (Transparent Packaging)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	otherwise	401	58,3	64,5	64,5
	see-through	221	32,1	35,5	100,0
	Total	622	90,4	100,0	
Missing	System	66	9,6		
Total		688	100,0		

Opaque

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	otherwise	424	61,6	68,2	68,2
	opaque	198	28,8	31,8	100,0
	Total	622	90,4	100,0	
Missing	System	66	9,6		
Total		688	100,0		

Product Category (Type)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	pizza	375	54,5	60,3	60,3
	salmon	247	35,9	39,7	100,0
	Total	622	90,4	100,0	
Missing	System	66	9,6		
Total		688	100,0		

7.3 Appendix III – SPSS Output – Measure variables

"Total" Packages

Case Processing Summary – Total of packages

		N	%
Cases	Valid	688	100,0
	Excluded[a]	0	,0
	Total	688	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics for Visual Elements of Pack.

Cronbach's Alpha	N of Items
,910	5

Reliability Statistics – Perceived financial risk

Cronbach's Alpha	N of Items
,634	2

Reliability Statistics – Perceived financial risk

Cronbach's Alpha	N of Items
,634	2

Reliability Statistics - functional

Cronbach's Alpha	N of Items
,757	3

Reliability Statistics for Purchase Intents

Cronbach's Alpha	N of Items
,728	3

Packaging with an image of the product (Graph)

Case Processing Summary - Graphs

		N	%
Cases	Valid	203	100,0
	Excluded[a]	0	,0
	Total	203	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics - PR Financial (Graph)

Cronbach's Alpha	N of Items
,621	2

Reliability Statistics for Visual Elements

Cronbach's Alpha	N of Items
,908	5

Reliability Statistics – PR Functional (Graphs)

Cronbach's Alpha	N of Items
,749	3

Reliability Statistics for Purchase Intents

Cronbach's Alpha	N of Items
,655	3

Transparent Packaging (See-Through)

Case Processing Summary – See-Through

		N	%
Cases	Valid	221	100,0
	Excluded[a]	0	,0
	Total	221	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics for Visual Elements

Cronbach's Alpha	N of Items
,903	5

Reliability Statistics - PR Functional (See-through)

Cronbach's Alpha	N of Items
,720	3

Reliability Statistics - PR Financial (See-through)

Cronbach's Alpha	N of Items
,653	2

Reliability Statistics for Purchase Intents

Cronbach's Alpha	N of Items
,740	3

Opaque packaging

Case Processing Summary for Opaque

		N	%
Cases	Valid	198	100,0
	Excluded[a]	0	,0
	Total	198	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics for Visual Elements

Cronbach's Alpha	N of Items
,888	5

Reliability Statistics - PR Functional (Opaque)

Cronbach's Alpha	N of Items
,791	3

Reliability Statistics - PR Finantial (Opaque)

Cronbach's Alpha	N of Items
,630	2

Reliability Statistics for Purchase Intents

Cronbach's Alpha	N of Items
,613	3

7.4 Appendix IV – SPSS Output – Inferential Statistics Hypothesis

Hypothesis 1: ***Visual elements of package positively impacts purchase intent.***

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,574[a]	,329	,328	,93946	2,005

a. Predictors: (Constant), Mean of Visual Elements

b. Dependent Variable: Mean of Purchase Intents

ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	268,581	1	268,581	304,312	,000[b]
	Residual	547,203	620	0,883		
	Total	815,784	621			

a. Dependent Variable: Mean of Purchase Intents

b. Predictors: (Constant), Mean of Visual Elements

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,595	0,116		22,301	,000
	Mean of Visual Elements	0,443	0,025	0,574	17,445	,000

a. Dependent Variable: Mean of Purchase Intents

Hypothesis 1a: Including a picture of the product on package will positively affect purchase intent.

