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Degree Project

Level: Master's

Consumer preferences for graphic, structural, and information elements on recycled paper-based package

Gender, age, and education differences

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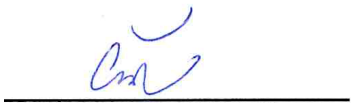

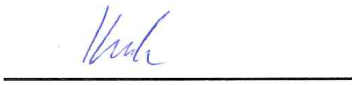

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Abstract

Objective: Nowadays, the increasing pressure pushes companies to behave more environmentally friendly. Indeed, packaging made from recycled fibres can represent an essential advantage for firms in the packaging industry if it is designed in a way that appeals to consumers. The purpose of this thesis is to examine the graphic, structural and informative packaging elements and their effect on consumers' preferences.

Methodology/approach: Purposefully modified packaging designs were sent to the respondents via an online questionnaire using convenience sampling. The research analyses Slovak consumers due to their below-average environmental performance index (EPI) within the Europe. Out of 529 questionnaires collected, 483 responses were further examined and analysed by the chi-square test in SPSS.

Findings: Our findings suggest that typography, colour contrast, pattern, image, shape and recyclability claims influence the preference of Slovak consumers. On the other hand, consumers did not prefer a particular layout and certificate. Furthermore, gender and age played a substantial role in the chosen recycled paper-based package, while education did not affect consumers preference in Slovakia.

Practical implications: This work provides more in-depth knowledge of specific consumer preferences of packaging elements across different demographic groups, representing a valuable framework for companies' marketing strategies. Moreover, it can serve as an inspiration for graphic designers for more innovative sustainable packaging solutions.

Originality/value: Drawing upon previous research, it is evident that specific solutions for recycled paper-based packaging are lacking. This research provides new knowledge about consumer preferences for individual packaging elements. Thus, it is not only a contribution to the businesses but also a contribution to more sustainable consumption in accordance with Agenda 2030 policies.

Keywords: Recycled paper-based packaging, Recycled material, Graphic, structural, information elements, Consumers preference, Experiment

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List of abbreviation

α	Alpha value
Cramer's V	Measurement of association between nominal variables
CSR	Corporate Social Responsibility
e.g.,	Exempli gratia, meaning for example
EPI	Environmental Performance Index
ibid	Ibidem, meaning in the same source
ID	Adobe InDesign
IL	Adobe Illustrator
LCA	Life Cycle Assessment
n	Number of observations
PFAS	Polyfluoroalkyl substances
Phi	Correlation coefficient measuring strength between two variables
PS	Adobe Photoshop
p-value	Value determining a probability of significant measurement between the variables
SPSS	SPSS statistical software suite
VOC	Volatile Organic Compounds
χ^2	Chi-square test, measurement of association

1 Introduction

> *„Green graphic design is, first and foremost, about using the power of design to shift the status quo toward sustainable solutions."* (Dougherty, 2008, p. 14)

Care and protection of the environment are becoming an increasingly popular topic worldwide. However, despite being talked about, very little is being done to ensure the sustainability of the planet (Sault, 2020). In 2017 scientists warned that by the actual tempo of plastic usage, approximately 12 000 Mt of plastic waste will be in nature and landfills by 2050 (Geyer et al., 2017). Nevertheless, this disturbing news still did not impact businesses in their usage of plastic material. According to worldwide statistics, plastic (rigid and flexible) is still the most used material for product packaging in the world (Statista, 2022). There are several reasons for its popularity among firms in the packaging industry. This material is light, thin, very economical, hygienic, and resistant to damage compared to, for instance, glass (Jedlička, 2010). Moreover, it can be colourful and attract consumers quickly (Nguyen et al., 2020).

Despite lots of advantages that the producers saw initially, there were no plans for dealing with the waste that plastic packaging causes. Thus, it was not until the problem was evident that recycling was invented (Eneh et al., 2012). However, this solution was not fully thought out, and the disadvantages prevailed. For instance, only 14-18% of plastic is recycled worldwide, leaving 24% incinerated and 58-62% in a landfill (Geyer et al., 2017). Furthermore, firms do not intend to pack their product into recycling plastic as it is more costly than new plastic materials. In addition, 40% of packaging is single-use plastic waste (Parker, 2018). What is more, oceans are new landfills for plastic waste; this material pollutes nature and damages welfare (PlasticOceans, 2021).

However, plastics should not be considered the only problematic industry and each packaging material is linked with a waste of the material or energy. For the illustration, paper packaging is related to the fourth most energy-intensive industry (Sherin, 2008), with adverse environmental effect due to the polyfluoroalkyl substances (PFAS) (Langberg et al., 2021) and due to their high biological oxygen

demand, chemical oxygen demand, suspended solids or potentially toxic organic acids (Mandeep et al., 2020).

It can be perceived that overall, the packaging is not environmentally friendly regardless of what it is made. Environmentalists would say that the best way to limit the packages is to have no package at all, or if so, have a brown paper bag (Wever & Vogtländer, 2013). Nevertheless, this solution cannot be applied in a world full of different brands where differentiation and appealing package design is a company advantage (Holdway et al., 2002; Monteiro et al., 2019). Moreover, consumers can perceive the product without a package as non-hygienic and discourage them from buying (Nguyen et al., 2020). The obstacles did not end up here. The product without a package can cause shortened expiry date, which may contribute to food waste, health concerns or damage to the product.

However, the solution for packaging causing minimal energy, water, and fibre issues is to use *post-consumer recycled fibres*, such as *recycled paper* (Dougherty, 2008; Jedlička, 2010; Ying-ping et al., 2014). Furthermore, Youn and Lee (2022) state that paper increases recyclability rates compared to other materials such as plastics. In this line, the recycled paper seems to be the *most suitable material* for the research. Even though it is proven that this packaging contributes markedly less to global warming, it is not commonly used compared to plastic or non-recycled paper material (Statista, 2022). The reason is higher costs (Dougherty, 2008) and perception of worse quality and hygiene, lack of colours and vagueness (Nguyen et al., 2020).

By referring to the opening citation, the business can get a competitive advantage while contributing to a better tomorrow by using a well-designed package made from recycled paper. In this context, there is no doubt that graphic designer has a key role in applying sustainable packaging (for more information, see Appendix C).

1.1 Research gap

From a business perspective, the previous research examined that the main motivators of redesigning the packaging to be more sustainable are economic profits (Gustavo et al., 2018). In addition, Monteiro et al. (2019) found that 30% of packaging manufacturers do not implement eco-design in their processes.

Other research within this area focused on consumers' perception of sustainable packaging and their willingness to buy. For instance, research from Scott and Vigar-Ellis (2014) evaluated, that South African consumers had trouble differentiating the normal packaging from sustainable. The study by Hao et al. (2019) concludes that Chinese consumers do not have sufficient knowledge about green packaging, but they are willing to pay for it.

In the study by Klaiman et al. (2016) examining the American consumers, they revealed that consumers are willing to pay more for plastic packaging than other types of packaging materials. However, after having watched videos on its environmental impact, their perception changed positively towards recycled packaging. Similarly, Koenig-Lewis et al. (2014) found that Norwegian consumers' purchase intention of sustainable packaging is driven by emotions. The preferences of young consumers from India were examined by Prakash and Pathak (2017), who confirmed that the preference for eco-friendly packaging is influenced by wiliness to pay, environmental concern, personal norms, and attitudes.

Recent research by Steenis et al. (2017) indicates that Dutch consumers falsely evaluate the sustainability of the packaging according to their inaccurate beliefs – concretely by the graphic cues and changes in materials of the packaging. Lindh et al. (2016) observed that Swedish consumers tend to refer mainly to the *material* when it comes to sustainable packaging. Moreover, Nguyen et al. (2020) discovered that Vietnamese consumers' perception of packaging eco-friendliness is linked with packaging materials (recyclable and biodegradable), market appeal (visualisation of packaging, price) and technology used in manufacturing. In addition, their study showed that the package should be visually appealing and, at the same time, fulfil the environmental expectations. Oloyede and Lignou (2021) showed that even though the consumers perceived the sustainable prototypes of paper-based packaging well, they did not intend to buy them due to design flaws. The importance of design in product packaging was reported in study by Kovač et al. (2019), who examined visual elements of packaging. Building on similar insights the findings of Silayoi and Speece (2007) and Waheed et al. (2018) point to the critical role of information elements of packaging. Thus, not only its design and visual elements.

Combined, these studies demonstrate that the packaging design, visual, and information elements need to be appealing to consumers. However, none of these studies considers the context of sustainable packaging.

Magnier and Crié (2015) indicates that there is a growing interest in research on sustainable packaging by providing a theoretical background for consumer responses on eco-designed packaging. Besides, they also encourage further research to operationalise their propositions using experimental methods.

Research on sustainable packaging is in its infancy, and according to Monteiro et al. (2019), there is a lack of studies focusing on this topic. Moreover, the literature review by Ketelsen et al. (2020) found that only a few studies so far focused on the consumer and their preference for concrete sustainable packaging solutions, showing that this area is still not well researched. It can be stated that research papers mainly focus on the consumers' perceptions; however, they do not apply the perceptions towards new design concepts meant exactly for recycled paper-based packaging. According to this gap, following the recommendation of Ketelsen et al. (2020), this research focuses on concrete packaging solutions rather than collecting general information about eco-friendly packaging.

1.2 Aim

To fill the research gap, this research focuses on concrete packaging elements and examine consumer preferences for recycled paper-based variations. In this context, Slovak consumers will be examined as Slovakia belongs to the least developed countries within the European Union in terms of environmental performance (Wendling et al., 2020). As was shown, the previous research concerning consumer perception of sustainable packaging was focused mainly on consumers from European countries which perform well in environmental performance index (EPI) (Sweden, Norway, Netherlands). For this purpose, the aim of the thesis is *to investigate how packaging elements applied to recycled paper-based packages affect the preferences of Slovak consumers.*

To identify the perception of consumers about recycled paper-based packaging, three objectives were designed:

1. To determine how *graphic elements* (colour, typography, visuals) affect consumers preference towards recycled paper-based package;

2. To determine how *structural element* (shape of package) affect consumers preference towards recycled paper-based package;

3. To determine how *information elements* (certifications, recyclability claims) affect consumers preference towards recycled paper-based package.

1.3 Relevance

The justification of this research builds on the fact that there is limited research conducted on specific proposals for more sustainable packaging. This study does that by pointing to the importance of the implementation of such package and, at the same time, examine the consumers' preferences. As the visual side has proven important for sustainable packaging, we provide information on which visual aspects need to be addressed. Since this is the first research of its kind to look at three aspects (graphic, structural, and informative) of recycled paper-based packaging, it can make a significant contribution to the current literature and practice. In addition, it contributes to previous research by providing information from a country with extensive development potential in the European Union in the EPI evaluation. Therefore, it is interesting to see how consumers' attitudes change towards information elements. These elements will examine the preferences for a certification and specific recyclability claims.

In addition to the theoretical contribution, this research helps businesses as it provides a different perspective on more sustainable packaging. Therefore, the findings might provide additional information for managers, marketers and graphic designers seeking innovative solutions for their businesses. As has been shown, it is now a duty to be green. However, it is up to the business to decide whether to take this as its advantage or whether it will be a competitive disadvantage. Nevertheless, the proper implementation of packaging made from recycled paper is of value to the companies in the packaging industry, and this research can help companies maintain their competitiveness. It also presents suggestions to graphic designers by offering guidance on what elements to look out for. In addition, preferences also assess

consumer demographics that can contribute to packaging development and marketing strategies for marketing departments.

Last but not least, we firmly believe that this research will be of value to those working with the implementation of Agenda 2030 policies in society. Furthermore, this study provides insights about the packaging elements that trigger more positive consumer responses to recycled paper-based materials, which can have a positive impact on the environment. Thus, our results have practical implications that might contribute to a more sustainable future in accordance with Agenda 2030. Implementing more eco-friendly variant of recycled paper-based packaging is one of the steps we can take to make the better and greener future.

2 Theoretical background

In this chapter, an analysis of previous research is investigated. The aim is to provide a theoretical framework considering the packaging and the role of its elements (graphic, structural, information) and to derive relevant hypotheses in the context of unappealing design in recycled paper-based packages. Multiple studies emphasise these attributes as the main drivers of consumer behaviour and buying intention (Atwal et al., 2012; Khan et al., 2021; Magnier & Crié, 2015; Westerman et al., 2013).

2.1 Packaging

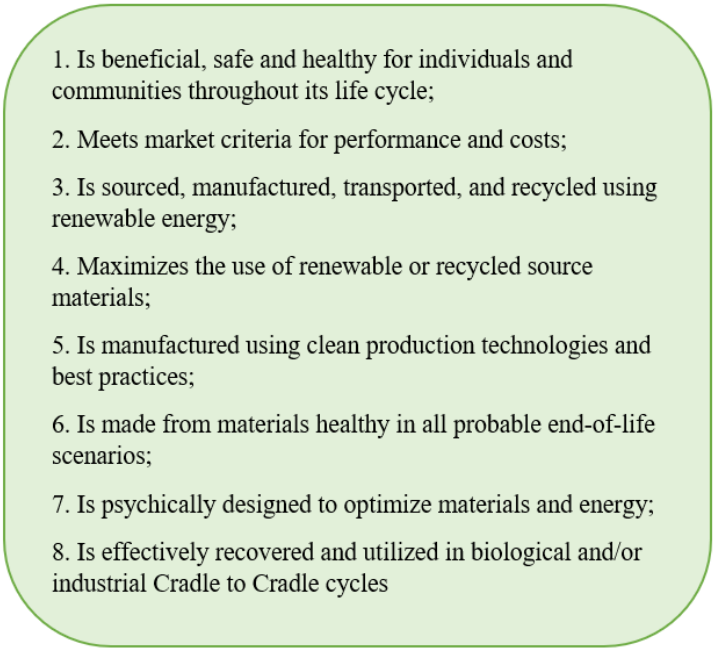
The role of the packaging can be defined in simple terms. According to Lydekaityte and Tambo (2020), the packaging is used as a means of containment, preservation or protection. Atwal et al. (2012) continue in similar manners while stating that packaging has two functions – logistical (e.g., protection) and marketing (e.g., communication). From the previous research, Zeng and Durif (2020) examine that the brands use packaging as a communication tool, as it can differentiate from competitors and gain a competitive advantage. In this line, several visible elements communicate with the consumers. In the light of the previous sentence, Ampuero and Vila (2006), Atwal et al. (2012) and Magnier and Schoormans (2015) describe three types of elements: 1. graphic elements (colour, typography, layout, pattern, image), 2. structural elements (shape, container size, material), and 3. information elements in the packaging (information about the product, labels, expiry date).

