



NOVA

IMS

Information
Management
School

MGI

Mestrado em Gestão de Informação

Master Program in Information Management

**SOPHISTICATED COLORED PACKAGING:
THE INFLUENCE ON PURCHASE INTENTION,
PERCEIVED QUALITY, PRODUCT ATTRACTIVENESS,
SOPHISTICATION AND WILLINGNESS TO PAY**

Carolina Rafael do Vale da Conceição Cabral

Dissertation proposal report presented as partial
requirement for obtaining the Master's degree in
Information Management with specialization in Marketing
Intelligence

NOVA Information Management School
Instituto Superior de Estatística e Gestão de Informação

Universidade Nova de Lisboa

NOVA Information Management School
Instituto Superior de Estatística e Gestão de Informação
Universidade Nova de Lisboa

**SOPHISTICATED COLORED PACKAGING:
THE INFLUENCE ON PURCHASE INTENTION, PERCEIVED
QUALITY, PRODUCT ATTRACTIVENESS, SOPHISTICATION
AND WILLINGNESS TO PAY**

by

Carolina Rafael do Vale da Conceição Cabral

Dissertation proposal report presented as partial requirement for obtaining the Master's degree in Information Management with a specialization in Marketing Intelligence

Advisor: Professor Diana Orghian

Abril 2022

ACKNOWLEDGEMENTS

The elaboration of this dissertation is the attainment of a goal I have always dreamed of. The closing of a chapter that has given me so much pleasure and the beginning of a new one that I can hardly wait for. The development of this dissertation would not have been possible without the support of several people to whom I am deeply grateful.

First of all, I would like to thank my parents for their love, support, and constant motivation throughout my life. For always believing in me even when I sometimes don't. Without them it would never be possible. Thank you for always being present at all times of my life and for encouraging me to follow my dreams.

To my boyfriend for believing in me and showing me that in the end everything will work out. What a ride!

To my great friend Monica for showing me that nothing is impossible. For all the help, friendship and laughs. Everyone should have the chance to have a friend like you.

To my supervisor, Professor Diana Orghian, for guiding me in the development of this dissertation. Without her help it would not be possible.

ABSTRACT

With the increasing number of products on the shelves, packaging has become increasingly important in consumers' purchasing decisions. Nowadays, packaging does not only serve to protect the product but it also serves as a space to communicate attracting consumers.

Color is one of the most prominent elements of packaging and it has been seen as the tool that most influences consumer's minds. However, previous research has only focused on primary colors or general color dimensions such as light/dark or warm/cold. Little research has been done into defining what sophisticated colors are. This study aimed to not only identify what are the colors considered sophisticated by consumers but also determine their influence on consumer purchase intention, perceived quality, product attractiveness, sophistication and finally, willingness to pay. It was also intended to find if the presence of the sophisticated colors on the packaging produced different effects between genders.

This study used a questionnaire with 325 valid answers.

The results showed that sophisticated colored packaging has a positive influence on all dependent variables: purchase intention, perceived quality, product attractiveness, sophistication and willingness to pay. The study also found that, color scenario impacts all dependent variables except product attractiveness of both genders in the same direction. Regarding, product attractiveness, contrary to expectations, it was observed that men are the gender that is more impacted by sophisticated colors.

KEYWORDS

Packaging; Sophisticated colors; Purchase Intention; Perceived quality; Willingness to pay; Product attractiveness; Packaging sophistication.

INDEX

1. Introduction	1
2. Literature review	4
2.1. Packaging	4
2.2. Color	6
2.3. Consumer purchase intention	8
2.4. Perceived quality	11
2.5. Product attractiveness	13
2.6. Willingness to pay.....	15
3. Methodology	17
3.1. Research objectives.....	17
3.2. Hypotheses.....	17
3.3. Procedure	18
3.3.1. Pre-test	18
3.3.2. Pre-test results	19
3.3.3. Questionnaire	19
3.4. Measures	20
3.4.1. Questionnaire design	20
3.4.2. Measurement scales	21
3.5. Participants.....	23
4. Results.....	24
4.1. Reliability	24
4.2. Descriptive statistics.....	25
4.3. Correlation.....	26
4.4. Sophistication	26
4.5. Purchase Intention	27
4.6. Perceived quality	28
4.7. Product attractiveness	28
4.8. Willingness to pay.....	30
5. Discussion and conclusions	31
6. Theoretical and managerial implications	34
7. Limitations and future research	35
8. Bibliography.....	37
9. Appendices	43

Appendix 1. T-tests paired samples for women.....	43
Appendix 2. T-tests paired samples for men.....	43
Appendix 3. Survey Flow	44
Appendix 4. Survey	44

LIST OF FIGURES

Figure 1 <i>Color scenarios</i>	20
Figure 2 <i>Descriptive plots regarding product attractiveness</i>	29

LIST OF TABLES

Table 1 <i>Measurement scales</i>	22
Table 2 <i>Cronbach's alpha for each construct</i>	25
Table 3 <i>Descriptive statistics</i>	25
Table 4 <i>Correlations between the constructs</i>	26
Table 5 <i>Descriptive for sophistication</i>	27
Table 6 <i>Descriptive for purchase intention</i>	27
Table 7 <i>Descriptive for perceived quality</i>	28
Table 8 <i>Descriptive for product attractiveness</i>	29
Table 9 <i>Descriptive for willingness to pay</i>	30
Table 10 <i>Overview of the hypotheses</i>	33

1. INTRODUCTION

Packaging is something that has existed for a long time and it has been changing. With the constant evolution of packaging, a new function has emerged: the visual function. Its role is being responsible for the identification, differentiation, and highlighting of the brand and/or product in order to appeal to the consumer, and to convey information to the consumer (Rundh, 2015). With the emergence of many new brands and since it is estimated that most decisions are made at the point of sale, packaging became an important ally when it comes to attract the eye of consumers. Packaging is often the first thing that a customer sees before making their first selection and it can influence consumer evaluation of the product proving to be a strong ally in product differentiation (Ampuero and Vila, 2006; Rettie and Brewer, 2000).

Packaging color is probably the tool that most influences consumer's minds (Rundh, 2016). It plays a vital role when it comes to products, packages and logos by influencing the consumer perceptions (Aslam, 2006; Labrecque & Milne, 2012).

While much research has been done into color psychology and color effects, little research has been done into defining what sophisticated colors are. According to Mooser (2003), sophisticated colors are all colors that are not simple, i.e., all non-primary and secondary colors (red, yellow, blue, orange, green and purple) which besides being a very broad definition does not tell us which colors are considered by consumers to be the most sophisticated. This study aims to fill this gap not only by identifying the most sophisticated colors but also to study its effects while present on product packaging.

The present study contributes to existing literature about packaging and color by examining the influence of sophisticated colors present on packaging have on consumer purchase intention, and how it influences the product perceived quality, attractiveness and sophistication. It has been proven that packaging color impacts consumer decisions. Following this line of reasoning, we want to understand if the presence of sophisticated colors on packaging impacts the choice of consumers and if so, how it impacts. In addition, this will be the first study in the field of sophisticated colors since this color family is not defined and has not yet been studied. Therefore, this paper carries valuable implications for product managers, marketers, scholars, packaging/product designers and companies who learn the effect that this new family of colors has. They can then use the knowledge to their advantage, increasing their sales and improving their products.

The main objective of this study is to answer the research question: What is the impact of the sophisticated colors present on product packaging and how do they influence consumers' purchase

intention and their evaluation of quality and product attractiveness? In addition, this study also intends to determine its influence on consumer's willingness to pay and if they evaluate the product as more sophisticated when its packaging has sophisticated colors on it. It also aims to determine whether there are significant differences between men and women for the different dependable variables under study and understand what importance consumers attach to sophisticated colors present on product packaging. To do so, five hypotheses were developed and tested. The product used to perform the study was a shampoo since it is a product of daily and common use for both genders. It was also selected for being a low involvement product since it is in the low involvement products that packaging and its visual elements play a significant role when it comes to affect positively the consumer choice (Silayoi & Speece, 2004). A fictional brand called Bambu was created to avoid prior knowledge of the brand.

To bridge this gap in the existing literature, first, this study seeks to contribute to the conceptualization of a new color family, sophisticated colors, that has not received attention from marketing scholars since prior research has mainly focus on the primary colors and its effects.

Second, this research intends to contribute to extend knowledge on marketing literature by providing new insights on the effects sophisticated colored packaging has on consumer decisions acting as preliminary research in this field. While there is a general recognition that packaging and packaging colors can influence the variables under analysis, direct linkage between sophisticated colors and that variables remains understudied.

Third, from a managerial perspective, it aims to assist managers, designers and marketers when making managerial decisions about the product and to better understand how package color decisions impact consumer responses.

This dissertation is organized in six main chapters with introduction being the first of them.

The second chapter concerns the theoretical framework in order to clarify the existing gap. It includes the literature review about packaging, color and their effect on consumer behavior as well as a review of the dependent variables under analysis: consumer purchase intention, perceived quality, product attractiveness and willingness to pay.

In the third chapter, regarding methodology, are presented the research question and objectives as well as the hypotheses. This chapter also explains the method used to test the hypotheses including a description of the questionnaire design, the measurement scales and participants. Before proceeding to the hypothesis test it will be necessary to find out which colors are considered the most sophisticated by consumers, since there is no literature review on which we can base ourselves.

For this purpose, a pre-test will be conducted in which participants rate 27 colors, presented in random order. Subsequently, a 2 (packaging with/without sophisticated colors) X 2 (shampoo for women/for men) between-groups factorial experiment will be conducted as the main study. The data will be collected using an online self-administered questionnaire developed on Qualtrics.

The fourth chapter contemplates the analysis of results and research findings obtained through statistical analysis of the collected data while the fifth chapter are dedicated to the discussion of the obtained results.

The last chapter is focused on summarizing the main findings of this study as well as presenting the theoretical and managerial implications, the limitations of the study and future recommendations.

2. LITERATURE REVIEW

2.1. PACKAGING

According to Kotler and Keller (2016, p.412), “packaging includes all the activities of designing and producing the container for a product”. However, packaging does not only serve to protect the product. Many authors argue that packaging should be seen as the fifth P of the four P's of the marketing mix: product, price, place and promotion. On the other hand, some include packaging as a product's part. The truth is that one way or another the importance of packaging in recent years had been recognized in literature (Rundh, 2016) and it has become an important part of the selling process (Rettie & Brewer, 2000).

Packaging is something that has existed for a long time and that has been changing. Retorta (1992) simplifies the functions of packaging into three main segments:

- Containment.
- Transportation: the package should be resistant, provide security and be convenient to carry. It may have several sizes.
- Protection: the packaging should preserve the product, keeping its flavours and aromas and being innocuous to the product itself and the environment.

Rundh (2016) also states that packaging serves mainly to protect the content from losing its functions and this includes protecting the product from shock and vibration as well as keeping the content clean, sterile and in the right temperature during transportation. According to the author, packaging should also present the necessary information about the product while promoting it. However, with the constant evolution of packaging, a new function has emerged: the visual function. Its role is being responsible for the identification, differentiation, and highlighting of the brand and/or product in order to appeal to the consumer, and to convey the necessary and mandatory information to the consumer.

Although there is literature and research on packaging there is no agreement on the classification of its elements. Silayoi and Speece (2004) divided the packaging into two categories: the visual elements which is composed by graphics, color, size and shape of packaging and it is related to the affective side of the decision-making process and the informational elements which relates to cognitive side of the decision and conveys product information and technologies used in the package. Similarly, Rettie and Brewer (2000) divide the packaging into verbal elements used to communicate with consumers and which includes brand, product name and information/instructions and visual elements, i.e., color, shape, size, images and symbols. Underwood, et al. (2001) divides them in

graphic elements (color, typography, shape and images) and structural elements (form, size and material) not considering the verbal elements. Kotler and Keller (2009) support that there are six elements of packaging – size, shape, material, color, text and graphics.