Hypothesis 1b: ***The presence of transparent elements on package positively impacts purchase intent.***

Hypothesis 1c: The inclusion of an image of the product on package will stimulate lower purchase intentions than the inclusion of a transparent element on package.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,586[a]	,343	,337	,93338	1,913

a. Predictors: (Constant), Salmon's See-through, Salmon's Graph, Mean of Visual Elements, Pizza's Graph, Pizza's See-through, Type
b. Dependent Variable: Mean of Purchase Intents

Coefficients[a]

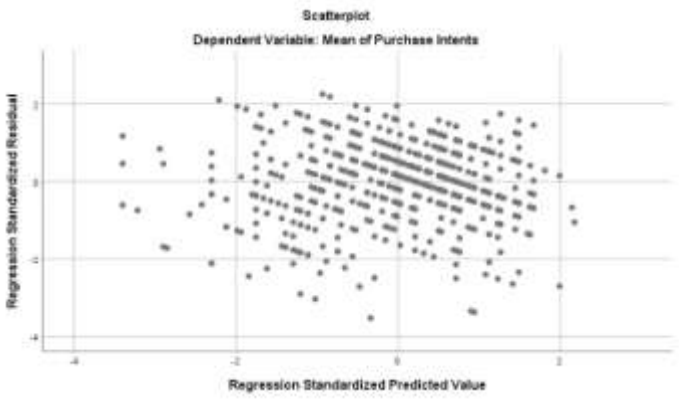
Model	Coefficients					Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	1,620	,167		9,702	,000		
Mean of Visual Elements	,614**	,038	,554	16,095	,000	,873	1,146
Type	,798***	,135	,341	5,903	,000	,320	3,126
Pizza's Graph	,308**	,120	,110	2,568	,010	,580	1,724
Pizza's See-through	,337***	,122	,118	2,765	,006	,577	1,734
Salmon's Graph	,339**	,152	,095	2,223	,027	,587	1,703
Salmon's See-through	,635***	,146	,199	4,362	,000	,501	1,998

a. Dependent Variable: Mean of Purchase Intents

ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	279,995	6	46,666	53,565	,000[b]
	Residual	535,789	615	,871		
	Total	815,784	621			

a. Dependent Variable: Mean of Purchase Intents
b. Predictors: (Constant), Salmon's See-through, Salmon's Graph, Mean of Visual Elements, Pizza's Graph, Pizza's See-through, Type



Hypothesis 2a: ***There is a negative relationship between perceived functional risk and transparent packaging.***

Hypothesis 2b: ***There is a negative relationship between perceived functional risk and product imagery.***

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,151[a]	,023	,020	1,17833	1,947

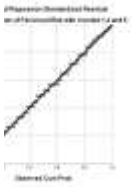
a. Predictors: (Constant), See-Through, Graph

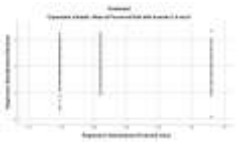
b. Dependent Variable: Perceived functional Risk

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	3,965	,084		47,345	,000		
	Graph	,081	,118	,032	,691	,490	,733	1,364
	See-Through	-,328	,115	-,132	-2,846	,005	,733	1,364

a. Dependent Variable: Perceived functional risk (-)





Hypothesis 3a: ***There is a negative relationship between perceived functional risk and purchase intent.***

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,260[a]	,068	,066	1,10760	2,122

a. Predictors: (Constant), Perceived Functional risk

b. Dependent Variable: Mean of Purchase Intents

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	55,179	1	55,179	44,979	,000[b]
	Residual	760,605	620	1,227		
	Total	815,784	621			

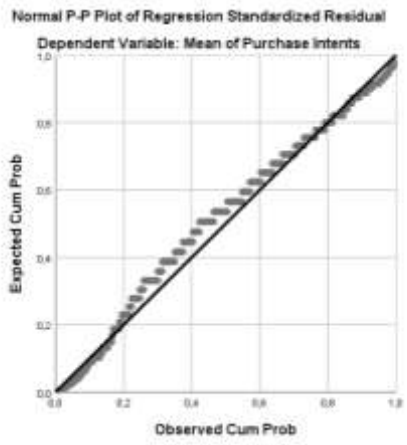
a. Dependent Variable: Mean of Purchase Intents