2.1.1 Recycled packaging

A specific approach needs to be done in order to produce the package in a sustainable manner. Jedlička (2010) defines eight requirements (see Figure 1) which are inevitable for marking the package as sustainable. However, as the term '*sustainable packaging*' is far-reaching and the aim of this master thesis considers only applied elements on the final package, we evaluate and include only recycled paper-based package. Due to the length of this term, the simplified name *recycled packaging* is used within this thesis as the focus is on recycled paper.

Figure 1

Eight characteristics of sustainable packaging



Note. Adapted from *Sustainable Graphic Design* [Table], by Wendy Jedlička, 2010, p. 212

2.2 Consumer preferences for recycled packages

Due to actual environmental concerns, consumers are becoming gradually more environmentally conscious, which is associated with an increase in green product purchases (Ansar, 2013). The boom of green product purchases that started at the beginning of the 21st century led to the new marketing strategy also named *green marketing* (ibid.). Rahbar and Wahid (2011) state that the companies are using various green marketing tools such as eco branding and environmental advertisements to influence the consumers' perception of the product and their purchase intention.

Regarding green products, businesses must take into account various dimensions. According to Prakash and Pathak (2017), one of them is packaging, which directly affects the success of the brand as it is the first consumers' contact with the brand. This fact is in accordance with Kovač et al. (2019), who claim that consumers buy impulsively, which stresses a significant impact of the packaging design. Moreover, consumers associate the package with the quality of the product, which means that a well-designed package relates to higher quality and plays a part in competitive

advantage (ibid.). For this reason, consumers' preferences of the package should be businesses' object of interest.

Wijekoon and Sabri (2021) describe that the perception of recycled packages also depends on consumer values. The authors examine that the positive values are associated with green trust, health consciousness, environmental concerns, subjective norms or environmental knowledge. In contrast, the negative values are associated with egoistic values, green advertising scepticism, lack of environmental concern or perceived environmental problem seriousness. Therefore, a consumer, who pays attention and is conscious of personal health and the environment, can differ from a consumer who cares only about health concerns (ibid.). Researchers, however, agree that recycled package is overall not perceived as having good quality and is not very appealing from the consumers' side (Magnier & Crié, 2015; Nguyen et al., 2020). In this line, we can propose that the design of the package plays a vital role in the consumer perception of recyclable products.

2.2.1 The influence of demographic variables

Preferences for a particular design as well as consumer behaviour can be influenced by different demographic variables – gender, age, and educational level (Jylhä & Hamari, 2021; Kumar, 2014). Since these variables can affect the relationship between consumer preferences and packaging elements (graphic, structural, information), they need to be further discussed.

The difference between gender examines the research by Moss and Colman (2001). The authors reveal that the particular gender prefers the design created by someone of the same gender. Furthermore, male participants do not prefer many colours used in text and hypertext compared to females (Miche & Noirhomme-Fraiture, 2009). Dennis et al. (2018) also expose the divergence between the gender, by highlighting the evolutionary predispositions – hunting associated with men while gathering linked with women. Additionally, González et al. (2021) assert that female consumers spent more time observing the product and paying attention to rich contextual settings which drive emotional values. On the contrary, men tend to spend as less as possible time shopping (Dennis et al., 2018), which may predict the packaging for men needs to be communicated outright.

As we continue, several authors examine that the age of the consumers can shape their perception of the products and, eventually, the purchase (Kumar, 2014; Wijekoon & Sabri, 2021). In more detail, the authors state that age, besides the other demographic variables enhance the purchase decision (ibid.). On the other hand, perception of the products might vary based on their age. Nielsen's study observes that generation Z, as the first generation born with the internet, has an attention span closer to 36-month-olds children rather than to the older generation (as cited in UCTV, 2018). In the same vein, Kotler et al. (2016) propose that a huge volume of constantly bombarding messages through mobile devices causes reduced attention of this particular generation. Moreover, Henley et al. (2011) emphasise that there is a need for an innovative and eye-catching design for generation group Z to catch their attention. They add that this generation, contrasting with others, pays more attention to environmentally friendly products.

Education is another variable that might affect the preference for the package and, eventually, for the whole product. In a similar line, Ghoshal (2005) states that the key to the sustainable performance of businesses and individuals is education. From a different perspective, one can assume that educated people might act differently when it comes to the preference for recycled packages. Similarly, Waris and Hameed (2020) observe that people educated about sustainability labels act differently and rather reach for the product with the eco-labels. In the light of previous data, we can assume that the education of the people can influence their preference in the context of recycled packaging.

2.3 Graphic elements in packaging

As was mentioned previously, graphic elements are one of three components in packaging. Babin (2003, as cited in Gómez et al., 2015) notes that packaging is a 'silent salesperson' as it can sell the product based on its look. More attention needs to be paid to these particular elements mainly because 90% of consumers purchase the product only by examining the front of the package (Hurley et al., 2016). Therefore, the design can be crucial to helping consumers make a purchase decision (ibid). The following lines present colours, typography and visuals and show how they influence the consumers' opinion on the packaging.

2.3.1 Colour

The importance of colour in design is undoubting as it is the first visual feature that makes an impression and the most crucial element which consumer notices (Kuo et al., 2021). Moreover, successful colour has the power to determine whether the consumers buy a product (Sherin, 2012).

2.3.2 Communicative power of colour

Pereira (2021) describes that colour has communication power, by which it serves as an identity mark. For instance, green is identified with ecology (Pereira, 2021), nature, healthiness and greenwash (Kauppinen-Räisänen, 2014), pink with women's products, and white with health (Pereira, 2021). According to Adams et al. (2012), every colour evokes different things, and that is why the designer needs to understand colour psychology and consider the tone of the project.

Additionally, colours have different meanings in different cultures (Kauppinen-Räisänen, 2014). Following this, Adams et al. (2012) state that cheerful colour in one country may be perceived as a mourning colour in another country. For instance, yellow is a courageous colour in Japan, while in the United States is often linked with cowardice (ibid). Therefore, a designer cannot overlook the cultural context. Cultural inconsistency supports Sherin (2012), who states that cultural association can lead to misinterpreted information.

2.3.3 Associations of flavours

Furthermore, colour has an iconic function as it can communicate the colour of food (Pereira, 2021). Carvalho and Spence (2019) conclude that colour plays a prominent role in response towards food, even if the colour is just a part of the packaging. In their experiments, the same coffee in different colours of cups was perceived as having different tastes. This experiment is in accordance with Silayoi and Speece (2007), who state colour is a cue that can indicate the flavour and nutrition of the product. A deeper understanding of colours and flavours brings Huang et al. (2021), who examine the colour-flavour congruency in the package. This concept means that the colour in the package is associated with the product's flavour. Their research claims that the consumers like the colour-flavour incongruent package less, and they

have a longer reaction time to find them, even though they find it innovative. Georgakarakou et al. (2020) also confirm the consistency between colours and flavours. In their research, people prefer olive colour on the label of olive oil rather than purple. Additionally, Krishna et al. (2017) add that colours need to be congruent with the expected texture, taste or calorie intake of food.

Communicating the flavour through colour also illustrate Grilo et al. (2021), who show that consumer can easily image a flavour based on the colour of the cigarette packaging. For example, they mention the red and green colour combination, which is automatically associated with watermelon. The congruency between colours and food flavours can be perceived as necessary for consumers, who want to quickly decide because colour-search is faster than word-search (Huang et al., 2021).

2.3.4 Associations of strength

Mercincavage et al. (2022) explicate that colours can also communicate strength to the consumers. They describe that as the cigarette companies could no longer use words such as ‘mild’ or ‘light’ in their package, they made colour coding schemes – red represents strength, while light colours (light blue, silver) represent mildness. In the same line, Ribeiro et al. (2018) add that red presents junkiness in the context of food, while light colours are linked with healthiness. Van der Laan et al. (2012) present similar results using the same biscuit in two variants. While one with light colours was considered healthy and more popular among consumers, the red one was viewed as a junk alternative.

2.3.5 Colour as a tool to grab attention

The colour strongly impacts consumers’ perception of the product, and the right colour design is thus a key to the products’ success (Kauppinen-Räisänen, 2014). However, Magnier and Crié (2015) mention the problem is that consumers perceive recycled packaging as vague packaging with dull colours – brown, white, and green tones (see Figure 2). Nguyen et al. (2020) also highlight this issue by mentioning that eco-packaging is perceived as less appealing because it lacks colours compared to other packages.

Figure 2

Colour of recycled packaging

Note. Adapted from *Sample packs* [Photograph], by Packhelp, 2021 (https://packhelp.com/custom-pizza-box/)

To find out what colours suit the packaging best, Hurley et al. (2016) performed research with appealing colour combinations to see if specific colour harmonies are more preferred. Nevertheless, they did not find a significant difference in consumer preferences. These results are in keeping with Adams et al. (2012), who state that there is no specific colour or colour combination which can be named as best one, and each project requires different colours

In congruence with Hurley et al. (2016), we can conclude that the importance of grabbing attention does not lay on the special colour but the colour contrast (Adams et al., 2012). Grilo et al. (2021) agree by stating that contrasting colours attract young people, and the best attention was given to dark background with light colours in the foreground. In a similar line, Waheed et al. (2018) assert that the youngest generations prefer flamboyant packaging, while adults prefer sober packaging design (see Figure 3). These findings align with (Pires & Agante, 2011), who state that children are attracted to package design similar to junk food, and fun packaging increases their purchase intention.

Figure 3

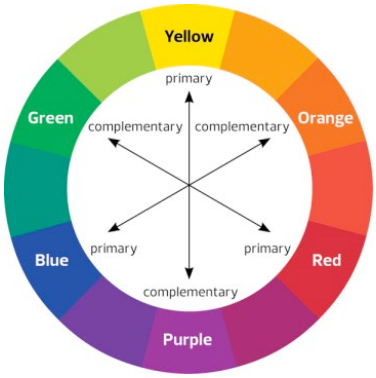
Flamboyant (vivid) and sober image design

Note. Own depiction

Adams et al. (2012) moreover add that contrast cannot be made through high-intensity complementary colours (colours opposed to each other in the colour wheel, (see Figure 4) because it brings vibration (see Figure 5). Colours should be legible and easy on the eyes. We can conclude that the contrast is not commonly seen in recycled packaging, which is why consumers do not perceive it as appealing.

Figure 4

Colour wheel and complementary colours



Note. Adapted from *Project #6: Color Theory* [Illustration], by Dekett digital photo, 2017 (http://dekettdigitalphoto.weebly.com/project-6-color-theory.html)

Figure 5

Colour vibration

Note. Own depiction

Most of the literature identifies the associations of colours and their effect on consumers; however, there is a lack of information about colour importance in recycled packaging. Furthermore, as Nguyen et al. (2020) examine, consumers associate the design of recycled packages with vague, dull colours such as brown and white. From this point, we conclude our hypothesis:

H1a: Consumers prefer contrasting colours on recycled packaging.

Besides, as the examined sample of our thesis consists of adults, we conclude:

H1b: Consumers prefer sober design on recycled packaging.

In addition, we would also like to emphasise the importance of choosing the correct ink for the designs. Dougherty (2008) explains that the concept of printing is often associated with the inclusion of toxic metals such as cobalt, zinc, barium or copper to procure an accurate printing process. Such actions result in volatile organic compounds (VOC) that cause environmental consequences such as air pollution. In this line, there are other alternatives in the form of low-VOC inks or specific vegetable-based inks (ibid.) that should be used in more sustainable packaging.

2.4 Typography

In a simple definition, typography refers to fonts, font size, spacing, line length, language and style (Khan et al., 2021). In the modern world, marketing managers use the strong effect of fonts as a communication tool to procure the attention and attitude of the consumers (ibid.). Wang and Chou (2011) observe that typography corresponds to effective findability, which means that consumers can easily and fast spot the product or find the difference by visual search. The whole process can then improve product sales (ibid.). Suleman (2016) describes that typography is pivotal in visual context because it contributes to 95% of attraction perceived by consumers along with colours and images.

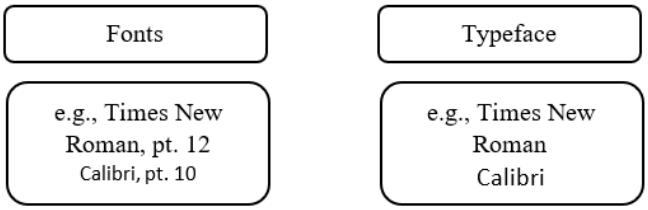
2.4.1 Classification

Adams et al. (2012) mention that we can differentiate typeface and fonts. In the context of *fonts*, this term relates to the actual font name but with the determined size, for instance, Times New Roman (12), Arial (14), and Calibri (10). On the

contrary*, typeface* refers only to the actual name of the font, for instance, Times New Roman (see Figure 6) (ibid.).

Figure 6

Font vs typeface

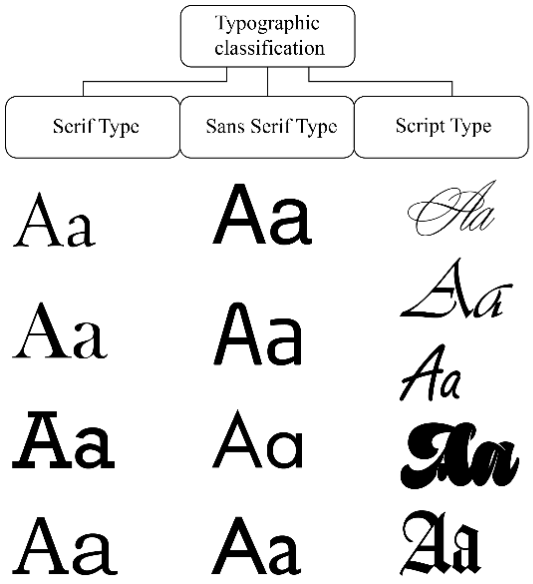


Note. Own depiction

Moreover, the typefaces can be categorised into three groups – serif, sans serif and script according to their design characteristics (see Figure 7).