According to Rundh (2016), it was due to the emergence of the self-service system that packaging gained strong importance persuading the consumer to make the final decision. Since then, packaging has been assuming an increasingly significant role in the communication of a product being identified as the most important vehicle of communication, especially in the point of sale (Underwood et al., 2001). “Not every customer will see a brand’s advertising, social media pages, or other promotions. However, all consumers who buy and use a product will interact regularly with its packaging” (Kotler & Armstrong, 2018, p.252). Thus, the packaging should also be seen as a space to communicate more than just being a protection for the product and an extension of it (Keller & Swaminathan, 1997). According to Kotler and Keller (2016), the typical shopper can pass by 300 products in just 1 minute so, as Pilditch (1961, as cited in Rettie & Brewer, 2000) stated, packaging is now the “salesman on the shelf”. Packaging is often the first thing that a customer sees before making its first selection and it can influence consumer perceptions and evaluation of the product proving to be a strong ally in product differentiation (Ampuero & Vila, 2006; Rettie & Brewer, 2000). Garber, et al. (2000) highlight the importance of packaging when consumers have little or limited knowledge of a product category or brand since packaging can be the only source of information and it can be used to get consumer attention (Underwood et al., 2001). According to Butkevicoene, et al. (2008), package has an impact on consumer attention, it allows the transferability of the desirable information about the product, it positions the product in consumer conscious and finally, it has the role of differentiate and identify the product. This means that package can become a competitive advantage for the company since it influences consumers and their decision-making process in the way that package can determine the preference of one product over another. Package and its visual elements assume a critical role especially in low involvement products where there isn’t an intensive analysis of product’s attributes since most people in this condition often think that the package is the product (Silayoi & Speece, 2004; Kauppinen-Raisainen, 2014). This study uses shampoo as the product in analysis. Shampoo is considered a low involvement product (Silayoi & Speece, 2004) and therefore, packaging and, especially, color became important for the analysis. Informational elements require more mental effort to process which leads to consumers not being willing to do so since it is a product that they do not consider important (Silayoi & Speece, 2004).

Vilnai-Yavetz and Koren (2013), in their research confirm the importance of aesthetics in packaging as well as packaging as an important predictor of customer’s perceptions and purchase intentions. Thus, packaging should be perceived as effective which means it should protect the content

(instrumental), it should have an attractive appearance (aesthetic) and it should communicate directly with the customers by sending them the desired message (symbolic). An effective packaging will then lead to consumer's purchase intent and will reduce advertising costs increasing companies' market share.

2.2. COLOR

Color is extremely important according to Farina, et al. (2006). This is readily demonstrated by the fact that people may have some difficulty describing a logo, however, they have an easy time describing its colors. Singh (2006) stated that people only take 90 seconds to form an opinion about the products and colors alone account for 62-90% of this opinion.

According to Gorn, et al. (1997), and widely accepted by color theorists, color has three different dimensions- hue, saturation and value. Hue is the wavelength of a color. It is the pigment of the color and what people usually call blue, red or green. Short wavelengths are associated with cool colors such as blue and long wavelengths are associated with warm colors such as red (Hsieh et al., 2018). Saturation refers to the intensity of the color and the way it is pigmented. Highly saturated colors have a large portion of pigment. Low-saturation colors are opaque while high-saturation colors are rich and vivid (Gorn et al., 1997). Finally, the value concerns the brightness of the color which is a continuous dimension from pure black to pure white. High-brightness colors appear "whitish" while low-brightness colors appear "darkish" (Hsieh et al., 2018). These three dimensions determine how people perceive colors and the associations they form.

This association happens due to associative learning process. Associative learning theory was made known by Thordike in 1911 and Pavlov in 1927 and it explains how consumers develop associations for colours over time (Ridgway & Myers, 2014). Pavlov's study, integrated in the classical conditioning, showed that due to associative learning a connection between a conditioned and unconditioned stimulus can be paired. In his study, dogs were taught to associate the ringing of the bell (conditioned stimulus) with being fed (unconditioned stimulus) which results in dogs' salivation (conditioned response). After a short period, when the dogs heard the bell, they started salivating even though there was no food (Grossman & Wisenblit, 1999). It happens the same with humans. Labrecque, et al. (2013) state that during our live we construct a network of color associations due to "encounter pairing of colors with particularly meaningful messages, concepts, objects, and experiences". With repetition over time, the color associations become stronger and the mere perception of a color can influence affect, cognition, and behavior accordingly (Elliot & Mayer, 2012). According to Grossman and Wisenblit (1999), in particular products, the preference for colors is based on the associations that consumer have formulated due to their experience. This means that it

is possible that favorable experiences will lead to color preferences. It is also possible that consumers learn, through association, that a certain color are appropriated for a certain product category which implies that consumers may prefer certain colors for certain product categories. Associative learning can explain the difference between colors meanings in different cultures. Since colors association are learned, cultures have a great influence on it once people of different cultures are exposed to different associations. Some color associations are consistent across cultures, while others are not. In their research, Madden, et al. (2000) found that blue, green and white colors are colors that, across countries, are commonly liked and share similar meanings unlike the colors black and which have considerably different meaning across cultures. Thus, colors convey meaning influencing consumer behaviour through marketing stimuli (Labrecque & Milne, 2012; Labrecque et al., 2013) but the meanings associated with colors vary from culture to culture (Labrecque et al., 2013).

According to Labrecque, et al. (2013), it also important the context in which colors are shown in order to predict the outcomes. Elliot and Mayer (2012), in their color-in-context theory, also support that color carries different meanings in different contexts which lead to different implications for feelings, thoughts, and actions in different contexts. The authors believe that the same color is capable of provoking opposite meanings and implications (i.e., approach vs. avoidance) in different contexts. Labrecque, et al. (2013) exemplifies that it is different seeing a woman wearing a red cocktail dress at a dinner party and seeing a red street sign. The color is the same but the context such as object, location and activity are different. In the first situation red may evoke feelings of attraction and excitement while in the second situation it may trigger feelings of avoidance and danger.

Farina, et al. (2006) also argues that color perception is not only influenced by culture but also by environment, education, temperament, and age. Arkay, et al. (2012) indicated that young adults attach more importance to product color than older groups. There are also differences between men and women i.e., women give more importance to product color than men. Bellizzi and Hite (1992) found that when the retail environments are blue instead of red the outcomes are better, i.e., it exists fewer purchase postponements, more simulated purchases, inclination to shop and purchase more expensive sets. Puccinelli, et al. (2013) concluded that male participants perceive greater savings when prices are shown in red (vs prices shown in black) and put them in a more positive state. Thus, it can be stated that warm colors, with an emphasis on red, are physically and emotionally arousing and distracting while cool colors, especially blue, are relaxing, calming, delightful and pleasant (Bellizzi & Hite, 1992).

Color plays a vital role when it comes to products, packages and logos by influencing the consumer perceptions (Aslam, 2006; Labrecque & Milne, 2012). Garber, et al. (2013) suggest that for consumers who are not loyal to a brand, a simple change in packaging color can lead consumers to consider that brand. Color can identify the brand, the product category and it can also be used to differentiate a product (Ampuero & Vila, 2006). In many categories, it is common that packaging color is used to convey specific information about the category but it is also used to convey higher-order information signalling that a product is premium (black) for example (Spence & Velasco, 2018). Also, gold is associated with luxury and that is why many luxury and premium products have a gold package (Garaus & Halkias, 2019). Thus, it has been used by marketers in packages in order to create psychological meaning influencing the consumers preferences (Bellizi & Hite, 1992).

Ampuero and Vila (2006) support that packaging is able to influence consumer response to a product. Rundh (2016) state that color is probably the tool in the package design that most influences the consumer's minds, therefore, it is important to have in consideration the meaning of colors when determining possible colors to fit the package. Color also indicates the product positioning. According to Ampuero and Vila (2006) cold and dark colored package are often associated with high priced and elegant products targeted to the upper class while products targeted to price sensitive consumers are associated with light colored packaging. Labrecque and Milne (2012) also highlight that packaging color can significantly affect the product identification and influence consumer perception thus, a wrong choice of colors for the packaging can cause strategic failure (Aslam, 2006).

While much research has been done into color psychology and color effects, little research has been done into defining what sophisticated colors are. According to Mooser (2003), sophisticated colors are all colors that are not simple, i.e., all non-primary and secondary colors (red, yellow, blue, orange, green and purple).

2.3. CONSUMER PURCHASE INTENTION

Purchase intention can be defined as consumer willingness to buy a product or service in the future after evaluation (MacKenzie et al., 1986). This evaluation depends on perceived value and perceived quality. These two constructs are expected to be positively related to purchase intention i.e., low perceived value and quality leads to expected low purchase intention and high perceived value and quality leads to expected high purchase intention (Chang & Wildt, 1994). Spears and Singh (2004) also define purchase intention as "an individual's conscious plan to make an effort to purchase a brand".

Engel (1995) divided purchase intention into three groups:

- Unplanned purchases which relate to impulsive buying behavior and where consumers choose the product category and the brand at the store;
- Partially planned purchases where consumers have previously defined the product category but only choose the brand to buy at the store;
- Planned purchases where consumers have a choice of the product category and brand before buying.

Kotler and Keller (2016) affirm that consumer purchase intention is divided into five stages. The first stage is problem recognition. This is the stage where the consumer recognizes the problem or need and the most crucial step because if the consumers do not acknowledge the problem or the need then they will not proceed to the product purchase. Usually, a need can be triggered by internal stimuli i.e., the personal perception experienced by the consumer or external stimuli i.e., outside influences such as advertising or word of mouth. After recognizing a need or a problem the consumer will often seek information about the product that will fulfil that need or problem. This is the second stage which is called the information search. The major sources of information are personal, commercial, public and experiential. However, this search for information is limited and according to the same author, “for durables, half of all consumers look at only one store, and only 30 percent look at more than one brand of appliances”. The brands available forms the total set but consumer will only acknowledge a subset of these – the awareness set. After gathering some information, consumers will choose a set of brands that will meet their initial buying criteria – consideration set- and just a few of them will remain - the choice set. After that, the consumer proceeds to the third stage, the evaluation of alternatives. In this stage, consumers evaluate the alternative brands, compare them and may also form an intention to buy their favorite brand. Consumers will pay attention to products or brands with the attributes that will deliver the benefit they need to fulfil their need or solve their problem. Finally, the fourth stage – purchase decision – is where consumers decide the brand, dealer, quantity, timing and payment method. After the purchase, consumers might be satisfied or “might experience dissonance from noticing certain disquieting features or hearing favorable things about other brands” as Kotler and Keller (2016) stated. In this stage, post-purchase behavior, if the consumer is unsatisfied with his decision, he will try to find information to support his decision.

Purchase intention is complex and it is influenced by several factors. Zeithaml (1988) support that purchase intention might be altered by the influence of price, quality perception and value perception. According to Silayoi and Speece (2004), purchase intention is influenced by the product involvement level and time pressure. The authors found that high involvement products such as many food and skincare products require more attention to product characteristics while low

involvement products such as shower gel, shampoo and detergent don't. In low involvement products, which include most of the fast-moving consumer goods, packaging and its visual elements (graphics, size and shape) play a significant role when it comes to affect positively the consumer choice while in high involvement products, the informational packaging attributes (information provided and technologies used) influences significantly the decision making. This importance decreases as time becomes constrained. Time pressure often affects purchase intention since when consumers shop under time constraints and pressure, they tend to make quick decisions without careful evaluation leading to unplanned purchases, most of them made at the sales point. The authors also found that packaging and its visual elements have a huge influence in time pressured decisions. When consumers are under time pressure, they tend to choose distinctive packages with simple information. Kotler (2016) also include cultural, social and personal factors as factors that influences purchase intention.