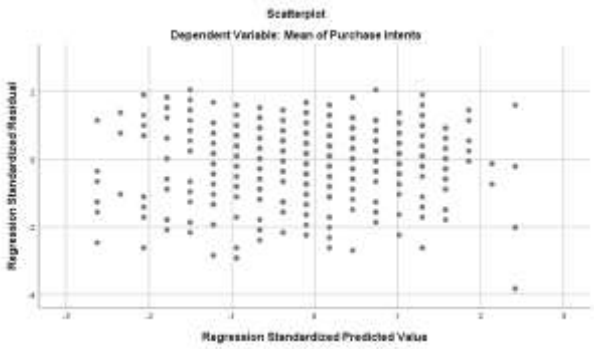
b. Predictors: (Constant), Perceived Functional risk

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5,487	,151		36,247	,000
	Perceived risk functional	-,250	,037	-,260	-6,707	,000

a. Dependent Variable: Mean of Purchase Intents





Hypothesis 3b: ***There is a negative relationship between perceived financial risk and purchase intent.***

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,525[a]	,276	,274	,97631	2,100

a. Predictors: (Constant), Perceived Financial Risk

b. Dependent Variable: Mean of Purchase Intents

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	224,808	1	224,808	235,850	,000[b]
	Residual	590,975	620	,953		
	Total	815,784	621			

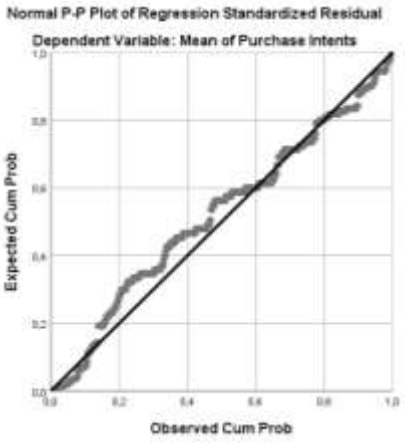
a. Dependent Variable: Mean of Purchase Intents

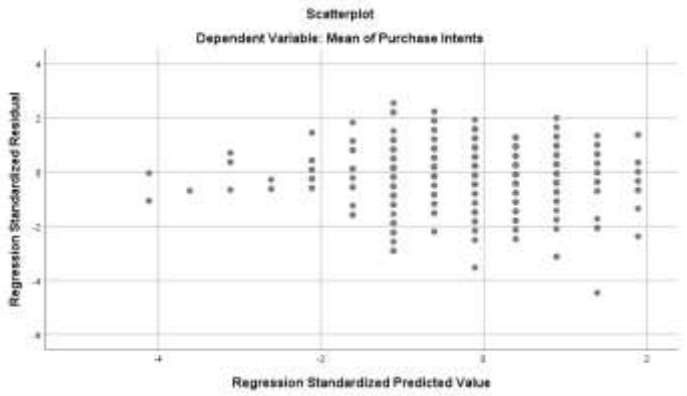
b. Predictors: (Constant), Perceived Financial Risk

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	6,258	,120		52,154	,000
	Perceived Risk financial	-,602	,039	-,525	-15,357	,000

a. Dependent Variable: Mean of Purchase Intents





Hypothesis 3c: ***There is a negative relationship between perceived psychological risk and purchase intent.***

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,161[a]	,026	,024	1,13206	2,112

a. Predictors: (Constant), Perceived Psychological Risk

b. Dependent Variable: Mean of Purchase Intents

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21,217	1	21,217	16,556	,000[b]
	Residual	794,567	620	1,282		
	Total	815,784	621			

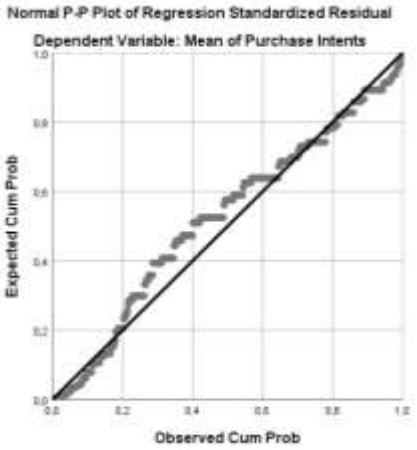
a. Dependent Variable: Mean of Purchase Intents