Figure 7

Typographic classification



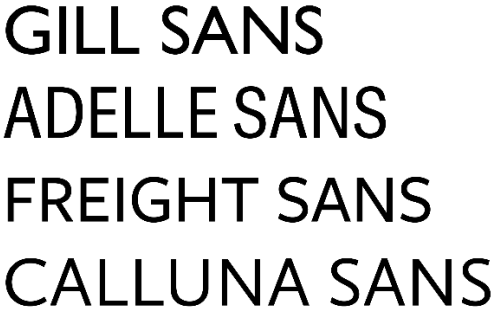
Note. Own depiction

In the context of different typefaces, Kovač et al. (2019) report which typefaces are more preferred by consumers on chocolate packaging. The authors describe two groups of typefaces, *text* and *display*. *Display typeface*, e.g., script style, is used rather for headlines or titles, while *text*, e.g., sans serif style, is used for running text. Despite the differences, the authors further assess that consumers do not prefer one typeface more than the other (ibid.).

On the contrary, by analysing a variety of font options for specific products, Ampuero and Vila (2006) claim that the sans serif type style is the most appropriate for accessible products (ibid.). However, Adams et al. (2012) argue that using the term sans serif and serif is very broad as we can categorise them into additional subcategories. In other words, typestyles contain additional styles that differ among themselves. Multiple options arise within this context; nevertheless, the authors propose that the humanistic sans serif font type is the most eligible and suitable for packaging because of its readability. The designer can use, for instance, Gill Sans, Adelle Sans, Freight Sans or Calluna Sans from this category (see Figure 8).

Figure 8

Humanistic sans serif



Note. Own depiction

From this perspective, one can claim multiple fonts should be used within a project. However, Adams et al. (2012) assert that graphic designers should avoid the mixture of a variety of typestyles as it can create the notion of confusion. Moreover, they add that one serif, and one sans serif font should be sufficient in most cases for one project (ibid.).

2.4.2 Size and hierarchy

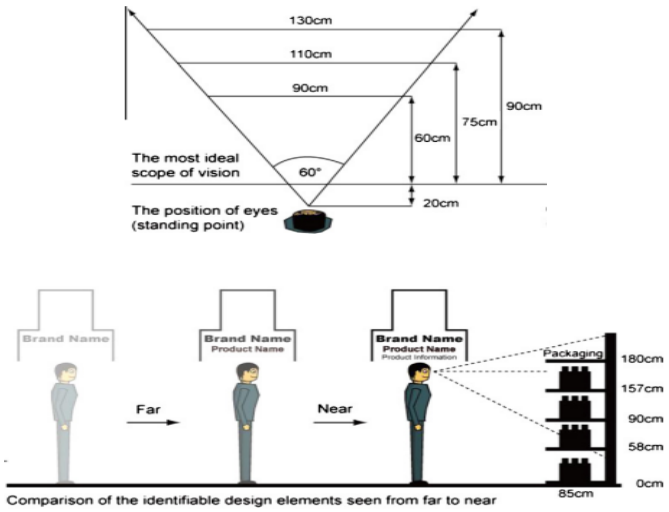
Khan et al. (2021) emphasise that only an adequate selection of the typography relating to the suitable design can prevent inefficient results in packaging appearance. In other words, we need to follow certain rules. Suleman (2016) states that such rules relate to the hierarchy of information, where certain words, sentences or characters need to catch attention first, e.g., using a bigger typeface for the title and smaller for the text. The appropriate size is a key to preventing consumers from confusion. According to Silayoi and Speece (2007), a very dense and small font is

used to maximise the information provided, which makes the reading difficult. Moreover, Adams et al. (2012) add that confusion might also arise when a graphic designer uses extreme characteristics of a typestyle such as ultrathin weight, resulting in poor readability.

In the light of previous data, Wang and Chou (2011) further suggest that the font on the package should be of a certain size to be clearly visible to the consumers. Georgakarakou et al. (2020) observe that the consumers generally prefer larger rather than smaller font sizes. In this line, Wang and Chou (2011) agree but impress that firstly we need to examine the main challenges that occur in this context. The authors highlight the *distance* and the *angle* from which the consumer is looking at the product. Regarding the distance, the authors suggest that the adequate size of the font for the display typeface is 1.27 cm, while according to FrontierLabel (2019) when it comes to the text, it should not be smaller than 0.2 mm as it might not be readable. In the context of angle, Wang and Chou (2011) further state that appropriate font helps to reach good visibility of the package, where the authors point out the Golden Zone, which means that standing consumers with a natural posture can see the product from the angle of 80 – 120 cm over the floor (see Figure 9).

Figure 9

Width of vision and visual depth for logo typography



Note. Adapted from *Differentiation in the arched surface of packaging: Its influence on the findability of logo typography displays* [Photograph], by Wang & Chou, 2010, p. 26.

By considering the previous literature, there is no consensus on what typeface should be the most efficient in the context of packaging. Additionally, the authors did not consider the recycled package in their research. From this point, we assume:

H2: Consumers prefer sans serif typefaces on recycled packaging.

2.5 Visuals

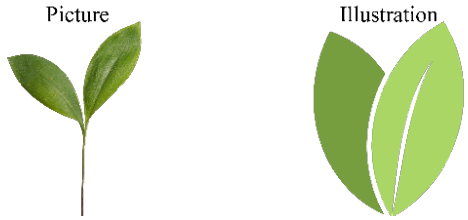
2.5.1 Images

During purchasing, consumers tend to pay attention to the appearance of the design and shop with their eyes (Folkes & Matta, 2004, as cited in Krishna et al., 2017). According to Waheed et al. (2018), the design of the package positively impacts consumers buying intention. In line with these statements are Underwood and Klein (2002), who claim that particularly images are more vivid than words and help consumers imagine the taste, smell and look of the product. Thus, they claim that the presence of an image is essential. Also, Piqueras-Finszman (2013, as cited in Georgakarakou et al., 2020) presents the importance of images in the packaging showing that more attention is paid to images than to the textual part on jam jars.

However, according to Hausman (2000, as cited in Waheed et al., 2018), the pictorial representation requires attention only in low involvement products, where other factors (e.g., price) do not play a significant role. The study of consumer attention towards images is also examined by Georgakarakou et al. (2020), who discover the inconsistency in attention towards images. Consumers did not pay attention to images on olive oil; nevertheless, images were of high importance in a package of feta cheese. In the context of images, Kovač et al. (2019) demonstrate that illustrations are less preferred by consumers than photography (see Figure 10).

Figure 10

Example of picture and illustration



Note. Own depiction

However, Nguyen et al. (2020) state that images are of poor quality when it comes to products from recycled material, and their appearance is not as appealing. Yeo et al. (2020) observe that in the context of recycled products, the interpretation of colours of the images is inappropriate. Studies did not examine the images from a recycled paper package perspective. Still, it can be perceived that using vivid photography can attract attention; therefore, we assume:

H3a: Consumers prefer photography on recycled package.

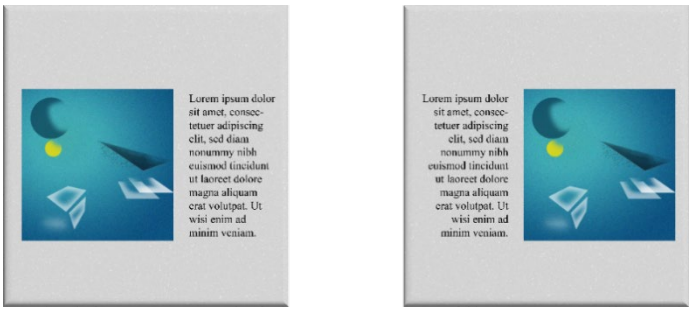
2.5.2 Layout

According to Silayoi and Speece (2007), layout (the arrangement of the visual and verbal components within the design) impacts the purchase decision. Even though most consumers do not recognise this element as a key, there is clear evidence of its importance (ibid.). Adams et al. (2012) emphasise that layout should be composed in the hierarchy, leading the consumer to the most important elements. Therefore, there is no space to put everything of the same size on the packaging.

Layout deals with the placement of the image and text. According to Adams et al. (2012), designers should avoid putting images in the corners of a package, which destroys its dimensions. Rettie and Bewer (2000) claim that the right-hand side of the package should contain verbal stimuli (text), while the left-hand side should have a pictorial element (image) to maximise consumers' recall of the packaging (see Figure 11).

Figure 11

Left-hand and right-hand layout



Note. Own depiction

However, this is not in accordance with Silayoi and Speece (2007), who argue that images are better on the right side and verbal info on the left in Malaysia. They defend this finding by stating that eastern countries use this layout; therefore, it is more familiar and provides trust to the consumers. In this line, we can suggest that the layout might change depending on for who the project is intended. The findings of Rettie and Brewer (2000) are also contrary to Westerman et al. (2013). Their research about vodka and water packaging propose that consumers prefer images on the right.

Moreover, according to Deng and Kahn (2009, as cited in Krishna et al., 2017), images placed on the right bottom are perceived as heavy in countries that read from left to right. In contrast, left top images are perceived as light. Thus, the match between product heaviness and correct placement may impact consumers' preferences for products.

From the contradiction presented in previous studies, and considering the left-right reading in Slovakia, we conclude that:

H3b: Consumer prefer left-aligned image on the recycled package.

2.5.3 Patterns

Adams et al. (2012) suggest not to use squiggles in the design unless they mean something. According to the authors, consumers should be able to recognise shapes with colours (ibid.). This statement agrees with Kovač et al. (2019), whose research

brought the findings that concrete patterns are more preferred by consumers than abstracts (see the difference in Figure 12).

Figure 12

Example of pattern and graphic

Note. Own depiction

The patterns can also communicate the products' flavour (Sousa et al., 2020). While rounded shapes are associated with sweetness, angular shapes are associated with sourness. Moreover, round shapes are more attractive and less disturbing for the consumers (Westerman et al., 2013). Regarding the direction of patterns, consumers prefer upward graphic properties, and these particular patterns are linked with consumers' purchase likelihood. On the other hand, the research outcome can vary from product to product, as their research observes differences only between the water and vodka bottle (ibid.).

Although there is no evidence of the importance of pattern in the context of a recycled package; therefore, we propose:

H3c: Consumers prefer concrete pattern on the recycled package.

2.6 Structural elements in packaging

Alhamdi's eye track experiment (2020) reveals that design and colour (graphic elements), as well as shape and size (structural elements), have an essential role in attracting attention to the product. Besides, the material is also a factor which affects the consumers' intention to buy. For instance, plastic material is preferred by the older generation, as it is light and easier to carry. In contrast, younger generations favour glass because of the hygienic and environmental concerns (Ribeiro et al., 2018). The following lines provide information about the shapes and materials of

packaging. The size of the package is, however, excluded, as the research design cannot observe this specific element.

2.6.1 Shape

The shape of the packaging has except for practical also aesthetical functions. Basso et al. (2016) emphasise the shape and label of the package are important visual elements. Their study demonstrates how dangerous can be the wrong shape of the package for the health. According to respondents, chemical products with incongruent drink shapes without labels were associated as tasty, safe, and drinkable (see Figure 13). Holdway et al. (2002) also mention the high importance of shape by highlighting the case of Carl Maria von Weber, who ruined his voice by accidentally drinking engraving acid stored in a wine bottle. From this perspective, symbolism cannot be avoided, and designers should pay respective attention not just to visuals but also to the shape of the product.

Figure 13

Example of improper shape

Note. Own depiction

The shape of the packaging can also be associated with the body figures. For example, the famous shape of Coca Cola bottle got the name “Mae West” bottle after the actress’s curvaceous figure (see Figure 14) (Coca-Cola, 2022).

Figure 14

Coca Cola and Mae West

Note. Adapted from *Mae West, um furacão ousado demais* [Photograph], by Memórias Cinematográficas, 2018 (https://www.memoriascinematograficas.com.br/2018/07/mae-west-um-furacao-ousado-demais.html)

Moreover, van Ooijen et al. (2017) state that the shape can promote the products' healthiness. In their study, the authors found out that packaging imitating healthy body shape acts as a symbolic cue to product healthiness. This finding is in accordance with Zeng and Durif (2020), who state that slim or oversized packaging shapes (see Figure 15) affect the perceived healthiness of the product. Furthermore, study by van Ooijen et al. (2017) contradicts Laran and Wilcox (2011), who states a negative relationship between *tastiness* and *healthiness* of product packaging. Here the authors declare the healthiness cued from the shape of the packaging does not impact product evaluation when consumers are focused on the tastiness.

Figure 15

Healthiness cues of different shapes of bottles

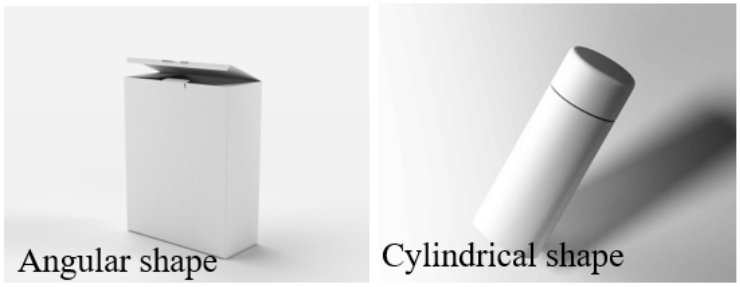
Note. Adapted from *Effects of package shape* [Photograph], by Ooijen et al., 2017, p. 75.

Additionally, Poslon et al. (2021) discuss shape and its influence on perceived tastiness, saying rounded and cylindrical shapes have lower taste intensity than

multifaceted designs (see Figure 16). However, according to Georgakarakou et al. (2020), rounded shapes are generally more preferred as they are not perceived as a threat compared to angled shapes. Moreover, according to Magnier and Crié (2015), a cylindrical shape is used in the majority. Nevertheless, they add that this shape requires more attention to designing the label with readable text and visible visuals. Westerman et al. (2012) assert that rounded design is preferred as it better conforms to the body shape.

Figure 16

Example of multifaceted and cylindrical design



Note. (left picture) Adapted from *Product Box Mockup* [Photography], by Mockup World, 2022 (https://www.mockupworld.co/free/product-box-mockup/); *(right picture)* Adapted from *Free Cylinder Packaging Mockup (PSD)* [Photograph], by Unblast, 2022 (https://unblast.com/free-cylinder-packaging-mockup-psd/)

According to van Ooijen et al. (2017), the shape can mislead the consumer about the actual size of the product. Longer shapes of the packaging are perceived as having more volume. In this context, Wilkins et al. (2016) add that when there is a perception of higher quantity, but in reality, there is less volume, the consumer probably will not purchase the product in that package again.