Purchase intention can also be driven by utilitarian and/or hedonic factors. Utilitarian motivation is related to rational reasons to buy and it is task oriented with the goal of satisfying a need or complete a task in an efficient and effective way (Botti & McGill, 2011), while hedonic motivation is related to emotional and pleasure reasons to buy (Batra & Ahtola, 1991). Hedonic and utilitarian motivations although distinct they are not mutually exclusive i.e., a product may both satisfy a need and provide pleasure. In the same way, they don't need to be consistent, i.e., a product can give pleasure and be bad in an instrumental sense or it may not give pleasure but may in fact be good in an instrumental sense (Batra & Ahtola, 1991)

In their study, Vilnai-Yavetz and Koren (2013) found that purchase intention should be seen as an important predictor of customers' perceptions. Especially, if the product conveys the appropriated information, it even generates a stronger impact on consumer purchase intention since it reduces uncertainty and increases product credibility. Also, in this case, where we are dealing with a low involvement product, packaging and visual elements influence choice more (Silayoi & Speece, 2004). Purchase intention is one of the most commonly used dependent variables to measure effects of color in marketing. For example, it has been proved that packaging color has influence on purchase intention, especially when it comes to consumers who are in a hurry such as millennials (Kauppinen-Raisanen, 2014). When consumers are short in time, they don't evaluate and compare products, they are influenced by extrinsic cues such as packaging color, size or graphics. Purchase Intention is a good predictor of consumer buying behavior and it's a good ally to managers since it is inexpensive to acquire and easily understood (Armstrong et al., 2000) and considered an important indicator of purchase (Chang & Wildt, 1994). In his research, Armstrong, et al. (2000) found that intentions-based forecasts are more accurate than extrapolating of past sales. However, according to Kotler and Keller

(2016), there is a gap between purchase intention and purchase behaviour due to two factors. The first factor concerns the attitude of others. It depends on the intensity of the other person's negative opinion and on the consumer's motivation to comply with that person's wishes. In that way, consumer will adjust his/her purchase intention based on the other people opinion of his/her choice. The second factor relates to unexpected and unanticipated situations that can alter the consumer's purchase intention such as losing income. Although having its flaws and not being a completely accurate and reliable predictor to measure conversion, purchase intention is still an indicator to measure purchasing (Chandon et al., 2005).

2.4. PERCEIVED QUALITY

Mitra and Golder (2006) support that quality might be the most important factor to achieve long term success of products. It is important to distinguish objective quality from perceived quality since they are not synonyms (Mitra & Golder, 2006; Zeithaml, 1988).

According to Mitra and Golder (2006) objective quality, or quality, is the “aggregate performance of all vector product attributes” and does not include intangible products attributes such as aesthetics nor extrinsic attributes such as brand image or salesperson behavior. Zeithaml (1988) defines it as a measurable and verifiable superiority.

Perceived quality, along with brand awareness, brand loyalty and brand associations, is one of the dimensions of brand equity which is “a set of assets (and liabilities) linked to a brand’s name and symbol that adds to (or subtracts from) the value provided by a product or a service to a firm and/or a firm’s customer (Aaker, 1996a). Perceived quality can be defined as the customer perceptions of quality (Mitra & Golder, 2006). Netemeyer, et al. (2004) defined it as the “customer’s judgment of the overall excellence, esteem, or superiority of a brand (with respect to its intended purposes) relative to alternative brand(s)”. Zeithaml (1988) stated that, besides being different from actual quality, perceived quality is a high level of abstraction instead of a specific product attribute. It also closely resembles an attitudinal evaluation of a brand and a consumer judgment usually made out of their evoked set. Thus, perceived quality may differ from real quality. According to Aaker (1996b) several reasons can be given for this. Consumers can be influenced by a previous image of products’ poor quality which leads them to not believing that product could change quality. The company and consumers have different visions on quality dimensions, i.e., the company achieves the quality but on a dimension that does not matter to consumers and therefore consumers do not recognize benefit. It may happens that consumer does not have the necessary information, time or motivation to rationally and objectively access the quality which happens often. Also, consumer may not even know how to evaluate quality. Perceived quality, although being an important element of trust for

businesses and a driver for financial performance (Aaker, 1996b) it also has its flaws. This happens because perceived quality involves having competitor frame of reference. This means that it different if consumer compares all available products in one category or just the available products in one specific store. There is also the problem of loyalty segments. The evaluation of quality done by customers loyal to the brand will differ from the evaluation done by customers loyal to other brands or even from customers who are not loyal to any brand (Aaker, 1996a).

Mitra and Golder (2006) discovered that a change in objective quality is not fully reflected in consumer's quality perception until after six years. This phenomenon is even larger and quicker when it faces a decrease in quality.

According to Keller and Swaminathan (1997), quality perception is intangible and subjective since it diverges from person to person considering their personality, needs and preferences. Consumers base their quality judgements in intrinsic and extrinsic cues. According to Zeithaml (1988), intrinsic cues concern the physical composition of the products such as color, texture, products' appearance, shape, size, flavour among others. Extrinsic cues are related to product but does not make part of the product which means that it can easily be changed without modifying the product physically. Examples of extrinsic cues to quality are price, brand name and level of advertising. Packaging is difficult to categorize in terms of intrinsic or extrinsic. It could be considered both depending on whether the package is a part of the physical composition of the product. In this case (squeezeable shampoo container) makes part of the physical composition of the product and, therefore, it is considered as intrinsic. However, the information present on packaging such as brand name or logo is considered as extrinsic. The same author states that intrinsic cues have more importance than extrinsic ones when consumers confidently believe that intrinsic product's attributes can be evaluated in the point of sale. Extrinsic cues gain importance over intrinsic when occurs the reverse scenario, that is, when the intrinsic attributes cannot be evaluated. Also, consumers who have already tried and experience the intrinsic attributes of a products would rely less on extrinsic cues when forming their judgments compared with no prior trial (Sprott & Shimp, 2004). Perceived quality is often used in research since is known by influenciating consumer's purchase intention (Richardson et al., 1994). In their research, Chang and Wildt (1994) found that perceived quality influences purchase intention which means that a variation on perceived quality accounts for significant variation in purchase intention. Thus, the higher the quality perceived by consumer the greater will be purchase intention. Vilnai-Yavetz and Koren (2013) also support that visual elements of packaging help consumers establish their expectations of the products reducing the perceived risk and increasing the purchase probability. According to Silayoi and Speece (2004), quality judgments are widely influenced by product's packaging characteristics which means that package make consumers

infer meaning about the product, i.e., if the package symbolizes high quality consumers will assume that the product has high quality and vice versa. In that way, packaging assumes a vital role serving as an indicator of product's quality (Ampuero & Vila, 2006) which justifies its importance for the current study. However, just as packaging influences positively consumer's perception of product quality, it can also influence it negatively resulting in product's failure (Silayoi & Speece, 2004).

As said before, it is common that packaging color is used to convey specific meaning about the product or category. According to Spence and Velasco (2018), black can be used to signalize a premium product. Gold is associated with luxury and that is why many luxury and premium products have a gold package (Garaus & Halkias, 2019). Since luxury and premium products are often related to quality, this study aims to investigate if black and gold can really impact the quality evaluation.

2.5. PRODUCT ATTRACTIVENESS

According to Crilly, et al. (2004), aesthetic impressions can be defined as the sensations that people infer from the perception of attractiveness (or unattractiveness) in products. The same author, also supported by Bloch (1995), stated that consumer's perceptions of product attractiveness may influence behavioral responses towards a product. These responses are mainly described by avoidance or approach. Avoidance is associated with ignoring the product, failure to purchase and even hiding the product while approach represents a further investigation of the product, product purchase and product use.

Visual appearance of product or packages and its attractiveness can influence how a product is comprehended as well as consumer product evaluation and choice (Bloch, 1995). Also, in low involvement products, such as the product analysed in this study, people often think that the package is the product (Silayoi & Speece, 2004) and packaging assumes an important role being a predictor of customer's perceptions and purchase intentions. Bloch (1995) stated that product's appearance is the first thing that a consumer will notice and it will be the first thing to connect with the potential buyer who will base his judgments on that interaction. However, people do not all behave in the same way. As Crozier (1994, cited in Crilly et al., 2004) suggests, the visual appeal of objects and how it is perceived by each person is influenced by socio-cultural, socio-economic, historical and technological factors. This means that what is perceived as aesthetic and visually appealing to a culture may not be appreciated by others. The authors also state that subjective experience can influence the aesthetic impressions.

Consumers' judgments on whether a product is attractive rely not only on the good looking of the product but also if it appears functional and says the right things about the owner (Crilly et al., 2004). However, it is more likely that a consumer chose a product that has an attractive appeal than a

similar in functioning and price but less visually appealing alternative. This happens because product appearance is able to provide value in itself and that's why people like to buy aesthetically pleasing products, looking at something aesthetic is rewarding (Creusen & Schoormans, 2005). It is also likely that a consumer with a strong aesthetic response to the product's would impulsively decide about the product (Bloch, 1995). Thus, depending on motivation and context, product's attributes such as product's appearance can represent a greater importance than its tangible properties (Crilly et al., 2004).

Package color play an important role in consideration and choice behavior of consumers which means that packaging appearance in general and package color in particular have impact on the formation of consideration set and on the choice behavior of consumers (Garber et al., 2000; Schoormans & Robben, 1997). This implies that colors on packages attract consumers' attention (Schoormans and Robben, 1997; Garber, 2000). It is one of the cues that most influences aesthetic consumer's response is color since it is able to evoke emotional reactions in consumers such as feelings of attraction to a product (Abbott et al., 2009). In their study, Stoll, et al. (2008) found that attractive packaging relates to visual attention, memory and rewards while unattractive packaging is "associated with the perception of response conflict, uncertainty, disgust, and expected risk". According to Garber, et al. (2000), different package appearance and package color tend to have a more important role and a more positive impact when consumers are looking for variety and sees something new and different on the shelf. However, Schoormans and Robben (1997) supports that this only happens if the deviation of the new packages is moderate since if it has a strong form deviation the product will undoubtedly catch consumer's attention but it will remove it from the regions of acceptability for the category.

According to Bloch (1995), consumers use product's visual appearance to make inference about products' attributes including functional attributes such as perceived quality. With colors being an important attribute of packaging/product that influences the consumer's minds (Rundh, 2016), the importance that visual appearance and aesthetics has on choice (Bloch, 1995) and as a predictor of customer's perceptions (Vilnai-Yavetz & Koren, 2013), this study aims to understand the effects that sophisticated colors can have on the product attractiveness/aesthetics evaluation. Kauppinen-Raisainen (2014) has already proved the communicative link between packaging color and product's quality through associative learning. The author exemplified the link by showing that green is commonly associated with nature and that is why green color is used to convey nature and healthiness on ecologically produced products. In that way this study aims to confirm the link by investigating if sophisticated colors can influence consumer's evaluation of product/packaging attractiveness.

2.6. WILLINGNESS TO PAY

Willingness to pay or, in other words, reservation price, concerns the maximum amount of money that each consumer is willing to pay for a given product (Kalish & Nelson, 1991; Krishna, 1991). The reservation price corresponds to consumer's reservation price for a specific product and it will be compared to the actual product's purchase price. Consumers will then choose the product that maximizes their utility (Kalish & Nelson, 1991). However, at reservation price, it makes no difference to the consumer whether he buys the product or not because the product and the money have the same value, i.e., spending money to buy the product translates into the same as keeping the money. This happens because willingness to pay reflects the product's inherent value in terms of money (Schmidt & Bijmolt, 2019).

Willingness to pay can be distinguished between hypothetical willingness to pay or real willingness to pay. Hypothetical measure of willingness to pay does not include a payment obligation or any financial consequences for participants' decisions (Schmidt & Bijmolt, 2019). It is the case of contingent valuation where, for example, consumers are asked directly what they would pay for a product, if given the opportunity to buy it (Kalish & Nelson, 1991; Schmidt & Bijmolt, 2019) or the case of conjoint analysis where is intended to establish trade-offs between product attributes and it is, usually, based on rankings, ratings or choice decisions among product profiles (Voelckner, 2006). In contingent valuation it may be required to participants a payment of the price they stated. These cases refer to real willingness to pay, a real measure of willingness to pay. Real willingness to pay happens, for example, in auctions where the winner has to pay the stated price for the product. The difference between real willing to pay and hypothetical willing to pay is the hypothetical bias where participants overprice their real willing to pay for a product (Schmidt & Bijmolt, 2019).