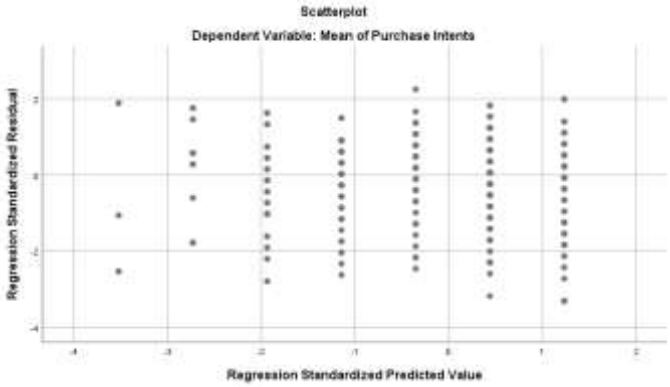
b. Predictors: (Constant), Perceived Psychological Risk

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4,890	,103		47,672	,000
	Perceived Risk psychological	-,146	,036	-,161	-4,069	,000

a. Dependent Variable: Mean of Purchase Intents





Hypothesis 4a: ***Perceived functional risk mediates the relationship between Visual Elements of package and Purchase Intent.***

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Perceived Risk functional	622	1,00	7,00	3,8746	1,19010
Valid N (listwise)	622				

```
Run MATRIX procedure:

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

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

**************************************************************************
Model = 4
    Y = PI
    X = VI
    M = PRfunc

Sample size
        622

**************************************************************************
Outcome: PRfunc

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,4722      ,2230     1,1023   177,9227     1,0000   620,0000      ,0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     5,5160      ,1301    42,4123      ,0000     5,2606     5,7714
VI           -,3788      ,0284   -13,3388      ,0000     -,4346     -,3231

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

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,5739      ,3294      ,8838   152,0152     2,0000   619,0000      ,0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2,5209      ,2300    10,9596      ,0000     2,0692     2,9726
PRfunc       -,0135      ,0360     -,3747      ,7080     -,0571      ,0841
VI            ,4484      ,0288    15,5434      ,0000      ,3918      ,5051

************************** TOTAL EFFECT MODEL ****************************
Outcome: PI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,5738      ,3292      ,8826   304,3120     1,0000   620,0000      ,0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2,5953      ,1164    22,3008      ,0000     2,3667     2,8238
VI            ,4433      ,0254    17,4445      ,0000      ,3934      ,4932

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
      ,4433      ,0254    17,4445      ,0000      ,3934      ,4932

Direct effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
      ,4484      ,0288    15,5434      ,0000      ,3918      ,5051
```

```
Indirect effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PRfunc     -,0051      ,0168     -,0363      ,0294

Partially standardized indirect effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PRfunc     -,0045      ,0147     -,0321      ,0255

Completely standardized indirect effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PRfunc     -,0066      ,0217     -,0474      ,0375

Ratio of indirect to total effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PRfunc     -,0115      ,0381     -,0827      ,0658

Ratio of indirect to direct effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PRfunc     -,0114      ,0374     -,0764      ,0705

R-squared mediation effect size (R-sq_med)
           Effect    Boot SE   BootLLCI   BootULCI
PRfunc      ,0675      ,0249      ,0217      ,1195

Normal theory tests for indirect effect
     Effect         se          Z          p
     -,0051      ,0137     -,3735      ,7088

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

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

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

NOTE: Some cases were deleted due to missing data.  The number of such cases
was:
  66

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```

Hypothesis 4b: ***Perceived financial risk mediates the relationship between Visual Elements of package and Purchase Intent.***

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Perceived Risk financial	622	1,00	7,00	2,8915	,99873
Valid N (listwise)	622				

```
Run MATRIX procedure:

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

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

**************************************************************************
Model = 4
    Y = PI
    X = VI
    M = PPRfin

Sample size
        622

**************************************************************************
Outcome: PPRfin

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,3858      ,1488      ,8504   108,4041     1,0000   620,0000      ,0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     4,0168      ,1142    35,1634      ,0000     3,7925     4,2411
VI           -,2597      ,0249   -10,4117      ,0000     -,3087     -,2107

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

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,6615      ,4375      ,7413   240,7397     2,0000   619,0000      ,0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     4,2395      ,1846    22,9712      ,0000     3,8770     4,6019
PPRfin       -,4093      ,0375   -10,9164      ,0000     -,4830     -,3357
VI            ,3370      ,0252    13,3498      ,0000      ,2874      ,3866