Shape as a subtopic of product packaging is relatively examined; however, very limited research explores shape in the context of sustainable package. Escursell et al. (2021) note that the shape is key because an effectively designed package can reduce the cost of logistics as well as reduce CO_2. Therefore, the well-designed shape should be closely suited to the shape and volume of the product. However, as can be seen in the work by Zeng and Durif (2020), it is still not a rule for producers. Their research points out the non-adequately designed packaging shapes of meat products and biscuits and proposes paper-based alternatives.

As the contrary can be noticed by several journals, we conclude next hypothesis:

H4: Consumers prefer cylindrical recycled package.

2.6.2 Material

As mentioned previously, packaging has various responsibilities, such as protection, conservation, or a means of containment (Lydekaityte & Tambo, 2020). Therefore, the packages' material also needs to have certain attributes to achieve these responsibilities. Marsh and Bugusu (2007) state that manufacturers use multiple materials such as plastic, glass, or paper that were shown to be appropriate to fulfil the safety and protection requirements. However, Zeng et al. (2021) explicate that the manufacturers do not consider the long-term consequences, which lead to inappropriate material handling, consequently creating worldwide scale pollution. Relating to the pollution concerns, (Eneh et al., 2012) observe that the alternative approach might be in the form of recycling. Recycling means:

> *"Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes"* (Arduin et al., 2019, p. 258).

Regardless of the theory, the *recyclable* material, however, does not mean it is sustainable. Nguyen et al. (2020) point out that consumers tend to specify materials such as paper to be full eco-based without side effects to the environment. However, they forget about *Life Cycle Assessment* (LCA) (manufacturing, transport, and end-of-life management). Taking into consideration the whole process as one concept, categorizing almost any packaging as eco-friendly is very limited (ibid.).

On the other hand, Ramezani et al. (2011) note that using recycled materials such as recycled paper is less demanding for manufacturing as well as damaging to the environment. Jedlička (2010) agrees by saying that recycled materials such as paper overall contribute to lower energy use, water and air pollution, and global warming. However, Gea et al. (2005) challenge Jedličkas' (2010) and Ramezanis' (2011) statement stating that even though the manufacturing process might be more cost-effective, it still poses a danger, for instance, through the de-inking process, where it possesses dangerous chemicals that affect the surrounding environment.

Responding to Geas' argument, Jedlička (2010) does not disagree but imposes the objective view of the manufacturing of recycled materials. Moreover, the author further asserts that the brands should not use the most common recycled materials (plastic and paper) and rather use alternatives such as *agricultural residues – wheat, barley, oat, rice, flax, or sugarcane bagasse*. The author further emphasises that paper can be manufactured from *textile, rag, artisan or stone and minerals* (see Figure 17). On the other hand, the main issue is that some of these papers might require specific recycling or composting facilities that are not common; therefore, production, usage, distribution, and end-of-life are restricting and limited (ibid.).

Figure 17

Example of paper from alternative materials

Note. (left picture) Adapted from *Khadi : white rag paper* [Photograph], by Jacksons Art, 2017 (https://www.jacksonsart.com/de-de/khadi-white-rag-paper-150gsm-medium-11x15cm-pack-of-20-sheets); *(middle picture)* Adapted from *Stone paper/Which is a revolutionary new paper made from stone* [Photograph], by Alibaba, 2022 (https://www.alibaba.com/product-detail/Stone-paper-Which-is-a-revolutionary_60712310112.html); *(right picture)* Adapted from *Scouted: Textile paper artworks by Liz Sofield* [Photograph], by We are scout, 2016 (http://www.we-are-scout.com/2016/06/scouted-textile-paper-artworks-liz-sofield.html)

Following the previous data, we can propose that using a less damaging alternative, in this case, paper, is the most suitable option for packaging good. Furthermore, according to Müller et al. (2012), this material is biodegradable and combustible while having the most advantageous end-of-life options in recycling, organic and energy recovery.

Despite the relevant information that we are presenting within this section, the aim of our thesis is based on recycled paper package design. Following the suggestion of Ampuero and Vila (2006), specific types of materials are not considered as independent variables.

2.7 Information elements in packaging

More and more consumers these days spend time reading the information about the packagings' environmental friendliness (Moser, 2015; Pino et al., 2012; Quested et al., 2013). The importance of these packaging elements is crucial as information that does not meet the expectations of consumers can cause an aversion to product purchase (Deakin, 2011; Nemat et al., 2020; Wang & Chou, 2011).

According to Taufique et al. (2019), one of the main sources to define the appropriate products with benefits for people and the environment is in the form of certifications and eco-labels (e.g., Rainforest Alliance, Fairtrade). Such labels show consumers, for instance, if the product is sustainable, if manufacturers or workers are treated fairly, or if the product is associated with humanitarian activities (Yokessa & Marette, 2019). Moreover, Neumayr et al. (2021), Oh et al. (2020), and Tigan et al. (2021) propose that such labelling can be associated with increasing sales for the firm.

At the same time, Magnier and Crié (2015) claim that consumers are not informed well about specific labels. Dekhili and Achabou (2014) agree by saying that eco-labels positively impacted consumer coffee preference regardless of the certifier – self-declaration (freely organised certification in accordance with the company's own environmental/social objectives) or independent (accreditation from a third party). Additionally, Camargos (2019) and Canning (2019) have a sceptical approach toward the self-declaration certifier because the transparency is limited as the sustainable claims are only from the company. Such an issue is in the context of Starbucks and the C.A.F.E certification, where despite the certification, the company was accused of disobeying Corporate Social Responsibility regulations (ibid.). Dekhili and Achabou (2014) further add that businesses should educate consumers to improve their expertise. This statement is also in line with Bernard et al. (2015), who agree that companies should guide consumers to select environmentally friendly products. In addition, Taufique (2019) notes that consumers will buy products with eco-labels if they notice, read and understand them.

On the other hand, constantly increasing attention towards environmentally sustainable products forms consumers' behaviour towards certifications. Bernard et al. (2015) propose that a lack of transparency in certification starts discourages consumers from buying the products. Furthermore, as was shown in the research by Janssen and Hamm (2014), consumers do not trust uncertified logos and prefer familiar certification. Based on provided literature, we assume:

H5a: Consumers prefer independent certifications.

In addition, scepticism of the consumers is also evoked by misleading information provided on the packaging. As emphasise Atwal et al. (2012), the inaccuracy and misleading can be caused by too little or too much text. Jedlička, 2010 also add that inexact information may have fatal consequences. The author mentions one of the most known cases of the Johnson & Johnson company, where misleading/inappropriate information caused the death of seven people.

In this line, the author emphasises that accuracy is a key to gaining consumers' trust and avoiding being marked with greenwashing. For instance, using terms such as 'recycled material' or 'from recycled materials' does not provide us information if the whole package is recycled or only part of it is (see Figure 18). Alternatively, Jedlička (2010) urges manufacturers to include precise information about the percentage of recycled materials used while manufacturing the package. In addition, the author further notes that the other relevant information, such as where or how to recycle the package, is necessary to mention (ibid.). In this line, we suggest:

H5b: Consumers prefer precise claims about recyclability on the package.

Figure 18

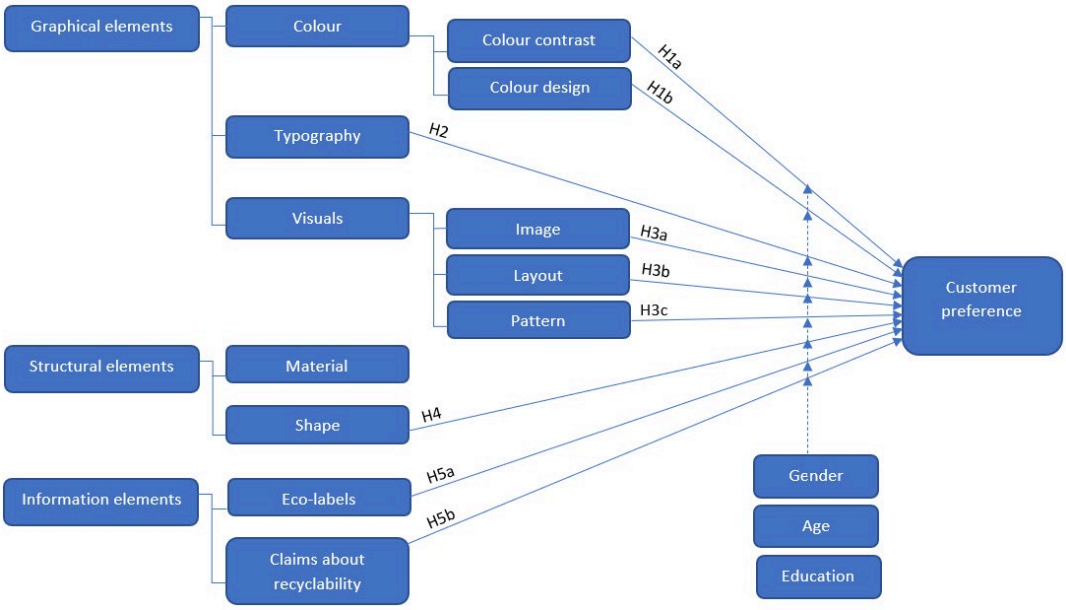
Recycled material label

Note. Own depiction

From the theoretical background, we propose the following hypothesis model (see Table 1).

Table 1

Hypothesis model



Note. Own depiction

3 Research design

For accomplishing the aim of this master's thesis, an adequate approach has to be chosen. Thus, the reasoning behind an appropriate research strategy is further discussed. This section describes the creation process of packaging samples along with the collection and analysis of the data.

3.1 Research approach

This thesis aims to investigate how packaging elements applied to recycled paper-based packages affect the preferences of Slovak consumers. Therefore, *quantitative research* was conducted. According to Saunders et al. (2019), the essential characteristic of this type of research is the usage of numerical and analytical techniques, which help researchers generalise the results from the sample to the broader population. In addition, quantitative research is linked to collecting the data for a specific project – primary data (Saunders et al., 2019). In this study, the primary data was gathered from Slovak consumers.

As the study tested existing theories to draw specific conclusions, the *deductive approach* was used. According to Saunders et al. (2019), this approach represents the testing proposition of the theory by explicitly designing a research strategy. For this research, nine hypotheses were developed. Moreover, the study was *explanatory* driven, as it describes the relationship between variables (Saunders et al., 2019); more concretely, it explains the dependency of the independent variables on the dependent variable. For this study, nine independent variables and one dependent variable were examined. Independent variables were *colour contrast, colour design, typeface, image, layout, pattern, shape, certification,* and *recyclability claim,* while the dependent variable was *consumer preference.*

3.2 Data collection

With regard to the data collection, this quantitative research used a *survey and experiment strategy*.

The survey strategy was performed via an online questionnaire between 18 and 20 of April 2022 in Microsoft Forms, a time-saving and financially undemanding way

to obtain the necessary data. This approach allowed us to get standardised data from a large group of respondents, which was easy to conduct and subsequently compare (Saunders et al., 2019). Moreover, this method was selected due to its convenience as participants can choose when they participate during their free time (Kovač et al., 2019).

In addition, this strategy was adopted along with *the experiment strategy*, where the independent variables were directly manipulated to see if they affected the dependent variable. Since each participant was exposed to the same questions, this strategy can be named a *within-subject experimental design*. Thus, participants were not divided into experimental and control groups (Saunders et al., 2019).

3.2.1 Research population

Due to the fact that the prevailing focus was on western countries (Silayoi & Speece, 2007), this study examined how a particular design influenced Slovak consumers – the research population. Furthermore, Slovakia belongs among the weaker countries within the European Union regarding environmental performance (Wendling et al., 2020). Therefore, it can be expected that their perception of recycled products is not favourable. Thus, the thesis looks into the relationship between design elements and the consumers' preference in Slovakia in the context of recycled paper-based packaging.

3.2.2 Sampling

Since the research of the whole population would be time and cost consuming, the sample from the population was used. More concretely, *convenience sampling* was applied since the sample presented the people easy to reach.

In view of the fact that this research does not possess a sampling frame, the sample is not representative, and the process used was *non-probability sampling*. This term refers to a technique where the chance of someone being selected is not known (Saunders et al., 2019). More channels for the questionnaire distribution were used to make sure that the data for this study were closer to a representative sample. Moreover, the questionnaire was posted on eight social media (Facebook) groups consisting of citizens from each Slovak region.

3.2.3 Pilot test

According to Sanders et al. (2019), every questionnaire needs to conduct a pre-test to determine if questions are well formulated, not offensive/disrespectful, and understandable. Thus, the pilot test with 10 participants was launched before publishing the questionnaire in the Facebook groups. This test provided information about the questionnaire's length, comprehensibility of the questions and feedback on the difficulty of the assignment. Gained information was conducive to reworking the questions to be mobile-friendly. Additionally, the instructions in the accompanying text were written.

3.3 Packaging samples

In the same line with the study of Kovač et al. (2019), participants were asked to pick between two pictures of packaging one they preferred more. The deodorant design was chosen for the recycled packaging because the technology so far does not allow manufacturers to use recycled packages in direct contact with food. Therefore, another packaging layer would be needed. Even though this product has already been introduced in foreign markets, it is still unavailable in Slovakia. Thus, Slovaks are used to plastic packages for this type of product.

Since this particular product comes in various scents, just one scent for women and one for men was used. This decision was made in line with Kovač et al. (2019), who emphasise that it reduces the effect of scent preferences. Additionally, a fictional logo for both men and female variants was designed to avoid the preferences of a special brand.

In order to develop a questionnaire and relevant testing material, three programs, Adobe Photoshop v. 23.2.2 (PS), Adobe Illustrator v. 26.2.1 (IL) and Adobe InDesign 17.2 (ID), were utilised. All programs have been acquired from the official Adobe website (https://www.adobe.com/). PS and IL were used to develop the actual packaging design. Moreover, ID was used to find and adjust relevant typography, as the program is mainly used to work with texts. In addition, to showcase the product's packaging design, relevant mock-ups (structural models used for study, display or testing) were applied (see Figure 19).

As the pictures of packages were similar to each other, we decided to put them in a different order in the questionnaire to avoid respondents' bias influenced by first seen designs. Thus, the organisation of the questions differs from the organisation of the hypothesis.

Figure 19

Pair of packaging samples

Note. Own depiction

3.4 Data analysis

After data collection, Microsoft Excel was used to store the data from the questionnaire. Furthermore, statistical software SPSS was utilised for data analysis.