Hypothetical willingness to pay assume a greater importance to companies so they can find out how much consumers are willing to pay for their still-developing products and researchers in marketing and economics who need to quantify concepts such as product's value for example (Steiner et al., 2016; Schmidt & Bijmolt, 2019). This would not be possible using real willingness to pay since it requires a finished and sellable version of the product and it can be expensive. (Schmidt & Bijmolt, 2019).

Marozzo, et al. (2020) in their research showed that packaging color has a significant main effect on willingness to pay. The authors introduced and defined a new color family called au naturel colors and found that consumers are willing to pay more when the product has au naturel colored packaging.

To date, there is no research on sophisticated colors nor its effect on willingness to pay. However, the literature provides evidence that consumers are now willing to pay more for convenience, appearance, dependability and prestige of better packages (Kotler & Keller, 2016).

3. METHODOLOGY

The purpose of this research is to investigate whether the use of sophisticated colored packaging can influence the purchase intention, perceived quality, product attractiveness, product sophistication and willingness to pay. Thus, an experimental research will be done in order to establish whether or not a change in the independent variables, i.e., color scenario and gender, cause a change on those dependent variables (Saunders et al., 2009). A quantitative approach was chosen to test the hypotheses using numerical data collected through a questionnaire and analysed using statistical techniques (Saunders et al., 2009). A between-groups experimental design will be performed, where participants are randomly assigned to either non-sophisticated color scenario or sophisticated color scenario but not both. This means that any difference between the groups in the dependable variables under analysis will be due to the manipulation of packaging color (Saunders et al., 2009). This allows to trace a causal relationship between color manipulation and dependent variables.

3.1. RESEARCH OBJECTIVES

There are several characteristics about product packaging that might influence consumers and their evaluations. The main objective of this study is to answer the research question: What is the impact of the sophisticated colors present on product packaging and how do they influence consumers' purchase intention and their evaluations of quality and product attractiveness?

In addition, to explore further details, specific objectives were outlined:

- Determine the influence of sophisticated colored packaging on consumer's willingness to pay;
- Determine the influence of sophisticated colored packaging on perceived product sophistication;
- Determine whether there are significant differences between men and women for the different dependable variables under study;
- Understand what importance consumers attach to sophisticated colors on packaging.

3.2. HYPOTHESES

To study the proposed general and specific objectives, five research hypotheses were developed, namely:

H1: Consumer purchase intention of shampoo will be positively influenced by sophisticated package colors.

H2: Quality evaluation of shampoo will be positively influenced by sophisticated package colors.

H3: Sophisticated colored packaged shampoo positively influences consumers' evaluation of product attractiveness.

H4: Sophisticated colored packaged shampoo positively influences consumer's willingness to pay.

H5: The interaction effect between gender and color scenario is expected to be significant with women being more impacted by sophisticated colors than men.

3.3. PROCEDURE

3.3.1. Pre-test

Prior to the main experiment, a pre-test was conducted in order to determine which colors are considered the most sophisticated since there is no literature or scientific research that defines exactly which colors are considered the most sophisticated.

The pre-test consisted of a survey that was distributed online through the social networks Facebook and Instagram and also to friends and family in order to reach various age groups.

Respondents were informed about the purpose of the questionnaire, that their participation was completely voluntary and anonymous, and they could withdraw from completing it at any time. After the respondents agreed to participate in the survey, they were shown the instructions on what they should do: They were asked to look carefully at the colors presented in the squares and score according to their opinion the level of sophistication of the colors. The respondents were asked to rate each color using a 9-point rating Scale where 1 stands for "not at all sophisticated" and 9 for "extremely sophisticated". All respondents saw the same 27 colors presented in a random order for each. Respondents were not allowed to return to previous sections.

Before the survey ended, some demographic information about the respondents was collected, namely their gender, age, nationality, occupation, and level of education.

The pre-test received a total of 59 responses but 1 respondent did not accept the term of consent and 2 respondents did not finish the survey. Thus, of the 59 total responses only 56 were considered valid and used for analysis.

Among the 56 respondents, 38 are women and 18 are men, which translates into 67.86% being female and 32.14% being male. The average age of the 56 respondents is 36.32 years old and they are all Portuguese. The highest level of education is bachelor's degree (50%) followed by master's degree (33.93%) and High School (12.50%). The occupation of the respondents was divided between employed (55.36%) followed by student and employed student both with 16.07%.

3.3.2. Pre-test results

By analysing the averages for each color, the colors with the highest average and the colors with the lowest average were chosen to be included in the experimental design as sophisticated colors and non-sophisticated colors respectively. Regarding the female gender, the highest averages representing the most sophisticated colors are gold (M=7.61), silver (M=6.53) and black (M=5.87). Concerning the male gender, the most sophisticated colors are also gold (M=7.88), silver (M=7.63) and black (7.36). For aesthetic reasons the colors, gold and black were chosen as sophisticated colors to integrate in the experimental design of both genders.

In terms of the non-sophisticated colors to integrate in the experimental design and regarding the female gender, the colors considered were purple (M=3.13), blue (M=3.18) and green (M=3.18). The colors chosen to be part of the study were purple and blue for aesthetic reasons since blue and green were tied in terms of sophistication level. As for the male gender, the survey showed that yellow and purple both with the lowest average (M=2.25) were the colors perceived as non-sophisticated and, therefore, integrated in the study.

A T-test was performed in order to compare the sophisticated colors with the non-sophisticated colors, i.e., black (sophisticated color) was compared to purple (non-sophisticated color) for men and women; gold (sophisticated color) was compared to blue (non-sophisticated color) for women and it was also compared to yellow (non-sophisticated color) for men. The T-test results showed that there is a statistically significant difference for both genders which supports and gives meaning to the study. Therefore, the questionnaire will have two scenarios for each gender. The T-test results for both genders can be found in Appendix 1 and 2.

3.3.3. Questionnaire

The present study used a 2 (packaging with/without sophisticated colors) X 2 (shampoo for women/for men) between-groups experimental design. In this study, the color of shampoo packaging was manipulated to see how participants evaluate this product. It is, also, important to have the adaptation of the same product for men and women in order to avoid a limitation of the study to one gender.

A fictional brand called Bambu was created to avoid prior knowledge of the brand, product and product quality and in order to not allow comparisons between packaging. The goal is to eliminate the possibility of the respondent evaluation based on brand or product reputation. The images were created for the sole purpose of serving the study using Adobe Photoshop 2020 software and can be found on Figure 1.

Figure 1
Color scenarios



An online survey developed on Qualtrics was distributed through a link shared on social media networks namely Facebook and Instagram and sent individually to friends and family through message platforms, such as Messenger and WhatsApp in order to obtain different age groups. All participants agreed to participate voluntarily. They were informed that at any time and for any reason, they could refuse to answer a question or stop filling out the questionnaire. There were no benefits or risks associated with this study and it was guaranteed that the data collected was intended for purely academic purposes. The questionnaire was also approved by NOVA IMS Ethics Committee.

The questionnaire was available for 16 days, from the 14th to the 29th of December 2021.

Respondents were presented only a partial part of the survey, i.e., only sophisticated colors or non-sophisticated colors. None of the color scenarios appeared significantly more than the other. For male gender, $N_{\text{SophisticatedColors}}=51$ and $N_{\text{Non-sophisticatedColors}}=53$ and for female gender, $N_{\text{SophisticatedColors}}=109$ and $N_{\text{Non-sophisticatedColors}}=112$.

Before implement the final survey, a pre-test was done in order to adjust and improve it and to evaluate the duration of the questionnaire based on the feedback of three participants. These feedback leads us to better explain few questions by clarifying the vocabulary used and make changes in the survey flow to make it more comprehensive. These responses were not included in the main survey.

3.4. MEASURES

3.4.1. Questionnaire design

The questionnaire begun with consent form. After agreeing to participate in the experiment, the respondent's age was asked as well as their gender so that they could be split by the different

scenarios. Male participants were randomly assigned to one of the two experimental groups intended for men i.e., a scenario in which the respondent had to evaluate a sophisticated colored shampoo package and another scenario without sophisticated colors, while female participants were randomly assigned to one of the two experimental groups intended for women. The survey flow can be found in Appendix 3.

After being allocated to their scenario, the respondents were given the instructions: "Imagine that you are at the supermarket looking for a new shampoo to buy. This time you have decided to try a different shampoo than what you usually buy, and you come across the shampoo shown below. We ask you to look carefully at the packaging and the product shown below. To answer the following questions, please assume that you have a normal hair type and that the shampoo below is for normal hair."

In all scenarios there were 5 groups of questions where respondents were asked to evaluate the statements regarding the shampoo presented to them. The first group concerned the product attractiveness with statements such as "the color of this packaging is pretty" and "this packaging is attractive". This group also regards sophistication represented by "this packaging is sophisticated". In the second group, the goal was to assess purchase intention, including questions such as "I would be interested in trying the shampoo in this package" and "I would buy this product". The third group concerns perceived quality where respondents evaluated the quality of the product shown. The fourth group corresponds to an open question where participants were asked to fill out the price in euros that they would expect to pay for the product they just saw. Finally, in the fifth group the participants were asked which brand of shampoo they usually buy. After finishing the survey, participants were thanked for their participation.

The questionnaire example can be found in Appendix 4. The questionnaire was the same for every scenario only changing the image of the shampoo presented to the participant.

3.4.2. Measurement scales

The study was conducted in Portugal and in order to obtain a greater number of answers, it was chosen to do the questionnaire in Portuguese.

The measures used in the questionnaire were adapted from the existing literature and the necessary changes have been made to adapt to the theme.

In Table 1 are presented a summary of the scales used with the respective measurement items and its references.

Table 1
Measurement scales

Constructs	Items	Measurement items	References
Purchase Intention (PI)	PP1	I believe that most people would like to buy this product (1-5)	(Vilnai-Yavetz & Koren, 2013)
	PP2	I would be glad to try the shampoo in this package (1-5)	
	PP3	I would recommend this product to my friends (1-5)	
	PP4	I would purchase this product (1-5)	
Perceived Quality (PQ)	PQ1	The likelihood that the product would be reliable is: (very high to very low)	(Dods et al., 1991)
	PQ2	This product should be of: (very good quality to very poor quality)	
	PQ3	The likelihood that this product is dependable is: (very high to very low)	
	PQ4	This product would seem to be durable in terms of the number of usages (strongly agree to strongly disagree)	
Product Attractiveness (PA)	PA1	The color of the package is beautiful (1-7)	(Vilnai-Yavetz & Koren, 2013)
	PA2	This package is ugly (1-7)	
	PA3	This packaging is attractive (1-7)	
Packaging Sophistication (PS)	PS1	This packaging is sophisticated (1-7)	Aaker (1997).
Willingness To Pay (WTP)	WTP1	How much would you expect to pay for the product you just saw?	(Kalish & Nelson, 1991).

To measure the purchase intention, respondents were presented with a 5-point scale ranging from “strongly disagree” to “strongly agree”. Purchase intention was measured by 4 items adapted from Vilnai-Yavetz and Koren (2013).

To measure perceived quality, a 7-point semantic differential scale was used and it was measured by 4 items which were based on the 5-item scale developed by Dodds, et al. (1991). The item regarding workmanship was deleted since it was deemed not to make sense for the type of product under study.

To measure product attractiveness, a 7-point scale ranging from “strongly disagree” to “strongly agree” with 3 items was adapted from Vilnai-Yavetz and Koren (2013).