************************** TOTAL EFFECT MODEL ****************************
Outcome: PI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,5738      ,3292      ,8826   304,3120     1,0000   620,0000      ,0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2,5953      ,1164    22,3008      ,0000     2,3667     2,8238
VI            ,4433      ,0254    17,4445      ,0000      ,3934      ,4932

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
      ,4433      ,0254    17,4445      ,0000      ,3934      ,4932

Direct effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
```

```
      ,3370      ,0252    13,3498      ,0000      ,2874      ,3866

Indirect effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PPRfin      ,1063      ,0156      ,0777      ,1375

Partially standardized indirect effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PPRfin      ,0928      ,0131      ,0689      ,1196

Completely standardized indirect effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PPRfin      ,1376      ,0194      ,1021      ,1774

Ratio of indirect to total effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PPRfin      ,2398      ,0361      ,1767      ,3167

Ratio of indirect to direct effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PPRfin      ,3155      ,0641      ,2146      ,4635

R-squared mediation effect size (R-sq_med)
           Effect    Boot SE   BootLLCI   BootULCI
PPRfin      ,1673      ,0226      ,1238      ,2121

Normal theory tests for indirect effect
     Effect         se          Z          p
      ,1063      ,0141     7,5178      ,0000

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

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

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

NOTE: Some cases were deleted due to missing data.  The number of such cases
was:
  66

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```

Hypothesis 4c: ***Perceived psychological risk mediates the relationship between Visual Elements of package and Purchase Intent.***

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Perceived Risk Psychological	622	1,00	7,00	5,4437	1,26232
Valid N (listwise)	622				

```
Run MATRIX procedure:

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

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

**************************************************************************
Model = 4
    Y = PI
    X = VI
    M = PPRpsi

Sample size
        622

**************************************************************************
Outcome: PPRpsi

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,1025      ,0105     1,5793     6,5778     1,0000   620,0000      ,0106

Model
              coeff         se          t          p       LLCI       ULCI
constant     2,9340      ,1557    18,8476      ,0000     2,6283     3,2397
VI           -,0872      ,0340    -2,5647      ,0106     -,1539     -,0204

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

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,5830      ,3398      ,8700   159,3289     2,0000   619,0000      ,0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2,8712      ,1449    19,8131      ,0000     2,5866     3,1557
PPRpsi       -,0940      ,0298    -3,1547      ,0017     -,1526     -,0355
VI            ,4351      ,0254    17,1543      ,0000      ,3853      ,4849

************************** TOTAL EFFECT MODEL ****************************
Outcome: PI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      ,5738      ,3292      ,8826   304,3120     1,0000   620,0000      ,0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     2,5953      ,1164    22,3008      ,0000     2,3667     2,8238
VI            ,4433      ,0254    17,4445      ,0000      ,3934      ,4932

***************** TOTAL, DIRECT, AND INDIRECT EFFECTS ********************

Total effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
      ,4433      ,0254    17,4445      ,0000      ,3934      ,4932

Direct effect of X on Y
     Effect         SE          t          p       LLCI       ULCI
      ,4351      ,0254    17,1543      ,0000      ,3853      ,4849
```

```
Indirect effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PPRpsi      ,0082      ,0051      ,0012      ,0220

Partially standardized indirect effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PPRpsi      ,0072      ,0044      ,0011      ,0192

Completely standardized indirect effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PPRpsi      ,0106      ,0065      ,0016      ,0283

Ratio of indirect to total effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PPRpsi      ,0185      ,0114      ,0028      ,0497

Ratio of indirect to direct effect of X on Y
           Effect    Boot SE   BootLLCI   BootULCI
PPRpsi      ,0188      ,0120      ,0028      ,0523

R-squared mediation effect size (R-sq_med)
           Effect    Boot SE   BootLLCI   BootULCI
PPRpsi      ,0154      ,0096      ,0022      ,0407

Normal theory tests for indirect effect
     Effect         se          Z          p
      ,0082      ,0042     1,9324      ,0533

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

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

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

NOTE: Some cases were deleted due to missing data.  The number of such cases
was:
  66

NOTE: Kappa-squared is disabled from output as of version 2.16.

------ END MATRIX -----
```