The collected data were used to determine the relationship between the manipulated packaging elements and customer preferences. In addition, to examine the general preference of consumers, we also found out what role demographic elements play in this relationship. Using the specific categories of gender, age and education to which the respondents belonged, we were able to obtain more in-depth information about what kind of respondents prefer the given elements. A chi-square test was used to determine these relationships.

As a primary step in calculating the chi-square test, it was necessary to make a contingency table that allows us to see the number of combined values of the two variables in its cells. Thanks to the chi-square test, it was possible to determine which packaging elements depend on consumer preferences.

The dependence of the variables – the rejection of H0 – arises when the calculated value (p-value) is less than the significance level, which was set at the level $\alpha = 0.05$. Therefore, if H0 is rejected, it will be possible to claim that there is a relationship

between the variables with a certainty of 95%. If the conditions of the chi-square test are not met, i.e., the expected numbers are greater than 5, the research results are indicative.

3.5 Data quality

In the context of the research quality, it must be ensured that the study is reliable and valid. *Reliability* means that our research provides consistent data. The respondents were assured that their answers were confidential and anonymous to secure the reliability of the research. This action can prevent participants from untruth responses – participant bias (Saunders et al., 2019).

Internal validity of the research was ensured by change of just one examining element in each design pair. Other design elements remain unchanged, so it can be concluded that the reason for particular design preference is due to manipulated elements and no other factors.

Regarding *construct validity*, to make sure that consumers' preferences were truly measured, participants were directly asked about their preferences for two products. Moreover, control questions were used to secure that respondents did not randomly click the answers. In these questions, participants were asked to rate both of the products to see if the participants truly chose the product they preferred more.

As non-probability sampling was applied, external validity could not be secured. However, the extent to which the research can be externally valid (applicable to the whole population) was expanded. As was mentioned previously, eight social media groups associating citizens of a particular Slovak region were used for this purpose.

3.6 Possible problems

As the sample does not copy the characteristics of the whole population, it does not present a representative sample. Because the data were collected through an online questionnaire, demographic factors could not be determined in advance. The revealed limitation is also the limited accessibility of the questionnaire for people who do not have an Internet connection or social networks through which it was distributed. In particular, some older respondents were in this minority of the overall sample.

Another limitation of the online questionnaire is controlling the respondents' data, as it is impossible to determine the extent to which the respondents answered correctly and who are the respondents. Based on these facts, the results of the questionnaire may be skewed. Even though respondents were provided with confidentiality, there was still a chance that the respondents provided incorrect answers, intentionally or unintentionally. For this purpose, the control questions were used. Due to them, it was possible to recognise and exclude the questionnaires with random answers, as mentioned with construct validity.

3.7 Ethical considerations

This research is conducted in accordance with Dalarna University's Code of Ethical Standards. Moreover, the study is based on primary data; therefore, ethical consideration was implicated.

According to Saunders et al. (2019), every study researching physical subjects needs to be subjected to ethical issues. Alternatively, research needs to be formulated to minimise ethical concerns that further avoid unethical practice. Saunders et al. (2019) further stated that research design should not put the research samples at any risk, harm, pain or other material disadvantage. In this line, several procedures were conducted in the context of the questionnaire:

1. Precise information on what purpose was the questionnaire used was provided. The questionnaire was distributed in the language spoken by the respondents, while academic language was excluded in order to procure a complete understanding of the task. Moreover, only relevant information related to our study was implemented to avoid misleading information;
2. Participation in the questionnaire was voluntary, and the respondents were free to withdraw from the participation anytime they wanted;
3. Data were used only for the purpose of this research and were stored in an appropriate manner, according to GDPR.

4 Results

4.1 Sample

A total of 529 responses were collected in the conducted survey. However, 46 failed the control questions and were excluded from this research. Thus, 483 questionnaires were further considered and analysed.

Table 2

Frequency table

n = 483

Gender	Frequency	Percentage (%)
Men	174	36
Women	309	64
Age		
Generation Z	309	64
Generation Y	103	21
Generation X	44	9
Baby Boomers	27	6
Education		
Primary	4	1
Secondary	255	53
Tertiary Bachelor	116	24
Tertiary Master	105	22
Higher	3	0

Note. Own depiction

The introductory questions were of a classification nature, i.e., they dealt with demographic indicators of gender, education, and age. From all the collected questionnaires, the answers were filled in by 309 women (64%) and 174 men (36%) (see Table 2). The larger number of female responses in the research can be well-founded by the fact that their interest in shopping for cosmetics products (where the examined product of this research belongs) is higher compared to men. According to Liu et al. (2013), females spent more money on online drugstore shopping compared to males. This data is also in compliance with the statistical analysis of Slovak bank SLSP (2016), according to which Slovak females pay notably more in these types of stores than Slovak males and are of higher popularity for females.

Moreover, according to a big representative survey in Slovakia, Slovak females tend to spend more time observing the products and impulsively buy also those they did not come to buy. On the other hand, Slovak males are focused on their shopping list (Čas, 2019). This observation aligns with the time each gender spent on the questionnaire. While median value for men was 2:57, women took more time, and their median value was 3:21.

In continuation to another demographic variable, age was divided into four groups. First, Generation Z (age 18-25) consisted of 309 participants (64%), second group Generation Y (age 26-41) involved 103 participants (21%); third, Generation X (42-57) consisting of 44 respondents (9%) and last group, baby boomers (58-76), 27 participants (6%). In more detail, it was examined that respondents from the younger generation (Generation Z and Generation Y) preferred participating in the research compared to older generations (Generation X and Baby boomers). The reason behind this might be due to the fact that the questionnaire was in the online form, and Generation Z was growing up with the technology, while their daily existence was dependent on connection with the digital world (Margitová, 2022). This generation has its importance in the research mainly due to its high purchase power in Slovakia, which will tend to grow in the following decade (Šramková & Sirotiaková, 2021).

The last demographic variable is related to the highest achieved education of the respondents. From the collected data, most of the respondents (255) have accomplished a high school degree or diploma. The second largest group (116) has completed university education level 1 (bachelor), and the third-largest group (105) has accomplished university education level 2 (masters). Moreover, four respondents have primary education, and three have finished higher than master's university level. In a more concrete view, it can be seen that the majority of the respondents are categorised in secondary education. The potential reason might be due to the fact that according to the census in Slovakia (Sčítanie.sk, 2021), secondary education has the highest representation of people – 43,88%.

4.2 Colour contrast

After demographic questions, respondents were asked to choose one of the two products in each following question. The first analysed pair of recycled packaging samples were uncoloured recycled packaging and packaging with contrasting colours (see Figure 20).

Figure 20

1st pair of samples

Unchanged elements: logo, typography, brand, description, size, layout.
Manipulated elements: contrast colour vs. uncoloured.

It was first hypothesized that the package with contrasting colours would be preferred more among consumers than the uncoloured recycled package. As shown in Table 3, the chi-square test indicates a significant association between the colour contrast and consumer preference ($p<.001$). Thus, H1a is supported. Furthermore, demographic factors play a role in this relationship. From the second row examining gender can be seen a significant difference between female and male respondents ($p=.008$). More concretely, the preference for contrasting colours was evident for men, where 124 out of 174 preferred contrast colours while the results for women were not that unambiguous. Namely, almost half of them (126 out of 309) chose the uncoloured recycled package. Gender, therefore, influences preferred colour; however, according to Phi (-.120) and Cramer's V (.120), this effect is not that strong. A significant in this relationship is also age, where the youngest generation did not prefer the contrast colour uniformly (179 out of 309 respondents) compared to other age groups. The age significantly affects the preference for contrast colour ($p=.003$). The strength of this association is medium, as Cramer's V and Phi value was .171. On the other hand, no such linkage exists between education and the

likeness of uncoloured recycled packages. Thus, the demographic variable can be seen as having no impact on the preferred coloured package (p=.440).

Table 3

Preferred colour contrast

Colour contrast

	Customer preference (%)					Chi-square	*p*-value
Contrasting	63.56					35.530	<.001
Uncoloured	36.44						
Gender	Male (%)		Female (%)			Chi-square	*p*-value
Contrasting	71.26		59.22			6.968	.008
Uncoloured	28.74		40.78				
Age	Gen Z (%)		Gen Y (%)	Gen X (%)	Baby Boomers (%)	Chi-square	*p*-value
Contrasting	57.93		68.93	81.81	77.77	14.204	.003
Uncoloured	42.07		31.07	18.19	22.23		
Education	PS (%)	SE (%)	Bachelor (%)	Master(%)	Higher (%)	Chi-square	*p*-value
Contrasting	50	64.31	58.62	66.67	100	3.760	.440
Uncoloured	50	35.69	41.38	33.33	0		

Note. Own depiction

4.3 Colour design

Except for the colour contrast, the colour design was examined as a second hypothesis regarding colour. Figure 21 below shows the examined designs – vivid and sober.

Figure 21

2nd pair of samples

Unchanged elements: logo, typography, brand, description, size, layout.
Manipulated elements: vivid vs. sober design.

Contrary to our observations, the chi-square test reported that consumers do not prefer sober design over more vivid design on a statistically significant level

(p=.092), and H1b is not supported (see Table 4). Moreover, the difference between the gender was not found (p=.526), and both genders preferred vivid packaging slightly more (men – 55.75%, women – 52.75%). Thus, it can be concluded that the preferred, coloured design of the package is not affected by gender. On the contrary, age significantly influences colour design preferences (p=.007). Surprisingly to our assumptions, younger generations (Generation Z, Y) prioritize sober design over vivid, while older generations (Generation X, Baby boomers) show a uniform preference for the vivid package. The chi-square test demonstrates that education does not influence the picked colour design (p=.440). From each level of education, the vivid package prevailed over sober.

Table 4

Preferred colour design

Colour design

	Customer preference (%)					Chi-square	*p*-value
Vivid	53.83					2.834	.092
Sober	46.17						
Gender	Male (%)		Female (%)			Chi-square	*p*-value
Vivid	55.75		52.75			.402	.526
Sober	44.25		47.25				
Age	Gen Z (%)		Gen Y (%)	Gen X (%)	Baby Boomers (%)	Chi-square	*p*-value
Vivid	47.90		35.93	63.63	66.67	12.222	.007
Sober	52.10		64.07	36.37	33.33		
Education	PS (%)	SE (%)	Bachelor (%)	Master (%)	Higher (%)	Chi-square	*p*-value
Vivid	75	52.55	50.86	60	33.33	3.760	.440
Sober	25	47.45	49.14	40	66.67		

Note. Own depiction

4.4 Typography

The following question examined different typography used. On the left picture, humanistic sans serif was used for its readability as a text typeface. On the right side, the script typeface was applied to the package as a display typeface (see Figure 22).

Figure 22

3rd pair of samples

Unchanged elements: logo, colour, brand, description, size, layout.
Manipulated elements: sans serif (text) vs. script (display) typeface.

The second hypothesis predicted a greater preference for the sans serif typefaces. As illustrated in Table 5, there is a significant association between typography and consumer preference, where the overall preference is for the assumed typeface (p=.001). Hence, H2 is supported. The significant difference was perceived in gender (p=.037). More specifically, the female preference for sans serif was not as unified (62.46%) as the male preference (71.84%). It can be concluded that the preferred typography depends on gender. However, Phi and Cramer's V had values of .095; thus, the association between typography preference and gender is not strong. Furthermore, age also statistically influences the chosen typography (p<.001). It can be seen that Generation Z (70.55%) and Generation Y chose the sans serif dominantly. On the contrary, a slight preference for sans serif can be seen in Generation X (54.55%), while Baby boomers preferred script typeface more (66.67%). According to data considering education, this variable does not have an effect on the preferred typeface (p=.119). Thus, the particular level of education and preference for a specific typeface is not associated.

Table 5

Preferred typography

Typography

	Customer preference (%)					Chi-square	*p*-value
Sans-Serif	65.84					48.466	<.001
Script	34.16						
Gender	Male (%)		Female (%)			Chi-square	*p*-value
Sans-Serif	71.84		62.46			4.354	.037
Script	28.16		37.54				
Age	Gen Z (%)		Gen Y (%)	Gen X (%)	Baby Boomers (%)	Chi-square	*p*-value
Sans-Serif	70.55		65.05	54.55	33.33	18.257	<.001
Script	29.45		34.95	45.45	66.67		
Education	PS (%)	SE (%)	Bachelor (%)	Master (%)	Higher (%)	Chi-square	*p*-value
Sans-Serif	25	66.27	70.69	60	100	7.349	.119
Script	75	33.73	29.31	40	0		

Note. Own depiction

4.5 Image

When it comes to the image as a part of graphic elements, participants were asked to choose between photography or illustration (see Figure 23).

Figure 23

4th pair of samples

Unchanged elements: logo, colour, brand, description, size, layout, typography.
Manipulated elements: photography vs. illustration.

Hypothesis H3a predicted that photography would be preferred more among consumers compared to illustration. From the conducted chi-square test, there is a significant association between the chosen image and consumers' preference – H3a is upheld. More in-depth analysis shows that gender does not impact the consumers' preference regarding images (p=.830), where both men (59.2%) and women (60.19%) preferred photography over the illustration. On the other side, age is

having an impact on the chosen image (p=0.18). Except for other groups, generation Z did not choose photography unambiguously (169 out of 309). On the other hand, other generations preferred photography more uniformly (see Table 6). However, Phi, Cramer's V indicates that the strength of the association between age group and the preferred image is weak (.144). Based on information concerning different educational backgrounds can be concluded that this variable does not affect the preference for a particular image (p=.178).

Table 6

Preferred Image

Image							
	Customer preference (%)					Chi-square	*p*-value
Photography	59.83					18.685	<.001
Illustration	40.17						
Gender	Male (%)		Female (%)			Chi-square	*p*-value
Photography	59.20		60.19			.046	.830
Illustration	40.80		39.81				
Age	Gen Z (%)		Gen Y (%)	Gen X (%)	Baby Boomers (%)	Chi-square	*p*-value
Photography	54.70		70.83	68.18	62.96	10.008	.018
Illustration	45.30		29.17	31.82	37.04		
Education	PS (%)	SE (%)	Bachelor (%)	Master (%)	Higher (%)	Chi-square	*p*-value
Photography	50	55.29	65.51	65.71	33.33	6.294	.178
Illustration	50	44.71	34.49	34.29	66.67		

Note. Own depiction

4.6 Layout

Another observed element from the visuals category was the layout. The respondents were questioned which of the layouts they preferred more. The first layout was with a image on the left side (left-aligned), while the other was with the image on the right (right-aligned) (see Figure 24).