Regarding sophistication, 1 item was measured by a 7-point scale ranging from “strongly disagree” to “strongly agree” adapted from Aaker (1997).

In the end, it was also added an open question that measures how much participants would be willing to pay for the shampoo they just saw. This type of measure has been used in other studies (Krishna, 1991) and it was selected attending its simplicity. In this case, it’s a hypothetical measure

for willingness to pay - contingent valuation. Since participants only see one of four scenarios and there were no purchase obligations, the conjoint analysis was excluded since it is based on trade-offs between product attributes, rankings, ratings or choice decisions among products (Voelckner, 2006) and participants couldn't compare the product since they were only faced with one product. In contingent valuation methods, consumers are asked directly to state the price they are willing to pay for the product under review (Kalish & Nelson, 1991).

3.5. PARTICIPANTS

From a total of 377 participants, 52 did not finish the survey, thus, of the 377 total responses only 325 were considered valid and were used for analysis. In this study, 68% of the responders were females and 32% were male. For women the average age was $M_{\text{women}}=41.15$ $SD_{\text{women}}= 14.76$ and for men $M_{\text{men}}= 37.39$ $SD_{\text{men}}= 16.16$.

Before the results were analysed, the information collected from the questionnaire was cleaned in order to identify and eliminate incomplete or incorrect data and increase data consistency. After that, JASP 0.16.0.0 software was used to perform the analysis.

4. RESULTS

Bearing in mind that the items in the questionnaire were evaluated using scales ranging from “strongly disagree”/“extremely high” to “strongly agree”/“extremely low” and that the constructs were calculated by adding the values assigned to the items that compose them, we can conclude that the higher the average of constructs, the more favorable the response. Before adding up the 3 items that constitute product attractiveness the appropriate scale reversal was done for the item “This package is ugly” and only after that the average of the items were done. Willingness to pay is measured by a single numerical item, so it is not aggregated with any other such as sophistication that is measured only by one item. Regarding willingness to pay, some outliers were found. An outlier is an observation that differs markedly from most or even all other observations (Grubbs, 1969). For this study it was decided to trim the outliers. i.e., dropping the most extreme outliers. In order not to heavily bias the analysis and the sample, a 2.5% was chosen as the base value for trimming, so 2.5% of the highest and lowest values were eliminated (Leys et al., 2013)

A MANOVA (multivariate analysis of variance) was performed where color scenario and gender were used as dependent variables with two levels (sophisticated colors and non-sophisticated colors; female and male). Product attractiveness, sophistication, purchase intention, perceived quality and willingness to pay for the product were used as dependent variables.

4.1. RELIABILITY

Cronbach's alphas were calculated to analyse the internal consistency reliability of the multiple scale item questions, i.e., purchase intention, product attractiveness and perceived quality since it is the most widely used measure. A Cronbach's Alpha coefficient of 0.7 or above indicates an acceptable result (Hair et al., 2018). In this case, the Cronbach's alpha values calculated were all greater than 0.7 which revealed that the constructs and its dimensions have internal consistency and, therefore, the questionnaire was reliable as an instrument to test the hypotheses.

Table 2
Cronbach's alpha for each construct

Construct	Items	Cronbach's alpha
Purchase Intention	I believe that most people would like to buy this product I would be glad to try the shampoo in this package I would recommend this product to my friends I would purchase this product	0.868
Perceived quality	The likelihood that the product would be reliable is: (very high to very low) This product should be of: (very good quality to very poor quality) The likelihood that this product is dependable is: (very high to very low) This product would seem to be durable in terms of the number of usages (strongly agree to strongly disagree)	0.875
Product attractiveness	The color of the package is beautiful This package is ugly This packaging is attractive	0.858

4.2. DESCRIPTIVE STATISTICS

Below are the descriptive statistics regarding each construct.

Table 3
Descriptive statistics

Scenario		Purchase Intention			Perceived Quality			Product Attractiveness			Sophistication			Willingness to Pay		
		N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD
Sophisticated Colors	M	51	3.48	0.65	51	4.27	0.89	51	4.06	0.61	51	3.90	0.81	51	5.39	4.48
	F	109	3.59	0.74	109	4.51	0.88	109	3.89	0.78	109	3.82	0.94	109	6.34	6.07
Non-sophisticated Colors	M	53	3.05	0.82	53	3.93	0.90	53	3.18	1.00	53	2.99	1.14	53	4.60	3.13
	F	112	3.38	0.69	112	3.97	0.80	112	3.68	0.80	112	2.96	0.98	112	4.76	3.49

4.3. CORRELATION

Before proceeding with MANOVA, it was performed a correlation matrix for each analysis to make sure that the independent variables are correlated and to be able to perform the MANOVA. As reflected in the table below almost all variables have a significant correlation with each other since they have a $p < 0.05$. The correlation between willingness to pay and sophistication are marginally significant ($p = 0.052$).

Table 4
Correlations between the constructs

Variable		Purchase Intention	Perceived Quality	Product Attractiveness	Sophistication	Willingness to pay
1. Purchase Intention	Pearson's r	-				
	p-value	-				
2. Perceived Quality	Pearson's r	0.674	-			
	p-value	< .001	-			
3. Product Attractiveness	Pearson's r	0.713	0.516	-		
	p-value	< .001	< .001	-		
4. Sophistication	Pearson's r	0.527	0.467	0.535	-	
	p-value	< .001	< .001	< .001	-	
5. Willingness to Pay	Pearson's r	0.325	0.357	0.235	0.108	-
	p-value	< .001	< .001	0.003	0.052	-

Since variables are significantly correlated with each other, a MANOVA was performed using Pillai Test. In the MANOVA, the dependent variables are purchase intention, perceived quality, product attractiveness, sophistication and willingness to pay. The independent variables are color scenario and gender. According to Bartlett's Test of Sphericity, the statistically significant value assumed was $p < 0.05$. The results revealed that there is a significant difference between groups for color sophistication, $F(1, 321) = 15.26$, $p < .001$. There is also a significant gender effect for the overall MANOVA, $F(1, 321) = 2.34$, $p = 0.042$ and a significant interaction effect between gender and color sophistication, $F(1, 321) = 5.09$, $p < .001$. Since there is a significant interaction effect it makes sense to understand whether this interaction effect holds for all variables individually. Therefore, within MANOVA model, ANOVA tables for each dependable variable were analysed.

4.4. SOPHISTICATION

As for sophistication which served as a manipulation check, ANOVA results within MANOVA reveal that there is a main effect between groups for color scenario, $F(1, 321) = 66.77$, $p < .001$. This means

that, as predicted, participants perceived the sophisticated colored packaging as more sophisticated than the non-sophisticated colored packaging. The descriptives are showed in table 5. Thus, these results ensure that the color manipulation was effective and it worked since sophisticated colors are generally seen as such.

Table 5
Descriptives for sophistication

Scenario	Female gender			Male gender		
	M	SD	N	M	SD	N
Non-sophisticated colors	2.96	0.98	112	2.98	1.14	53
Sophisticated Colors	3.82	0.94	109	3.90	0.81	51

The ANOVA results also showed that there is no main effect of gender, $F(1, 321) = 0.21, p = 0.649$. This means that the difference between genders is not statistically significant.

There is also no significant interaction effect between gender and color sophistication, $F(1, 321) = 0.07, p = 0.796$. The null hypothesis is not rejected. Thus, **H5 is not supported**.

4.5. PURCHASE INTENTION

When evaluating purchase intention, ANOVA results within MANOVA showed that there is a significant difference between groups for color sophistication (main effect), $F(1, 321) = 11.89, p < .001$. This means that sophisticated colored packaging evoked higher purchase intention of the respondents.

There is also a main effect of gender, $F(1, 321) = 6.81, p = 0.009$.

Table 6
Descriptives for purchase intention

Scenario	Female gender			Male gender		
	M	SD	N	M	SD	N
Non-sophisticated colors	3.38	0.69	112	3.05	0.82	53
Sophisticated Colors	3.59	0.74	109	3.48	0.65	51

The table 6 showed that for both men ($M_{\text{SophisticatedColors}}=3.48$ $SD_{\text{SophisticatedColors}}= 0.65$) and women ($M_{\text{SophisticatedColors}}= 3.59$ $SD_{\text{SophisticatedColors}}= 0.74, p = 0.032$), the purchase intention is higher for the product with sophisticated colors than for the product with non-sophisticated colors ($M_{\text{Non-}}$

sophisticatedColors= 3.05 SDNon-sophisticatedColors= 0.82 for men; MNon-sophisticatedColors= 3.38 SDNon-sophisticatedColors= 0.69 for women).

Finally, there is no significant interaction effect between gender and color sophistication, $F(1, 321) = 1.57, p = 0.211$. This means that, there is no evidence that the color scenario impacts the purchase intention differently for men and women. In that way, **H5 is not supported**.

These results also suggest that the presence of sophisticated colors on shampoo packaging have a positive impact on the consumer’s purchase intention and, therefore, **H1 is supported**.

4.6. PERCEIVED QUALITY

As for perceived quality, ANOVA results within MANOVA revealed that there is a significant difference between groups for color sophistication, $F(1, 321) = 11.89, p < .001$. This means that the product with sophisticated colors is perceived as having higher quality than the product with non-sophisticated colors as it can be seen in table 7.

Table 7
Descriptives for perceived quality

Scenario	Female gender			Male gender		
	M	SD	N	M	SD	N
Non-sophisticated colors	3.97	0.80	112	3.93	0.90	53
Sophisticated Colors	4.51	0.88	109	4.27	0.89	51

The results also showed that there is no main effect of gender, $F(1, 321) = 1.71, p = 0.192$. This means that the difference between genders is not statistically significant.

Finally, there is also no significant interaction effect between gender and color sophistication, $F(1, 321) = 0.72, p = 0.322$. In that way, the null hypothesis is not rejected and it can be stated that there is no evidence that the color scenario impacts the purchase intention differently for men and women. Therefore, **H5 is not supported**.

These results suggest that the presence of sophisticated colors on shampoo packaging influences positively the consumer’s evaluation regarding perceived quality. Therefore, **H2 is supported**.

4.7. PRODUCT ATTRACTIVENESS

As for the dependent variable product attractiveness, ANOVA results within MANOVA reveal that there is a main effect between groups for color scenario, $F(1, 321) = 22.99, p < .001$. This means that,

as predicted, participants perceived the sophisticated colored packaging as more attractive than the non-sophisticated colored packaging.

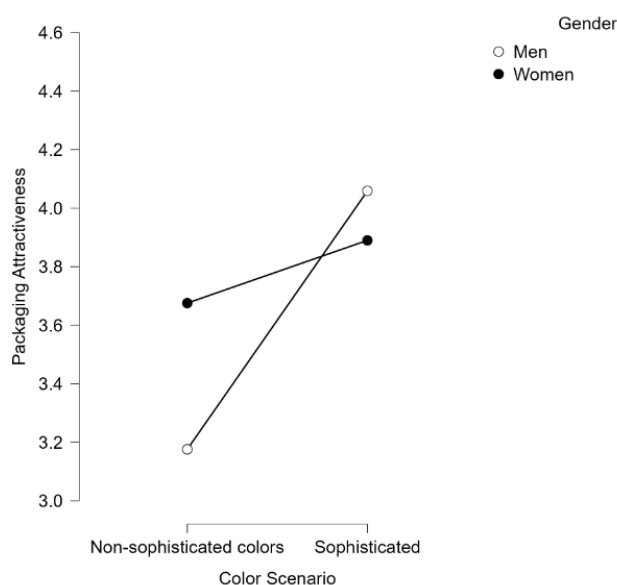
Table 8
Descriptives for Product Attractiveness

Scenario	Female gender			Male gender		
	M	SD	N	M	SD	N
Non-sophisticated colors	3.68	0.80	112	3.18	1.00	53
Sophisticated Colors	3.89	0.78	109	4.06	0.61	51

Regarding main effect of gender, ANOVA results showed that there is a marginally significant effect. From table 8, it can be seen that for both men ($M_{\text{SophisticatedColors}}=4.06$ $SD_{\text{SophisticatedColors}}= 0.61$) and women ($M_{\text{SophisticatedColors}}=3.89$ $SD_{\text{SophisticatedColors}}= 0.78$) the product with sophisticated colors are seen as more attractive than the product with non-sophisticated colors ($M_{\text{Non-sophisticatedColors}}=3.18$ $SD_{\text{Non-sophisticatedColors}}= 1.00$ for men; $M_{\text{Non-sophisticatedColors}}=3.68$ $SD_{\text{Non-sophisticatedColors}}= 0.80$ for women).