Figure 24

5th pair of samples

Unchanged elements: logo, colour, brand, description, size, layout, typography, image.
Manipulated elements: left-aligned layout vs. right-aligned layout.

Table 7 demonstrates a slightly more preference for left-aligned layout (261 respondents) over right-aligned layout (222 respondents), although the conducted chi-square shows no significant differences between the samples. Hence, H3b cannot be upheld. However, the results indicate that gender should be considered in the context of a particular layout (p=.008). Specifically, the left-aligned layout was preferred by men (62.07%); nevertheless, the preference for this layout was not seen among women (49.51%). Phi and Cramer's V (.121) indicate that this association is however weak. In contrast, a significant difference between generations was not found; thus, this variable is not assumed to have an influence on the preferred layout (p=.072). Nonetheless, Generation Z showed the most consistent answer by choosing the left aligned layout (57.93%). Surprisingly, a significant difference between achieved education was observed in the preference of layout (.048). Higher educated respondents preferred the right-aligned layout on the packaging, master level – 59 out of 105 respondents, higher education – 2 out of 3. On the other hand, the left-aligned layout was most popular among people with the lower education levels – primary, 4 out of 4, secondary level – 142 out of 255 and even bachelor level – 68 out of 116.

Table 7

Preferred layout

Layout							
	Customer preference (%)					Chi-square	*p*-value
Left	54.04					3.149	.076
Right	45.96						
Gender	Male (%)		Female (%)			Chi-square	*p*-value
Left	62.07		49.51			7.064	.008
Right	37.93		50.49				
Age	Gen Z (%)		Gen Y (%)	Gen X (%)	Baby Boomers (%)	Chi-square	*p*-value
Left	57.93		49.51	38.64	51.85	6.986	.072
Right	42.07		50.49	61.36	48.15		
Education	PS (%)	SE (%)	Bachelor (%)	Master(%)	Higher (%)	Chi-square	*p*-value
Left	100	55.69	58.62	43.81	66.67	9.603	.048
Right	0	44.31	41.38	56.19	33.33		

Note. Own depiction

4.7 Pattern

Another observing variable was a pattern, where the respondents were asked to choose between concrete (water in men's packaging, rose in women's packaging) and abstract pattern (squares in men's packaging, circles in women's packaging) (see Figure 25).

Figure 25

6th pair of samples

Unchanged elements: logo, colour, brand, description, size, layout, typography.
Manipulated elements: concrete vs abstract pattern.

According to H3c, it was expected to observe the overall preference for the concrete pattern. Table 8 depicts a significant association between pattern and consumer preference (p<.001). From the results, 303 of all respondents (63.73%) preferred the expected pattern; thus, H3c is supported. Following the detailed examination, both

genders preferred the concrete pattern; however, males' answers were more consistent (85.06%) than females (50.16%), setting the gender as a factor significantly influencing the choice of pattern (p<.001). Furthermore, the strength of influence can be specified as medium (Phi, Cronbach's V=.346).

The preference for the pattern is also influenced by age (p=.023), where a more unified choice for concrete pattern shows Generation Z (66.99%) and Generation X (65.91%) compared to Generation Y (51.46%) and Baby Boomers (51.85%). Thus, there is a dependency between the age and choice of pattern; however, considering Phi and Cramer's V, this association is weak (.141). From the results of the education variable, choice of pattern was not associated with different levels of achieved education (p=.270). Thus, we can conclude that education has no impact on pattern preference.

Table 8

Preferred pattern

Pattern							
	Customer preference (%)					Chi-square	*p*-value
Concrete	63.73					31.323	<.001
Abstract	36.27						
Gender	Male (%)		Female (%)			Chi-square	*p*-value
Concrete	85.06		50.16			57.981	<.001
Abstract	14.94		49.84				
Age	Gen Z (%)		Gen Y (%)	Gen X (%)	Baby Boomers (%)	Chi-square	*p*-value
Concrete	66.99		51.46	65.91	51.85	9.555	.023
Abstract	33.01		48.54	34.09	48.15		
Education	PS (%)	SE (%)	Bachelor (%)	Master(%)	Higher (%)	Chi-square	*p*-value
Concrete	100	61.96	67.24	59.05	33.33	5.169	.270
Abstract	0	38.04	32.76	40.95	66.67		

Note. Own depiction

4.8 Shape

Continuing, another choice of options was in the context of the packages' shapes (see Figure 26).

Figure 26

7th pair of samples

Unchanged elements: logo, colour, brand, description, size, layout, typography.
Manipulated elements: cylindrical vs. angular shape.

H4 predicted the respondent's preference for the cylindrical shape of the package. As shown in Table 9, a statistically significant association between pattern and preference was observed ($p<.001$); thus, hypothesis H4 is supported. Moreover, it can be further examined that women were reaching for the first cylindrical choice more than men. Performed chi-test of the association between the genders and shape demonstrated statistically significant difference ($p=.005$). Therefore, it might be concluded that gender has an influence on the preferred shape of the package. Nevertheless, Phi (-.128) and Cramer's V (.128) indicate a weak association between shape and gender. In the context of age, generations Z, Y and X preferred cylindrical shapes and were more consistent in their preference. On the other hand, Baby Boomers were not certain, and they chose both shapes more equally. Despite this fact, the results were not statistically significant, saying there is no difference between genders and preferred shapes ($p=.214$). Furthermore, respondents with primary and higher education were fully consistent with their preference for cylindrical shape, while on the other hand, other education groups were not. As all education groups have chosen the cylindrical shape, the results were not statistically significant ($p=.242$). Therefore, we can conclude that education did not influence the preference for the particular shape of the package.

Table 9

Preferred shape

Shape

	Customer preference (%)					Chi-square	*p*-value
Cylindrical	65.01					43.530	<.001
Angular	34.99						
Gender	Male (%)		Female (%)			Chi-square	*p*-value
Cylindrical	56.90		69.58			7.872	.005
Angular	43.10		30.42				
Age	Gen Z (%)		Gen Y (%)	Gen X (%)	Baby Boomers (%)	Chi-square	*p*-value
Cylindrical	64.40		71.84	61.36	51.85	4.478	.214
Angular	35.60		28.16	38.64	48.15		
Education	PS (%)	SE (%)	Bachelor (%)	Master(%)	Higher (%)	Chi-square	*p*-value
Cylindrical	100	64.70	60.34	68.57	100	5.473	.242
Angular	0	35.30	39.66	31.43	0		

Note. Own depiction

4.9 Certification

In the context of eco-labels, the respondents were asked to choose the certification they preferred (see Figure 27).

Figure 27

8th pair of samples

Unchanged elements: colour, description, size, layout, typography.
Manipulated elements: independent certificate vs. unknown certificate.

According to hypothesis 5a, we expected to examine the strong relation between consumer preference and independent certification. Contrary to our expectations, results indicated no statistically significant relationship between the variables (p=.964). In this line, hypothesis H5a is not supported.

Moreover, as shown Table 10, in both gender groups were approximately even preferences for the certifications. Those data, therefore, indicate that there is no statistical relationship between gender and certification preference (p=.730). On the contrary, age was identified as a significant factor in respondents' preference (p=.003). While the older generation (X and Baby Boomers) preferred unknown certification, younger generations (Z and Y) preferred independent certification slightly more. Thus, an interesting finding suggests that age plays a significant role between consumer preference and the choice of certification (p=.003). In the context of education as the last demographic factor, it can be expected that higher education is positively correlated with the choice of independent certification. However, no such relationship is present. Interestingly, a closer look at the data indicates that all respondents with achieved education of primary school have correctly preferred the independent certification, while on the contrary, respondents with higher education rather preferred the unknown certification. Therefore, inconsistency between the preference and the choice of certification suggests no statistically significant relationship (p=.306).

Table 10

Preferred certification

Certification

	Customer preference (%)					Chi-square	*p*-value
Indepedent	50.10					.002	.964
Unknown	49.90						
Gender	Male (%)		Female (%)			Chi-square	*p*-value
Indepedent	51.15		49.51			.119	.730
Unknown	48.85		50.49				
Age	Gen Z (%)		Gen Y (%)	Gen X (%)	Baby Boomers (%)	Chi-square	*p*-value
Indepedent	53.43		56.31	30.99	22.22	13.973	.003
Unknown	46.57		43.69	69.01	77.78		
Education	PS (%)	SE (%)	Bachelor (%)	Master (%)	Higher (%)	Chi-square	*p*-value
Indepedent	100	49.02	52.59	48.57	33.33	4.825	.306
Unknown	0	50.98	47.41	51.43	66.67		

Note. Own depiction

4.10 Recyclability claims

Following the last pair of questions, the respondents were asked to choose one between two products that had different recyclable claims (see Figure 28).

Figure 28

9th pair of samples

Unchanged elements: colour, description, size, layout, typography.
Manipulated elements: 100% recycled material vs recyclable material.

The last hypothesis predicted that the consumers would prefer precise recyclability claims, in this context, stating *100% recycled material* rather than a label stating *recyclable material*. Data from Table 11 indicated a significant association between consumer preference and recyclability claims ($p<.001$). Therefore, H5b is supported.

Furthermore, both males and females have preferred the first choice, the 100% recycled material label. The results, therefore, indicated that there is no significant relationship between gender and consumer preference ($p=.675$). Following age, results indicate consistency between preferred recyclability claims, as they all preferred and chose 100% recycled material label. Alternatively, age is seen to have no significant influence on the label preference ($p=.317$). Additionally, education did not statistically influence the preference between the labels ($p=.061$). Only respondents with primary education preferred the second option, while the respondents of other education levels preferred the 100% recycled material label. Thus, the analysis presented no significant difference between the education and the consumer preference for particular recyclability claims.

Table 11

Preferred recyclability claims

Recyclability claims

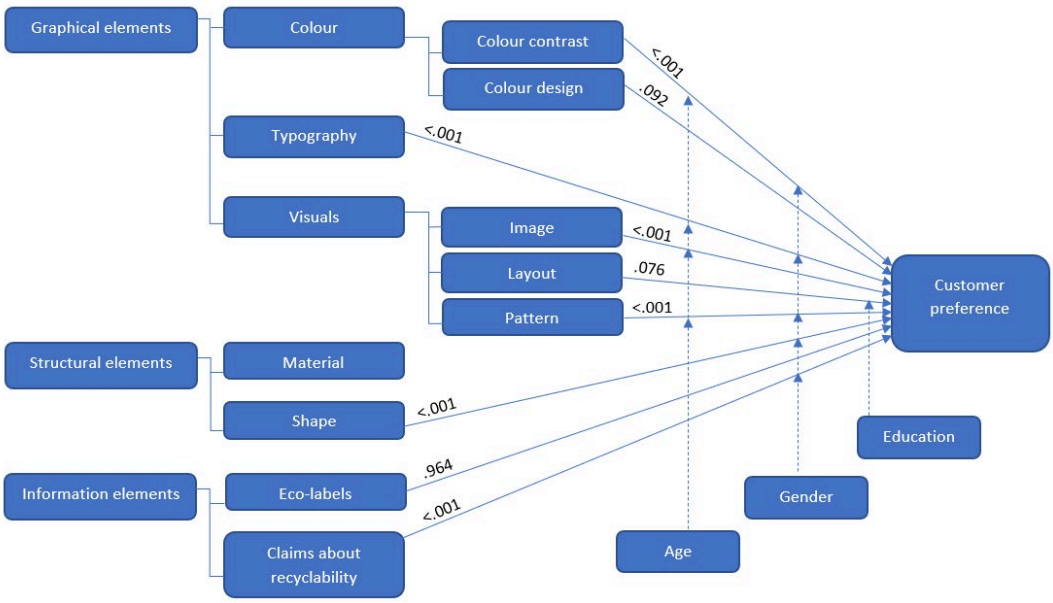
	Customer preference (%)					Chi-square	*p*-value
100% Recyclable	78.26 21.74					154.304	<.001
Gender	Male (%)		Female (%)			Chi-square	*p*-value
100% Recyclable	79.31 20.69		77.69 22.31			.176	.675
Age	Gen Z (%)		Gen Y (%)	Gen X (%)	Baby Boomers (%)	Chi-square	*p*-value
100% Recyclable	78 22		83.50 16.50	70.45 29.55	74.10 25.90	3.526	.317
Education	PS (%)	SE (%)	Bachelor (%)	Master(%)	Higher (%)	Chi-square	*p*-value
100% Recyclable	25 75	77.25 22.75	77.59 22.41	83.80 16.20	66.67 33.33	8.989	.061

Note. Own depiction

Our main findings are summarised in Table 12, showing the p-values of the analysed hypotheses. Moreover, Table 13 shows which hypothesis were supported.

Table 12

Hypothesis model – results



Note. Own depiction

Table 13

Summarisation of the results

H1a:	*Consumers prefer contrasting colours on recycled packaging.*	*Strong Support*
H1b:	*Consumers prefer sober design on recycled packaging.*	*No Support*
H2:	*Consumers prefer sans serif typefaces on recycled packaging.*	*Strong Support*
H3a:	*Consumers prefer photography on recycled products.*	*Strong Support*
H3b:	*Consumer prefer left-align picture on the recycled package.*	*No Support*
H3c:	*Consumers prefer concrete pattern on the recycled package.*	*Strong Support*
H4:	*Consumers prefer cylindrical recycled package.*	*Strong Support*
H5a:	*Consumers prefer independent certifications.*	*No Support*
H5b:	*Consumers prefer precise claims about recyclability on the package.*	*Strong Support*

Note. Own depiction

5 Discussion

5.1 Graphic elements and consumer preferences

Several findings can be concluded from our results. When testing H1a, it was found that there is a strong association between preferred package and colour contrast. This result builds on theories that contrasting colours can grab the attention better (Adams et al., 2012; Hurley et al., 2016) and thus, even recycled packages are more noticeable.

However, a visible difference can be found between women and men. More concretely, women are more inclined to choose the uncoloured recycled package than men. This result can be explained by several factors. Firstly, women are observers when it comes to shopping, while men try to make a decision quickly. Thus, men act quickly and choose the more appealing design, while women decide due to more parameters (Dennis, 2018). Furthermore, Carrigan and Attala (2001), De Pelsmacker et al. (2005), and Niinimäki and Hassi (2011), state that generally, women and the younger generation care more about the environment. From this perspective, the uncoloured option could appear as a more sustainable variant. Accordingly, the younger generation choose uncoloured packaging than older generations. In this regard, it can be expected that education would influence the chosen package. As Aytekin (2014), Casaló and Escario (2018) and Ekinci (2014) observe that higher education is also associated with environmental behaviour. However, the results indicate no significant difference between the level of education and chosen packaging. The reason might be that both packages are recyclable and made sustainably; even the congruency in sustainability and colour can be perceived more in uncoloured packaging.

On contrary to the first colour comparison, the H1b tested two fully coloured packages, neither of which could be associated as more eco-friendly. The results show that neither simple nor complex package is preferred significantly more. As many authors found the difference between colour preferences of males and females (Fortmann-Roe, 2013; Hassani et al., 2018), this hypothesis aimed particularly at colour design – sober and vivid, letting the preferences of specific colours behind. For this reason, for both males and females, we used colours congruent to the

products' scent. However, gender reveals no preference for simple or complex colour design. What is more surprising, the difference is significant between different age categories. Contrary to Waheed et al. (2018), sober, in this context, a more simplistic design is preferred by the younger generation, while older generations prefer the vivid design. The possible explanation for this result might be the ongoing modern trend 'less is more'. The simplicity and tidiness of the design are further examined in research by Abbas et al. (2021) and Uzzi (2021). The authors claim that visual simplicity helps the brand and product obtain perceived quality and mediate the message straight. Furthermore, Favier et al. (2019) explain that simple design is associated with modernity, while complex design is more associated with charm, seniority, and sophistication. Moreover, throughout the years, the researchers came to conclusions that education level and educational background affect the preference for specific aesthetics and colours (e.g., Hanafy & Sanad, 2015; Spaulding, 1955); however, a significant difference was not found in this case. The reason might be due to the limited knowledge about respondents' education as we based our questionnaire on the general audience and not on people who are related to the graphic design industry. From this line, we do not consider the education variable in the following graphic and structural elements.

The findings obtained from testing H2 revealed a plausible association between the typography and consumer preference on recycled packaging. These results relate to the present literature (Adams et al., 2012; Ampuero & Vila, 2006) that the sans serif typeface is more popular and preferred. In line with the current theory, the observed findings could be possibly explained due to the clear readability (Carter, 2002). On the other hand, in terms of gender preference, it was interesting to examine females' preferred script typeface significantly more than males. The potential reason for this observation is the specificity of the typeface, as the script might be perceived as more feminine due to its curves (van Rompay & Pruyn, 2011; Velasco & Spence, 2019). Moreover, males' preference for sans serif could also be explained by its masculinity created by straight, angular form (van Rompay& Pruyn, 2011), legibility and the decreased reading time. Sheedy et al. (2005) explore that cursive decreased the reading speed, and connecting to Dennis et al. (2018), men want to

make a purchase decision faster; therefore, they do not want to spend too much time reading the products' content.

Since the older generation might be vulnerable to the readability of the typeface, we were surprised to examine that there was observed a difference between the age groups. More concretely, younger generations (Z and Y) prefer sans serif typeface while older generations (X and Baby Boomers) prefer the script. These findings add new insight into the previous study realised by Brumberger (2003). The author stated that the age effect on selected typography could not be found due to the insufficient number of participants from different age categories. Differences in our findings might be explained by the various perceptions of personalities of the typefaces, while the older generation liked script typefaces due to their elegancy (Mackiewicz & Moeller, 2004). On the other hand, the younger generation prefer the sans serif typeface because it is perceived as calm and organised (Amare & Manning, 2012).

As predicted, when testing H3a, a significant preference for photography was found among consumers on recycled packaging. This finding is consistent with research by Kovač et al. (2019), where photography of a strawberry was preferred over illustration on the chocolate packaging. The attribution to this also provides Hurley et al. (2016), who examine that consumer prefer package which gives them to see at least some of the product, while the package with just graphic representation (illustration) did not receive enough visual attention. In the context of our researched recycled package, the visual presentation – image can help consumers imagine the scent of the deodorant. Thus, the real photography of roses or sea waves can stimulate the scent's imagination better (He et al., 2017).

Furthermore, the preference for photography was generally examined in both genders. As women prefer the photography of roses on feminine deodorant, males choose the photo of waves over the illustration. However, the important difference is between generations, where the youngest generation choose illustration more than other older generations. This finding gives space for new observations and insights. The possible explanation is that generation Z is the youngest examined generation; thus, they can incline to still prefer fiction and shun reality to some extent (Rancea,

2021). Following Daley (2005), the preference for reality is consistent with increasing age, as humans are taught to find the one correct answer instead of developing imagination. Moreover, when it comes to real products, older generations believe in photography more, while illustration is not that persuasive (Rancea, 2021).

When testing H3b, the results are in line with our expectations as we found a statistically significant difference between the consumer preference and the pattern of the recycled package. During the examination, we can see an exciting occurrence. As in H3a, the H3b also shows that people overall are inclined to choose design closer to reality – photography, concrete pattern, than abstract design – illustration, pattern. The results are also in accordance with Kovač et al. (2019), where the authors examine that the concrete pattern is more preferred. Our data suggest this association while pointing out the interesting fact that males are more confident in their preference for concrete patterns compared to their female counterparts. Examined results could be possibly explained by the different patterns (circles for females, squares for males) used on a recycled package tested between the gender. As was found in the research by Westersman et al. (2013), rounded shapes evoke sweetness; thus, this can be a possible reason why women preferred the packaging with abstract pattern more in comparison to men, who had squares (which evoke sourness and are more disturbing) in their packaging. Furthermore, the difference is in the concrete pattern. While for males, we used water as a reference, for female consumers, the illustration of roses was used as a reference.

A statistically significant difference is also present between the age groups and the consumer preference. The data indicate that generations Z and X are more consistent in their preference for concrete patterns than generation Y and Baby Boomers, who are not uniform in answers. Even though the similarities between children and their parents – millennials and boomers (Wesner & Miller, 2008) and generation X and generation Z (The Hook Team, 2019) were found in the research, the reason for their preferences in a particular pattern can only be assumed. Thus, there is room for new insights into this specific finding.

Surprisingly to our expectation, when testing H3c concerning preferred layout, no significant preference between consumers was found. Since the previous research did not consider the demographic data (Rettie & Brewer, 2000; Silayoi & Speece, 2007), this research provides new insights into demographic variables that affect the preference for layout. By looking at the variables, the layout is of significant difference between genders. While men prefer a left-aligned layout, women are not unanimously confident in their preference. The nature of men's shopping can be a reason for their choice of left-aligned design. As they want to decide quickly, they do not want to spend time reading the information but rather check the image. On the other hand, the age of the participants can be seen as having no impact on the preference for the left or right-aligned images. However, education is seen as having an impact on preference in this context. According to our findings, the higher level of education respondents achieved, the more they were inclined to choose the graphic element on the right and textual element on the left. As Slovakia is a country where the reading is from left to right, we can hypothesise that these people prefer reading the information before looking at the image.

5.2 Structural elements

Continuing to the structural factors of packaging, findings from H4 are consistent with Georgakarakou et al. (2020); thus, the cylindrical shape is generally more preferred in examined recycled packaging. This popularity may also be reasoned by the wide usage of cylindrical shapes not just in deodorant packaging but packaging overall (Magnier & Crié, 2015). Nevertheless, the inconsistency between the preferences was found in demographic variables. Female respondents overall preferred the cylindrical shape more than males. According to Gal and Wilkie (2010), the male inconsistency in preference for the cylindrical package can be reasoned by the fact that rounded edges and cylindrical shape tend to be perceived as feminine, while sharp edges and angular shape has a more masculine design. In their experiments, the authors found that men tend to choose more masculine, thus gender-congruent packages and items. Moreover, Pang and Ding (2021) further examined in their series of studies that consumers prefer curved shapes for feminine brands while for masculine brands, they prefer angular shapes of the package. Furthermore, this result is consistent with H2, where more curved typography was

perceived as more feminine. Our finding builds on these theories by suggesting that gender significantly influences the preference for the specific shape of the recycled package. On the other hand, age does not directly affect the shape preference. This conclusion is consistent with Palumbo et al. (2015) and van Rompay and Pruyn's (2011) findings, who did not consider age as a variable affecting preferred shape.

5.3 Information elements

Following the information elements, when testing H5a, we found no association between the chosen certification and consumers' preferences. This finding contradicts French research by Dekhili and Achabou (2014), who discovered that a self-declaration certificate is effective only for well-known brands. Two main reasons can explain such a result.

Firstly, the consumers have insufficient knowledge about this specific certification. The overall lack of knowledge can be linked with Bednárová and Chovancová (2014), who found that around half of the Slovak population does not know the meaning of corporate social responsibility (CSR). This fact can be reasoned for the overall lack of education concerning this topic. Moreover, there is low participation in green activities in Slovakia (Wendling et al., 2020), and Slovakia does not take initiatives in CSR compared to other countries, e.g., France (Ahmed et al., 2013). Secondly, no unified preference for one of the logos can be reasoned by its information and design. While the independent original logo states 'cruelty-free', this may not directly impact the consumer. Nevertheless, the information 'not tested on animals' is more straightforward. Furthermore, the original design of this logo can be perceived as more confusing, while our made-up logo is more concrete. As was perceived earlier in the hypothesis concerning graphic elements, overall, respondents chose concrete designs over abstract ones. Taufique et al. (2019) also point out that not suitable design may cause the failure of eco-label

Compared to H1, we were surprised to examine that there is no statistically significant association between gender and consumer preference for certification. These findings challenge the present literature associating women with a higher preference for sustainable products (e.g., Arachchi & Managi, 2021; Muresan et al., 2021) and casting speculations on the role of gender in sustainable behaviour. On

the other hand, age impacts the selection of labels. While the younger generation prefers independent certification, the older tend to choose the unknown. One explanation can be that the younger generation liked the more abstract design of certification, as seen in the previous hypotheses. Another speculative answer to this examination might be that the younger generation is more concerned with the environmental issues nowadays (Barr, 2007; Dunlap, 1992; Evans & Jacobs, 1981; Jones & as cited in Macias, 2016); therefore, they are more cautious about the certifications overall. Although researchers are not unified in this statement, several studies claim that older generations act more sustainably (Casaló & Escario, 2018; D'Souza et al., 2007). However, the older generation tends to behave according to different factors such as price, quality of the product or consumer service (Križan et al., 2018), and attributes such as fit and comfort may influence their decision more than eco-labels (Rahman & Kharb, 2022). Brockhoven et al. (2021) agree, saying that the older generation tends to have specific behaviour, which might be unsustainable, that they are not willing to change. Moreover, as the majority of the certifications tend to be in the English language, we assume that the older generation does not properly understand their meaning.

In addition, the education did not provide statistically significant results on label preference. These findings challenge the examined theory (e.g., Daugbjerg et al., 2014; Taufique et al., 2016; Waris & Hameed, 2020), where better education is associated with a better understanding of the certifications. On the other hand, the reason for this finding is due to the low number of respondents with primary and higher education.

Continuing to H5b, the preference for 100% recycled material claim was significant regardless of education, gender or age. This result aligns with Akehurst et al. (2012), who state that ecologically conscious consumer behaviour is not affected by demographic variables. The overall preference for this label can be reasoned by the fact that the labels are in a language that is understandable within the country; respondents can differentiate them and decide correctly. Unfortunately, this also shed doubt about the availability and the transparency of the certifications overall. In other words, if the company alter or develop its own unofficial certificate or the label, respondents might not be able to identify the difference.

6 Conclusion

As it was previously observed, consumers do not perceive recycled packaging as appealing. Thus, the present research aimed to investigate packaging elements (graphic, structural, and information) and their effect on the consumers' preferences towards recycled packaging. The study was based on an experimental survey where respondents were asked to choose between pairs of samples of recycled packaging. The data from Slovak consumers were further analysed, and several findings were discussed.

The first research objective was to determine how graphic elements (colour, typography, visuals) influence consumer preference for recycled packaging. Our findings indicate that sans serif typeface, concrete pattern and real photography prevail and are more preferred by consumers on recycled packaging. On the other hand, the placement of information and picture (layout) in the packaging seems to have no impact on consumers' preferences. Moreover, no clear choice was found in the two samples examining the colour design. One (vivid design) used the gradient of two contrasting colours, and the other (sober design) used one colour-scent congruent colour. However, our findings suggest that colour plays a crucial role in packaging, and colourful packaging is more preferred over typical recycled packaging – brown and white.

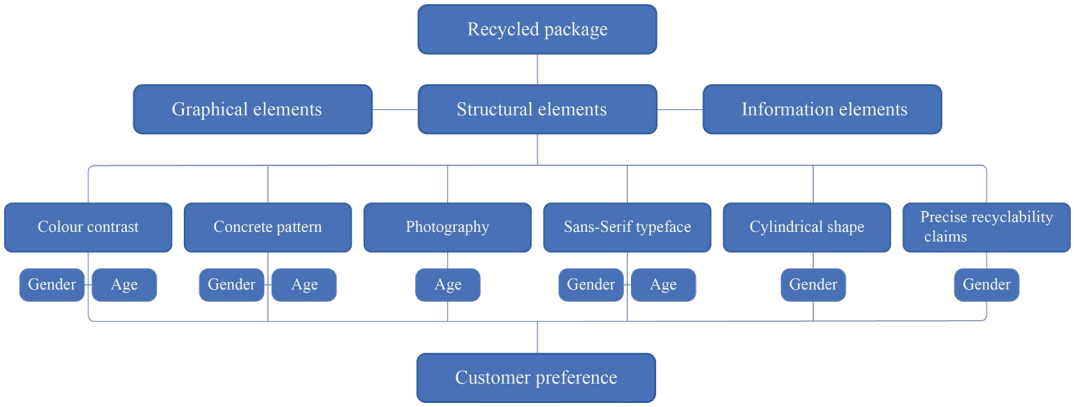
Furthermore, by analysing the second objective regarding structural elements, it was shown that shape plays a significant role in Slovakian consumers' preferences. Thus, our findings indicate that the cylindrical shape was an overall favourite choice for the deodorant packaging.

Last but not least, information elements as a third objective revealed interesting insights. In the context of the first examined certification, it was shown that Slovak consumers do not prefer independent certification labels on the product, and half of them chose an unknown certificate label. Thus, we conclude that consumers do not make their choices on the basis of independent certification labels on the packaging. On the other hand, the recyclability claims were shown to have a significant impact on consumer preferences. Interestingly, a claim about 100% recycled material was uniformly preferred over a claim that only stated recyclable material.