The ANOVA results showed that, regarding product attractiveness there is an interaction effect between gender and color, $F(1, 321) = 12.19, p < .001$. However, contrary to expectations, men are the ones that are more impacted by sophisticated colors, as it can be seen in the figure below.

Figure 2
Descriptive plots regarding product attractiveness



Thus, these results suggest that the presence of sophisticated colors on shampoo packaging does have a positive influence on the product attractiveness and therefore **H3 is supported**. However, it is also suggested that men are the most impacted gender regarding this variable and, therefore, **H5 is not supported**.

4.8. WILLINGNESS TO PAY

When evaluating willingness to pay, ANOVA results within MANOVA revealed that there is a significant main effect between groups for color scenario, $F(1, 321) = 6,72, p = 0.010$. This means that when consumers are facing a sophisticated colored packaging they are willing to pay a higher price for that product than when faced with non-sophisticated colored packaging as it can be seen in the table 9.

Table 9
Descriptive for willingness to pay

Scenario	Female gender			Male gender		
	M	SD	N	M	SD	N
Non-sophisticated colors	4.76	3.49	112	4.60	3.13	53
Sophisticated Colors	6.34	6.07	109	5.39	4.48	51

Regarding main gender effect, results showed that there is no statistically significant effect between genders, $F(1, 321) = 0.99, p = 0.320$.

Finally, there is also no significant interaction effect between gender and color sophistication, $F(1, 321) = 0.52, p = 0.473$. Thus, **H5 is not supported**.

These results suggest that the presence of sophisticated colors on shampoo packaging influences positively the consumer’s willingness to pay. Therefore, **H2 is supported**.

5. DISCUSSION AND CONCLUSIONS

According to the literature, packaging has become an important part of the selling process (Rettie & Brewer, 2000) being considered and recognized as such in literature (Rundh, 2016). The visual function has emerged as a new packaging function that is responsible for attracting consumers, identifying and differentiating the brand or the product (Rundh, 2016).

Color has a vital importance in products, packages and logos when it comes to influencing the consumer perceptions and evaluations (Aslam, 2006; Labrecque & Milne, 2012). In this study, shampoo was the product selected and since it is considered a low involvement product (Silayoi & Speece, 2004), packaging and, especially, color became important for the analysis.

Pilot study results showed that black and gold were considered the most sophisticated color for both genders. These results are in line with black being associated with premium (Spence & Velasco, 2018) and gold with luxury and premium products as well (Garaus & Halkias, 2019). However, little to no research have been done in the field of sophisticated colors. This family of colors have not been defined yet and, consequently, their effects, when applied to packaging, have not been studied.

The main objective of this dissertation is to understand if sophisticated colors present on product packaging can influence consumers' purchase intention and their evaluation of quality product attractiveness. It also intends to analyse the influence of sophisticated colored packaging on consumer's willingness to pay and if they perceive the product as more sophisticated when its packaging has sophisticated colors on it. Finally, it also aims to determine whether there are significant differences between men and women.

By being the first study that analyse the effect of sophisticated colors it becomes difficult to compare the results with previous literature, research and studies to find an agreement or not. The results may be in concordance with the color literature but due to the lack of research and literature about this new introduced family color it becomes difficult or even impossible to confront the results. Further and new studies should be done to consolidate the results obtained.

A color manipulation was done with everything else remaining the same to ensure that the results would be uniquely and exclusively due to different color scenarios. The results ensured that the color manipulation was effective and it worked since sophisticated colors were seen as such.

The first finding of this study suggests that the presence of sophisticated colors on packaging can positively influence purchase intentions. Both women and men revealed a significant positive influence of sophisticated colored packaging on purchase intention. The findings also revealed that

both sets of participants perceived sophisticated colored packaging as more attractive than non-sophisticated colored packaging. These results can be explained by the fact that the product under analysis is a low involvement product where packaging and visual elements influence choice more (Silayoi & Speece, 2004) and since colour is seen as a source of attractiveness it can retain attention (Kauppinen-Raisainen, 2014). In their study, Silayoi & Speece (2004) suggested that graphics and color can make the difference in consumer's decision to buy or not the product as they strongly affected their attention. Also, this study's results are in agreement with Ampuero and Vila (2006) that support that packaging is able to influence consumer response to a product and with Crilly, et al. (2004) and Bloch (1995) who discovered that consumer's perceptions of product attractiveness may influence behavioral responses towards a product by ignoring the product or consider it. Thus, it can be concluded that packaging that features sophisticated colors such as gold and black can influence the consumers attitudes towards the product. A simple change in the color of packaging, keeping everything else constant, leads to increased purchase intention and evaluation of the product as attractive and sophisticated. Thus, in general, sophisticated colors do have a positive influence on consumer's purchase intention and consumer's evaluation of product attractiveness.

This study also found that sophisticated colored packaging are perceived by participants as having higher quality than the ones without sophisticated colors. Sophisticated colored packaging products are also seen as more sophisticated than the ones without sophisticated colors. Silayoi and Speece (2004), have already discovered that quality judgments are widely influenced by product's packaging elements such as colors and graphics. In that way, packaging assumes a vital role serving as an indicator of product's quality (Ampuero & Vila, 2006). Kauppinen-Raisainen (2014) research proved that product's quality is influenced by packaging color due to associative learning. This means that in particular products or categories, consumers may prefer certain colors based on the associations learned by their experience (Grossman & Wisenblit, 1999). In that way, these results are congruent with Spence and Velasco (2018) and Garaus and Halkias (2019) who associated gold and black with premium, luxury and quality. Due to the novelty of the topic, there is no literature to confirm or disconfirm the results.

Regarding willingness to pay, to date, there is no research on sophisticated colors nor its effect on willingness to pay. However, the literature provides evidence that consumers are now willing to pay more for convenience, appearance, dependability and prestige of better packages (Kotler & Keller, 2016). Marozzo, et al. (2020) in their research also showed that packaging color has a significant main effect on willingness to pay. In this study, findings suggest that women are willing to pay more when the product has sophisticated colored packaging which agrees with Marozzo, et al. (2020) results.

Finally, it was hypothesized that women should be more impacted by sophisticated colors than men. However, no significant interaction effect between gender and color sophistication was observed. It was discovered that in all variables but product attractiveness, the color scenario impacts the purchase intention of both genders in the same direction. This happened mainly due to gender effect that was not observed in four out of the five dependent variables. In product attractiveness, contrary to what has been hypothesized, men are the ones more impacted by sophisticated colored packaging. This may have happened because there are already plenty of products on the market dedicated to women in which the packaging contains the sophisticated colors black and gold. However, this does not happen with men. Proven by most of the answers to the questionnaire, the shampoos mainly used by about 65% of men are Linic and H&S. These brands have their packaging mostly marked by the colors green, blue and white. Thus, the significant difference in product attractiveness between genders that put men as being the gender most influenced by sophisticated colored packaging can be explained by novelty. This is in line with the study of Garber, et al. (2000) who found that the color of the packaging tends to have a more positive impact when consumers see something new and different on the shelf, attracting their attention (Schoormans and Robben, 1997; Garber, 2000; Abbott et al., 2009).

To summarize the results and make them easier to read, below is an overview of the hypotheses and their respective results.

Table 10
Overview of the hypotheses

Hypotheses	Content	Results
H1	Consumer purchase intention of shampoo will be positively influenced by sophisticated package colors.	Supported
H2	Quality evaluation of shampoo will be positively influenced by sophisticated package colors.	Supported
H3	Sophisticated colored packaged shampoo positively influences consumers' evaluation of product attractiveness.	Supported
H4	Sophisticated colored packaged shampoo positively influences consumer's willingness to pay.	Supported
H5	The interaction effect between gender and color scenario is expected to be significant with women being more impacted by sophisticated colors than men.	Not Supported

6. THEORETICAL AND MANAGERIAL IMPLICATIONS

This study aimed to investigate whether the impact of sophisticated colors present on packaging has on consumer purchase intention, perceived quality, product attractiveness, packaging sophistication and willingness to pay. By being the first study to focus on sophisticated colors, this paper carries valuable implications for product managers, marketers, scholars, packaging/product designers and companies.

To begin, until now to our best knowledge there was no research that clarified what colors were considered sophisticated and, consequently, their effects had never been studied on the variables presented. The present study contributed to the existing gap in the literature. From now on, this study not only introduces information about a new family color, sophisticated colors, but also provide information about its effects on the variables referred above.

This study shows that there is a significantly higher purchase intent for a shampoo with sophisticated colored packaging as well as being seen as more attractive and sophisticated products. The knowledge of consumers' purchase intention and evaluation helps brands and companies to define their strategy. Product managers, packaging/product designers and companies acting in the Portuguese market are assisted with insights on how to increase purchase intent, willingness to pay and perceived quality through the manipulation and use of sophisticated packaging colors and how it can affect the way consumers perceived the product as attractive and sophisticated. Thus, companies and marketing professionals should put effort into developing product's packaging using that type of colors in order to communicate their product's visual better and more effectively and therefore, appropriately meet consumers' expectations and benefiting from it.

7. LIMITATIONS AND FUTURE RESEARCH

During the development of this study some limitations that are important to mention here were found.

The first limitation regards sample size. This study collected 325 valid answers which is a relatively small sample to generalize the findings and conclusions. Besides, there is a clear predominance of female gender with more than 65% of the sample being women. In future research it would be interesting to replicate the study with a larger and more representative sample to see if the results are similar and to validate the findings.

Secondly, the study relies only on data collected from a self-administered online questionnaire which despite becoming more efficient regarding time and money it leads to measuring intentions rather than behavior (Carrington et al., 2010). This resulted in the impossibility of measuring the actual buying behavior since purchase intention sometimes overstate or understate the actual purchase behavior. Also, the method used to measure willingness to pay does not include a purchase obligation which may lead participants to overestimate the result, in this case their willingness to pay. In future experiments it might be interesting to repeat this study and try to overcome these issues by measuring actual in-store behavior, creating a more realistic shopping environment where behavior can be measured instead of intention.

Thirdly, regarding measurement scales, it is important to mention that the item regarding workmanship was deleted from the original quality perception scale since it was deemed not to make sense for the type of product under study. In that way the scale's reliability can be affected. It is also important to refer that sophistication was measured in a single item adapted from the original scale so it might be necessary to replicate the scale to verify if it performs as expected.

The fourth limitation of this study is that it only analysed one product category, shampoo. Therefore, the finding cannot be generalized as they may be different in other product categories. Considering the level of product involvement, this study used a product considered as a low involvement product. In that way, it might also be relevant for future research to perform the study using more categories and also using products of high involvement in order to find if the relationships between the variables are affected and if so if it is in the same way and to generalize the findings making a more complete study.

Finally, it would be relevant for further research to not only replicate the study in different countries and compare the results but also build knowledge on the possible existence of moderator and mediating effects between the constructs used in this study.

8. BIBLIOGRAPHY

Aaker, D. A. (1996a). Measuring brand equity across products and markets. *California Management Review*, 38(3), 102-120. <https://doi.org/10.2307/41165845>

Aaker, D. A. (1996b). *Building strong brands*. The Free Press.