Except for general preferences, demographic variables age and gender were significant to consider with respect to how our informants perceived the recycled packages. On the other hand, education is seen as having no impact on consumer preferences towards this packaging. The model below (see Table 13) shows which demographic variables to consider when developing recycled packaging. This table moreover shows the preferred elements of examined packaging.

Table 14

Preference model



Note. Own depiction

6.1 Theoretical contribution

As seen from the literature review, there is not much research on sustainable packaging. This research, therefore, contributes to this gap and provides information for more sustainable packaging, being the first to take into account the aesthetics and the role of packaging in attracting consumers' attention. Last but not least, it contributes by providing information from an EU country that has proven to be one of the worst in environmental performance. Despite this fact, consumers in this country have shown clear preferences for 100% recycled packaging. On the other hand, results indicated limited knowledge about certifications. This fact is interesting insight as previous research also emphasised little consumer knowledge about sustainable packaging, even though the examined consumers were from countries performing better in environmental performance.

6.2 Managerial implications

As indicated in previous research, sustainable packaging is a challenge for a variety of businesses because it beats the cost and other issues in a fast-changing environmental situation.

Despite the fact that plastic production is a low-cost solution, this material is unsustainable as it is difficult to recycle in practice. Thus, companies will gradually be pushed to replace it with other packaging materials. One of the possible substitutes for plastics is discussed in this research, and that is a package made of recycled paper.

This research, therefore, brings new information to companies performing in Slovakia and points out that with the right choice of graphic, structural and information elements, recycled paper-based packaging can attract the consumer's attention. It shows the need to evaluate demographic factors that can contribute to a company's choice of packaging design.

In addition to the benefits for companies, this research is helpful for graphic designers, as it provides an alternative perspective of how to present graphic elements that appeal to Slovakian consumers. From this perspective, graphic designers represent a primary impetus for a more sustainable future, as they are the ones who can design packaging that, in addition to communicative products, does not harm the environment.

This research gives room for a new look at recycled, more sustainable packaging that can bring new value to the company. Although this paper was designed explicitly for deodorant packaging due to its simple design, it turns out that recycled packaging has a future for other types of products such as food or even liquids. In addition to recycled packaging, a second layer, such as a corn-based biopolymer, can be applied to such product types to ensure that the product is hygienic. We believe that this research will help companies focus on the development of packaging that contributes to a sustainable future.

6.3 Limitations

Several limitations of this study need to be further discussed. Firstly, we used non-probability sampling within our research concerning the data collection. In this line, despite our data providing satisfactory outcomes, we are not able to generalise our findings to the whole research population, in this context, the Slovak people. Additionally, we used the convenience sampling method to collect our data. Even though that convenience sampling is associated with the easy to access respondents,

there are many sources of bias that we cannot influence. For instance, who responds to the questionnaire, how many times and how accurately the participants respond.

Secondly, our limitations relate to the demographic variables – education and age. Regarding education, we were able to collect an insufficient number of respondents, which restrained us from conducting adequate data analysis. Moreover, in the context of age, we found that there is not an equal number of participants between these groups, which could cause altered data analysis.

Thirdly, limited time caused that we were able to design only two variants of the recycled package, one for males and one for females. In this line, designs could be perceived as repetitive, with minor or no adjustments. Thus, the previously viewed packaging could possibly influence the preference of the packaging.

Fourthly, we cannot speak of our proposed packaging as sustainable, as we focus only on its material and do not take into account the whole process (manufacturing, transport, and end-of-life management) (LCA).

In addition, we further believe that a greater number of certifications and eco-labels could be provided as there might be other, more known variants that would bring different outcomes to the research.

6.4 Recommendations for further research

This work brings new topics that may be of interest to future research. First of all, since our study did not deal with the manufacturing process of packaging, the following analysis can address the packaging regarding the whole LCA process.

Thus, it can propose solutions for its minimal impact on the environment, not only in terms of material. It would be interesting to focus on packaging logistics or packaging using the least amount of material.

In a similar vein, as there are currently many alternatives that replace plastics, it would be interesting to examine how such options can be recycled efficiently, what are the current barriers to their low popularity and how these barriers can be avoided.

Moreover, this study focused only on one country. Thus, it would be interesting to see a cross-cultural study examining the extent to which consumers' views on recycled packaging differ between countries.

Since it is different to see the packaging on a computer screen and feel it in their hands, it is possible to conduct focus group research with real-life models where people would discuss how they perceive such a product.

Furthermore, during our research, we examined the preference of adult people toward the recycled package. From this point, there is also space to conduct research on children and youth populations, as they might have a different perception of such packages while having the power to influence older generations toward preference and buying intention.

In addition, research focused on graphic designers would be interesting, as they play a crucial role in the implementation of more sustainable variants, not only packaging but also other creations. Research on them could focus on how they seek to apply sustainable ideas, what barriers they have and how they prevent such barriers.

In line with the info elements, we recommend conducting research with different or multiple certifications and eco-labels and comparing the findings in an extended context. Relating to the findings reported in this study, we observed a lack of knowledge among the Slovak respondents regarding certifications and eco-labels. In this line of research, one might consider conducting studies on the information and education provided in Slovakia and examine to what extent Slovak organisations, advertising organisations, education institutions or government care and pay attention to CSR and sustainability. Moreover, we also cast suspicion on the understandability of certifications and eco-labels as most of them are in the English language. We, therefore, advance a suggestion to conduct research that would focus on distribution certifications and eco-labels in the native language of the specific country.

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Appendix A: Questionnaire Slovak version

Milí účastníci,

Sme študentmi Dalarna University vo Švédsku a touto cestou by sme Vás chceli požiadať o vyplnenie nasledujúceho dotazníka, ktorý je časťou výskumu pre našu magisterskú prácu.

Cieľom našej práce je zistiť, do akej miery dokáže obal vyrobený z recyklovaného materiálu a jeho dizajn (napr. farba, štýl písma, vzor) ovplyvniť preferencie SLOVENSKÝCH zákazníkov.

Dotazník je dobrovoľný, anonymný a odpovede budú použité a analyzované len za účelom tejto magisterskej práce. V dotazníku nie je žiadna odpoveď správna alebo nesprávna, preto Vás prosíme odpovedať čo najúprimenšie.

V prípade akýchkoľvek otázok nás môžete kontaktovať na emailovej adrese: h21andca@du.se

Ďakujeme Vám veľmi pekne za Váš čas a vyplnenie nášho dotazníka!

Andrea Čabajová & Jakub Košík

Dalarna University, Sweden

INŠTRUKCIE

Z dvoch obrázkov si, prosím, vyberte ten, ktorý sa Vám páči viac.

Následne ohodnoťte každú možnosť počtom hviezdičiek od 1 (najmenej atraktívna) do 5 (najviac atraktívna).

V prípade, že sa Vám páčia obe možnosti rovnako, označte akúkoľvek z nich a v nasledujúcej odpovedi im, prosím, dajte totožný počet hviezdičiek.

Vyplnenie tohto dotazníka by nemalo trvať dlhšie než 5 minút.

1. ***Váš vek***

2. ***Vaše najvyššie dosiahnuté vzdelanie***

    a. *Základné*
    b. *Stredoškolské (maturita, výučný list)*
    c. *Vysokoškloské prvého stupňa*
    d. *Vysokošklolské druhého stupňa*
    e. *Vyššie vysokoškloské*

3. ***Vaše pohlavie***

    a. *Muž*
    b. *Žena*

4. ***Ktorý z dvoch pánskych deodorantov na obrázku preferujete viac?***

5. ***Možnosť 1***
   Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

   ★★★★★

6. ***Možnosť 2***
   Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

   ★★★★★

7. Ktorý z dvoch pánskych deodorantov na obrázku preferujete viac?

8. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

Možnosť 2

9. *Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1*- najmenej, 5*- najviac)*

★★★★★

10. Ktorý z dvoch pánskych deodorantov na obrázku preferujete viac?

11. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

12. Možnosť 2

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

13. Ktorý z dvoch pánskych deodorantov na obrázku preferujete viac?

14. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

15. Možnosť 2

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

16. Ktorý z dvoch pánskych deodorantov na obrázku preferujete viac?

17. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

18. Možnosť 2

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

19. Ktorý z dvoch pánskych deodorantov na obrázku preferujete viac?

20. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

21. Možnosť 2

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

22. Ktorý z dvoch pánskych deodorantov na obrázku preferujete viac?

23. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

24. Možnosť 2

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

25. Ktorý z dvoch pánskych deodorantov na obrázku preferujete viac?

26. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

27. Možnosť 2

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

28. Ktorý z dvoch pánskych deodorantov na obrázku preferujete viac?

29. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

30. Možnosť 2

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

31. ***Ktorý z dvoch dámskych deodorantov na obrázku preferujete viac?***

32. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

33. Možnosť 2

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

34. ***Ktorý z dvoch dámskych deodorantov na obrázku preferujete viac?***

35. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

36. Možnosť 2

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

37. *Ktorý z dvoch dámskych deodorantov na obrázku preferujete viac?*

38. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

39. Možnosť 2

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

40. ***Ktorý z dvoch dámskych deodorantov na obrázku preferujete viac?***

41. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

42. Možnosť 2

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

43. ***Ktorý z dvoch dámskych deodorantov na obrázku preferujete viac?***

44. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

45. *Možnosť 2*

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

46. *Ktorý z dvoch dámskych deodorantov na obrázku preferujete viac?*

47. *Možnosť 1*

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

48. *Možnosť 2*

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

49. *Ktorý z dvoch dámskych deodorantov na obrázku preferujete viac?*

50. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

51. Možnosť 2

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

52. *Ktorý z dvoch dámskych deodorantov na obrázku preferujete viac?*

53. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

54. Možnosť 2

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

55. ***Ktorý z dvoch dámskych deodorantov na obrázku preferujete viac?***

56. Možnosť 1

Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1- najmenej, 5*- najviac)*

★★★★★

Možnosť 2

57. *Ohodnoťte atraktívnosť možnosti 2 z predošlej otázky. (1*- najmenej, 5*- najviac)*

★★★★★

Appendix B: Questionnaire English version

Dear participants,

We are students at Dalarna University in Sweden, and in this way, we would like to ask you to fill in the following questionnaire, which is part of the research for our master's thesis.

The aim of our work is to find out how can the packaging made of recycled material and its design (e.g., colour, font style, pattern) influence the preferences of SLOVAK consumers.

The questionnaire is voluntary, anonymous and answered and analysed only for the purpose of using this master's thesis. The answer to the questionnaire is not correct or incorrect, so please answer as honestly as possible.

If you have any questions, you can contact us at the e-mail address: h21andca@du.se

Thank you very much for your time and for filling out our questionnaire!

Andrea Čabajová & Jakub Košík

Dalarna University, Sweden

INSTRUCTIONS

From the two pictures, please choose the one you like more.

Then rate each rating option from 1 (least attractive) to 5 (most attractive).

If you like both options, mark any of them, and in the following answers, please give them the same evaluation.

This questionnaire should not take more than 5 minutes to complete.

1. ***Your age***

2. ***Your highest level of education***

    a. *Primary*
    b. *Highschool (Diploma, certificate)*
    c. *Higher education 1st degree*
    d. *Higher education 2nd degree*
    e. *Another*

3. ***Gender***

    a. *Male*
    b. *Female*

4. ***Which of the two men's deodorants in the picture do you prefer more?***

5. ***Option 1***
   *Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

6. ***Option 2***
   *Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

7. ***Which of the two men's deodorants in the picture do you prefer more?***

8. ***Option 1***

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

9. ***Option 2***

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

10. ***Which of the two men's deodorants in the picture do you prefer more?***

11. ***Option 1***

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

12. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

13. Which of the two men's deodorants in the picture do you prefer more?

14. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

15. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

16. Which of the two men's deodorants in the picture do you prefer more?

17. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

18. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

19. Which of the two men's deodorants in the picture do you prefer more?

20. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

21. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

22. Which of the two men's deodorants in the picture do you prefer more?

23. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

24. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

25. Which of the two men's deodorants in the picture do you prefer more?

26. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

27. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

28. Which of the two men's deodorants in the picture do you prefer more?

29. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

30. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

31. Which of the two women's deodorants in the picture do you prefer more?

32. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

33. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

34. Which of the two women's deodorants in the picture do you prefer more?

35. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

36. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

37. Which of the two women's deodorants in the picture do you prefer more?

38. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

39. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

40. Which of the two women's deodorants in the picture do you prefer more?

41. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

42. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

43. Which of the two women's deodorants in the picture do you prefer more?

44. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

45. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

46. Which of the two women's deodorants in the picture do you prefer more?

47. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

48. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

49. Which of the two women's deodorants in the picture do you prefer more?

50. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

51. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

52. Which of the two women's deodorants in the picture do you prefer more?

53. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

54. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

55. Which of the two women's deodorants in the picture do you prefer more?

56. Option 1

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

★★★★★

57. Option 2

*Rate the attractiveness of option 2 from the previous question. (1 * - least, 5 * - most)*

Appendix C: Graphic Designer as game changer?

A graphic designer is a person who works with symbolic and visual communication to transform ideas and visual solutions through graphic elements, for instance, colours, typography or images, through print as well as digital media (Dziobcenski & Person, 2017). However, the role of the graphic designer is changing, while they can be positioned in a variety of other roles such as innovation management, business strategy, branding or service design (ibid.). In addition, also social as well as environmental responsibilities of the graphic designers started to be questioned. Victor Papanek was the first who mentioned their environmental and social duties in the early 70s. He remarked that graphic designers do not pay sufficient attention to social engagement in design (as cited in Sherin, 2008). Jedlička (2010) imposes that 70-90% of newly designed products fail because of inadequate strategy approach of the companies. In more detail, the author states that companies do not pay enough attention to offering more than the competition and do not present themselves as a contributor to better tomorrow. In the light of the previous findings, Holdway et al. (2002) add that graphic designer should be positioned at the top of the environmental game, as they can influence consumers' behaviour towards social and environmental sustainability. Thus, eco-minded graphic designers have been highlighted as necessary for a sustainable world.

As presented from various sources, nowadays, the graphic designer holds the responsibility for minimalising the ink coverage, choosing recycled materials and educating the consumers about lifecycle issues (Dougherty, 2008; Jedlička, 2010; Sherin, 2008). Jedlička (2010) further mentioned that sustainable manners do not relate just to the product but also to a choice of a supply chain, where the designer should consider and choose the best suppliers and converters. However, the real possibilities for graphic designers in the supply chain might be often limited. In this line, the better option might be to adequately use design elements to communicate with the consumer properly and distribute the knowledge and drive the buying intention.