Aaker, K. L. (1997). Dimensions of brand personality. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.945432>

Abbott, M., Holland, R., Giacomini, J., & Shackleton, J. (2009). Changing affective content in brand and product attributes. *Journal of Product & Brand Management*, 18(1), 17-26. <https://doi.org/10.1108/10610420910933335>

Ampuero, O., & Vila, N. (2006). Consumer perceptions of product packaging. *Journal Of Consumer Marketing*, 23(2), 100-112. <https://doi.org/10.1108/07363760610655032>

Akçay, O., Sable, P., & Dalgin, M. H. (2012). The importance of color in product choice among young Hispanic, Caucasian, and African-American Groups in the USA. *International Journal of Business and Social Science*, 3 (6), 1-6. <https://doi.org/10.18374/jabe-14-1.13>

Armstrong, J., Morwitz, V., & Kumar, V. (2000). Sales forecasts for existing consumer products and services: Do purchase intentions contribute to accuracy?. *International Journal Of Forecasting*, 16(3), 383-397. [https://doi.org/10.1016/S0169-2070\(00\)00058-3](https://doi.org/10.1016/S0169-2070(00)00058-3)

Aslam, M. M. (2006). Are you selling the right colour? A cross-cultural review of colour as a marketing cue. *Journal of Marketing Communications*, 12(1), 15-30. <https://doi.org/10.1080/13527260500247827>

Batra, R., & Ahtola, O. (1991). Measuring the hedonic and utilitarian sources of consumer attitudes. *Marketing Letters*, 2(2), 159-170. <https://doi.org/10.1007/bf00436035>

Bellizzi, J. A., & Hite, R. E. (1992). Environmental color, consumer feelings, and purchase likelihood. *Psychology & Marketing*, 9(5), 347-363. <https://doi.org/10.1002/mar.4220090502>

Bloch, P. (1995). Seeking the Ideal Form: Product Design and Consumer Response. *Journal Of Marketing*, 59(3), 16. <https://doi.org/10.2307/1252116>

- Botti, S., & McGill, A. (2011). The Locus of Choice: Personal Causality and Satisfaction with Hedonic and Utilitarian Decisions. *Journal Of Consumer Research*, 37(6), 1065-1078. <https://doi.org/10.1086/656570>
- Carrington, M., Neville, B., & Whitwell, G. (2010). Why Ethical Consumers Don't Walk Their Talk: Towards a Framework for Understanding the Gap Between the Ethical Purchase Intentions and Actual Buying Behaviour of Ethically Minded Consumers. *Journal Of Business Ethics*, 97(1), 139-158. <https://doi:10.1007/s10551-010-0501-6>
- Chandon, P., Morwitz, V. G., & Reinartz, W. J. (2005). Do intentions really predict behavior? self-generated validity effects in survey research. *Journal of Marketing*, 69(2), 1-14. <https://doi.org/10.1509/jmkg.69.2.1.60755>
- Chang, T.-Z., & Wildt, A. R. (1994). Price, product information, and purchase intention: An empirical study. *Journal of the Academy of Marketing Science*, 22(1), 16-27. <https://doi.org/10.1177/0092070394221002>
- Creusen, M., & Schoormans, J. (2005). The Different Roles of Product Appearance in Consumer Choice. *Journal Of Product Innovation Management*, 22(1), 63-81. <https://doi.org/10.1111/j.0737-6782.2005.00103.x>
- Crilly, N., Moultrie, J., & Clarkson, P. (2004). Seeing things: consumer response to the visual domain in product design. *Design Studies*, 25(6), 547-577. <https://doi.org/10.1016/j.destud.2004.03.001>
- Crozier, W. (1994). *Manufactured pleasures*. Manchester University Press.
- Dodds, W. B., Monroe, K. M., & Grewal, D. (1991). Effects of Price, Brand, and Store Information on Buyers' Product Evaluations. *Journal of Marketing Research*, 28(3), 307-19. <https://doi.org/10.2307/3172866>
- Elliot, A. J., & Maier, M. A. (2012). Color-in-Context theory. *Advances in Experimental Social Psychology*, 61-125. <https://doi.org/10.1016/b978-0-12-394286-9.00002-0>
- Engel, J. F., Blackwell, R. D., & Miniard, P. W. (1995). *Consumer behavior* (8th ed.) New York: Dryden Press.
- Farina, M., Perez, C., & Bastos, D. (2006). *Psicodinâmica das cores em comunicação*. (5th ed.). Blucher
- Garber, L. L., Burke, R. R., & Jones, J. M. (2000). *The role of package color in consumer purchase consideration and choice*. Marketing Science Institute, MSI.

- Garaus, M., & Halkias, G. (2019). One color fits all: Product category color norms and (a)typical package colors. *Review of Managerial Science*, 14(5), 1077–1099. <https://doi.org/10.1007/s11846-018-0325-9>
- Gorn, J. G., Chattopadhyay A., Yi T., Dahl W. D. (1997). Effects of Color as an Executional Cue in Advertising: They're in the Shade. *Management Science*, 43(10), 1387-1400. <http://dx.doi.org/10.1287/mnsc.43.10.1387>
- Ghosh, D., & Vogt, A. (2012). Outliers: An Evaluation of Methodologies.
- Grossman, R. P., & Wisenblit, J. Z. (1999) What we know about consumers' color choices. *Journal of Marketing Practice: Applied Marketing Science*, 5(3), 78-88. <https://doi.org/10.1108/EUM0000000004565>
- Grubbs, F. (1969). Procedures for Detecting Outlying Observations in Samples. *Technometrics*, 11(1), 1-21. <https://doi:10.1080/00401706.1969.10490657>
- Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2018). *Multivariate Data Analysis*. Pearson Prentice Hall.
- Hsieh, Y., Chiu, H., Tang, Y., & Lee, M. (2018). Do Colors Change Realities in Online Shopping? *Journal of Interactive Marketing*, 41, 14-27. <http://dx.doi.org/10.1016/j.intmar.2017.08.001>
- JASP Team (2022). JASP (Version 0.16.1)[Computer software].
- Kalish, S., & Nelson, P. (1991). A comparison of ranking, rating and reservation price measurement in conjoint analysis. *Marketing Letters*, 2(4), 327-335. <https://doi.org/10.1007/bf00664219>
- Kauppinen-Räsänen, H. (2014). Strategic use of colour in brand packaging. *Packaging Technology and Science*, 27, 663– 676. <https://doi.org/10.1002/pts.2061>
- Keller, K. L., & Swaminathan, V. (1998). *Strategic brand management: Building, measuring, and managing brand equity* (5th ed.). Pearson Education. <https://doi.org/10.1108/jcm.2000.17.3.263.3>
- Kotler, P., & Keller, K. L. (2016). *Marketing management* (15th ed.). Pearson Education. <https://pt1lib.org/book/3357739/fa6044>
- Kotler, P., & Armstrong, G. (2018). *Principles of marketing* (17th ed.). Pearson Education. <http://doi.org/10.1080/0267257X>

- Krishna, A. (1991). Effect of Dealing Patterns on Consumer Perceptions of Deal Frequency and Willingness to Pay. *Journal Of Marketing Research*, 28(4), 441-451. <https://doi.org/10.1177/002224379102800406>
- Labrecque, I. L., & Milne, R. G. (2013). To be or not to be different: Exploration of norms and benefits of color differentiation in the marketplace. *Marketing Letters*, 24(2), 165–176. <https://doi.org/10.1007/s11002-012-9210-5>
- Labrecque, I. L., & Milne, R. G. (2012). Exciting red and competent blue: the importance of color in marketing. *Journal of the Academy of Marketing Science*, 40(5), 711–727. <https://doi.org/10.1007/s11747-010-0245-y>
- Labrecque, L., & Patrick, V. (2013). The Marketers' Prismatic Palette: A Review of Color Research and Future Directions. *Psychology and Marketing*, 30(2), 187-202. <http://doi.org/10.1002/mar.20597>
- Leys, C., Ley, C., Klein, O., Bernard, P., & Licata, L. (2013). Detecting outliers: Do not use standard deviation around the mean, use absolute deviation around the median. *Journal Of Experimental Social Psychology*, 49(4), 764-766. <https://doi:10.1016/j.jesp.2013.03.013>
- MacKenzie, S. B., Lutz, R. J., & Belch, G. E. (1986). The role of attitude toward the ad as a mediator of advertising effectiveness: A test of competing explanations. *Journal of Marketing Research*, 23(2), 130. <https://doi.org/10.2307/3151660>
- Madden, J. T., Hewett, K., & Roth, S., Martin. (2000). Managing Images in Different Cultures: A Cross-National Study of Color Meanings and Preferences. *Journal of International Marketing*, 8(4), 90-107. <https://doi.org/10.1509/jimk.8.4.90.19795>
- Marozzo, V., Raimondo, M. A., Miceli, G. “., & Scopelliti, I. (2019). Effects of AU naturel packaging colors on willingness to pay for healthy food. *Psychology & Marketing*, 37(7), 913-927. <https://doi.org/10.1002/mar.21294>
- Mitra, D., & Golder, P. N. (2006). How does objective quality affect perceived quality? short-term effects, long-term effects, and asymmetries. *Marketing Science*, 25(3), 230–247. <https://doi.org/10.1287/mksc.1050.0175>
- Morrison, D. G. (1979). Purchase Intentions and Purchase Behavior. *Journal of Marketing*, 43(2), 65–74. <https://doi.org/10.1177/002224297904300207>.

Moser, M. (2003). *United we brand: How to create a cohesive brand that's seen, heard, and remembered*. Harvard Business Press.

Netemeyer, R. G., Krishnan, B., Pullig, C., Wang, G., Yagci, M., Dean, D., Ricks, J., & Wirth, F. (2004). Developing and validating measures of facets of customer-based brand equity. *Journal of Business Research*, 57(2), 209–224. [https://doi.org/10.1016/s0148-2963\(01\)00303-4](https://doi.org/10.1016/s0148-2963(01)00303-4)

Pilditch, J. (1961). *The silent salesman: How to develop packaging that sell*. London: Business Publications Limited.

Puccinelli, M., N, Chandrashekar., R., Grewal., D. & Suri., R. (2013). Are Men Seduced by Red? The Effect of Red Versus Black Prices on Price Perceptions. *Journal of Retailing*, 89(2), 115–125. <https://doi.org/10.1016/j.jretai.2013.01.002>

Retorta, M. E. (1992). *Embalagem e marketing: A comunicação silenciosa* (1st ed.). Texto Editora.

Rettie, R., & Brewer, C. (2000). The verbal and visual components of package design. *Journal of Product & Brand*, 9(1), 1-7. <https://doi.org/10.1108/10610420010316339>

Richardson, P. S., Dick, A. S., & Jain, A. K. (1994). Extrinsic and intrinsic cue effects on perceptions of store brand quality. *Journal of Marketing*, 58(4), 28. <https://doi.org/10.2307/1251914>

Ridgway, J., & Myers, B. (2014). A study on brand personality: consumers' perceptions of colours used in fashion brand logos. *International Journal of Fashion Design, Technology and Education*, 7(1), 50-57. <https://doi.org/10.1080/17543266.2013.877987>

Rundh, B. (2016). The role of packaging within marketing and value creation. *British Food Journal*, 118(10), 2491-2511. <https://doi.org/10.1108/BFJ-10-2015-0390>

Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.

Schmidt, J., & Bijmolt, T. (2019). Accurately measuring willingness to pay for consumer goods: a meta-analysis of the hypothetical bias. *Journal Of The Academy Of Marketing Science*, 48(3), 499-518. <https://doi.org/10.1007/s11747-019-00666-6>

Schoormans, J. P. L. & Robben, H. S. J. (1997). The Effect of New Package Design on Product Attention, Categorization and Evaluation. *Journal of Economic Psychology*, 18 (2-3), 271-287. [https://doi.org/10.1016/S0167-4870\(97\)00008-1](https://doi.org/10.1016/S0167-4870(97)00008-1)

- Silayoi, P., & Speece, M. (2004). Packaging and purchase decisions: An exploratory study on the impact of involvement level and time pressure. *British Food Journal*, 106(8), 607–628. <https://doi.org/10.1108/00070700410553602>
- Singh, S. (2006). Impact of color on marketing. *Management Decision*, 44(6), 783-789. <https://doi.org/10.1108/00251740610673332>
- Spears, N., & Singh, S. N. (2004). Measuring attitude toward the brand and purchase intentions. *Journal of Current Issues & Research in Advertising*, 26(2), 53–66. <https://doi.org/10.1080/10641734.2004.10505164>
- Spence, C., & Velasco, C. (2018). Packaging colour and its multiple roles. *Multisensory Packaging*, 21-48. https://doi.org/10.1007/978-3-319-94977-2_2
- Sprott, D. E., & Shimp, T. A. (2004). Using product sampling to augment the perceived quality of store brands. *Journal of Retailing*, 80(4), 305–315. <https://doi.org/10.1016/j.jretai.2004.10.006>
- Steiner, M., Eggert, A., Ulaga, W., & Backhaus, K. (2014). Do customized service packages impede value capture in industrial markets?. *Journal Of The Academy Of Marketing Science*, 44(2), 151-165. <https://doi.org/10.1007/s11747-014-0410-9>
- Stoll, M., Baecke, S., & Kenning, P. (2008). What they see is what they get? An fMRI-study on neural correlates of attractive packaging. *Journal of Consumer Behaviour*, 7(4-5), 342-359. <https://doi.org/10.1002/cb.256>
- Underwood, R. L., Klein N. M., & Burke R. R. (2001). Packaging communication: attentional effects of product imagery. *Journal of Product & Brand*, 10(7), 403–422. <https://doi.org/10.1108/10610420110410531>
- Vilnai-Yavetz, I., & Koren, R. (2013). Cutting through the clutter: Purchase intentions as a function of packaging instrumentality, aesthetics, and symbolism. *International Review of Retail, Distribution and Consumer Research*, 23(4), 394–417. <https://doi.org/10.1080/09593969.2013.792743>
- Voelckner, F. (2006). An empirical comparison of methods for measuring consumers' willingness to pay. *Marketing Letters*, 17(2), 137-149. <https://doi.org/10.1007/s11002-006-5147-x>
- Zeithaml, V.A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *Journal of Marketing*, 52(3), 2-22. <https://doi.org/10.1177/002224298805200302>

9. APPENDICES

APPENDIX 1. T-TESTS PAIRED SAMPLES FOR WOMEN

Measure 1	Measure 2	t	df	p
Gold	Blue	8.930	38	< .001

Note: Student's t-test

Measure 1	Measure 2	t	df	p
Black	Purple	4.030	38	< .001

Note: Student's t-test

APPENDIX 2. T-TESTS PAIRED SAMPLES FOR MEN

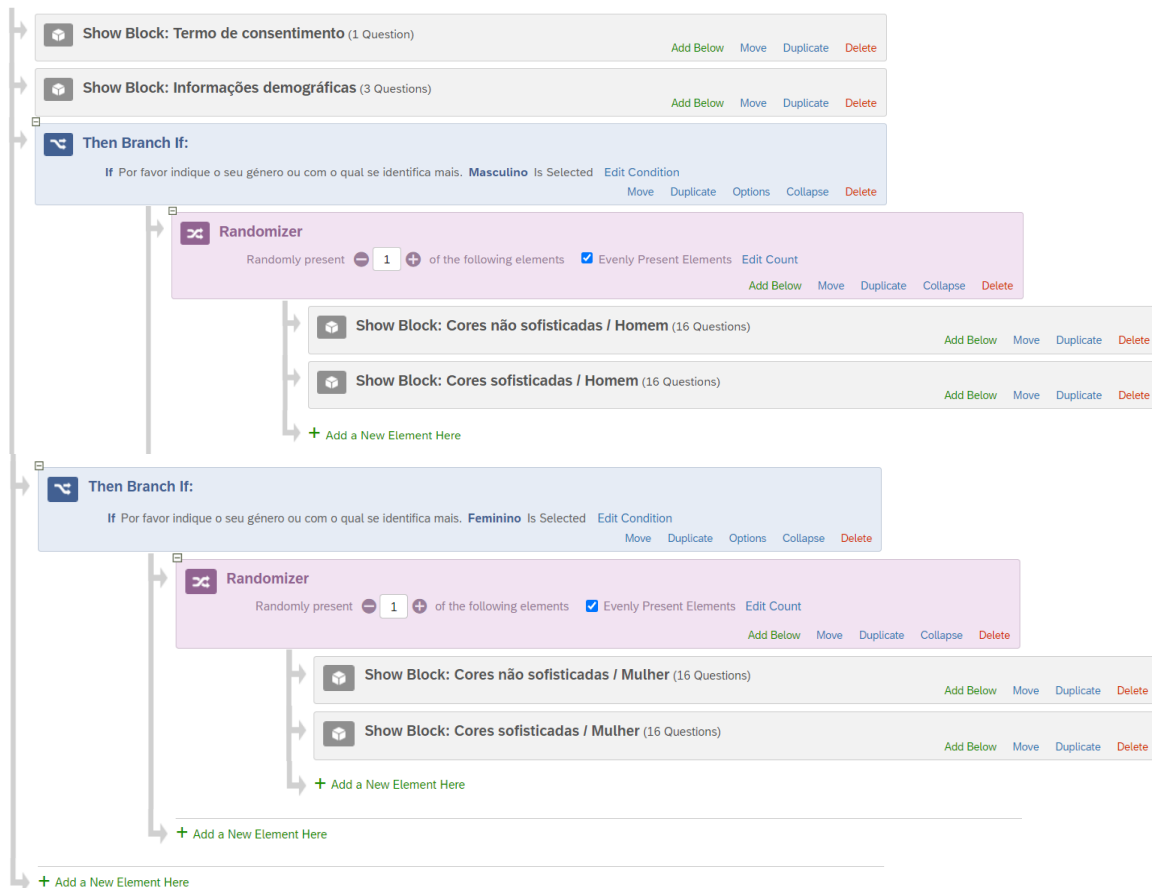
Measure 1	Measure 2	t	df	p
Gold	Blue	6.359	18	< .001

Note: Student's t-test

Measure 1	Measure 2	t	df	p
Black	Purple	2.303	18	0.033

Note: Student's t-test

APPENDIX 3. SURVEY FLOW



APPENDIX 4. SURVEY

Start of Block: Term of consent

Q1.1 Caro/a participante,

Este estudo insere-se no âmbito de uma dissertação de Mestrado em Gestão de Informação com especialização em Marketing Intelligence e o seu objetivo é estudar o comportamento de compra do consumidor relativamente à compra de shampoo.

Não há nenhum risco associado ao preenchimento deste questionário. Note que a sua participação é voluntária, pelo que pode fazê-lo ou não, e inclusive pode desistir de o preencher a qualquer momento.

A informação recolhida é totalmente anónima e será trabalhada apenas para fins académicos. Se surgir alguma questão sobre o conteúdo deste questionário ou quiser fazer algum comentário adicional, não hesite em enviar um e-mail para m20200104@novaims.unl.pt, ao cuidado de Carolina Cabral.

O questionário tem uma duração aproximada de 5 minutos.

Termo de Consentimento

Declaro que a minha idade é igual ou superior a 18 anos e que pretendo participar nesta investigação. Declaro que fui informado/a de que a minha participação neste estudo é voluntária, de que posso abandonar este processo a qualquer momento, sem qualquer tipo de penalização, e de que todos os dados são confidenciais.

- Sim, aceito responder ao questionário. (1)
- Não, não pretendo responder ao questionário. (2)

Skip To: End of Survey If Caro/a participante, Este estudo insere-se no âmbito de uma dissertação de Mestrado em Gestão de... = Não, não pretendo responder ao questionário.

End of Block: Term of consent

Start of Block: Demographic informationx

Q2.1 Antes de começar, necessitamos de saber algumas informações demográficas como o género e a idade. Se não se sentir confortável em fornecê-las, por favor, não avance com o preenchimento do questionário e feche a página.

Q2.2 Por favor indique a sua idade.

Q2.3 Por favor indique o seu género ou com o qual se identifica mais.

- Feminino (1)
- Masculino (2)

End of Block: Demographic informationx

Start of Block: Non-sophisticated colors / Men

Q3.1 Imagine que está no supermercado à procura de um novo shampoo para comprar. Desta vez decidiu experimentar um shampoo diferente do que compra habitualmente e depara-se com o shampoo apresentado abaixo.

Pedimos que veja com atenção a embalagem e o produto apresentado abaixo.

Para responder às perguntas a seguir, por favor, assuma que tem um tipo de cabelo normal e que o shampoo abaixo é para cabelos normais.



Q3.2 De seguida, iremos apresentar-lhe um conjunto de afirmações. A sua tarefa é indicar se concorda ou discorda com as mesmas.

Q3.3 A cor desta embalagem é bonita.

- Discordo totalmente (1)
 - Discordo (2)
 - Não concordo nem discordo (3)
 - Concordo (4)
 - Concordo totalmente (5)
-

Q3.4 Esta embalagem é feia.

- Discordo totalmente (1)
 - Discordo (2)
 - Não concordo nem discordo (3)
 - Concordo (4)
 - Concordo totalmente (5)
-

Q3.5 Esta embalagem é atrativa.

- Discordo totalmente (1)
 - Discordo (2)
 - Não concordo nem discordo (3)
 - Concordo (4)
 - Concordo totalmente (5)
-

Q3.6 Esta embalagem é sofisticada.

- Discordo totalmente (1)
 - Discordo (2)
 - Não concordo nem discordo (3)
 - Concordo (4)
 - Concordo totalmente (5)
-

Q3.7 Acredito que a maioria das pessoas gostaria de comprar este produto.

- Discordo totalmente (1)
 - Discordo (2)
 - Não concordo nem discordo (3)
 - Concordo (4)
 - Concordo totalmente (5)
-

Q3.8 Teria interesse em experimentar o shampoo desta embalagem.

- Discordo totalmente (1)
 - Discordo (2)
 - Não concordo nem discordo (3)
 - Concordo (4)
 - Concordo totalmente (5)
-

Q3.9 Recomendaria este produto aos meus amigos.

- Discordo totalmente (1)
 - Discordo (2)
 - Não concordo nem discordo (3)
 - Concordo (4)
 - Concordo totalmente (5)
-

Q3.10 Compraria este produto.

- Discordo totalmente (1)
 - Discordo (2)
 - Não concordo nem discordo (3)
 - Concordo (4)
 - Concordo totalmente (5)
-

Q3.11 A probabilidade de que a marca seja fiável é:

- Extremamente baixa (1)
 - Baixa (2)
 - Relativamente baixa (3)
 - Nem alta nem baixa (4)
 - Relativamente alta (5)
 - Alta (6)
 - Extremamente alta (7)
-

Q3.12 Este produto deve ser de:

- Extremamente baixa qualidade (1)
 - Baixa qualidade (2)
 - Relativamente baixa qualidade (3)
 - Nem alta nem baixa qualidade (4)
 - Relativamente alta qualidade (5)
 - Alta qualidade (6)
 - Extremamente alta qualidade (7)
-

Q3.13 A probabilidade deste produto ser de confiança é:

- Extremamente baixa (1)
 - Baixa (2)
 - Relativamente baixa (3)
 - Nem alta nem baixa (4)
 - Relativamente alta (5)
 - Alta (6)
 - Extremamente alta (7)
-

Q3.14 Este produto parece ser durável (em termos do número de utilizações).

- Discordo totalmente (1)
 - Discordo (2)
 - Não concordo nem discordo (3)
 - Concordo (4)
 - Concordo totalmente (5)
-

Q3.15 Por favor, preencha o preço, em euros, que estaria disposto a pagar por este produto.

Q3.16 Qual a marca de shampoo que costuma comprar habitualmente?

End of Block: Non-sophisticated colors / Men