

Designer's Guide for Healthy Food Packaging Design Concepts after Covid-19 Pandemic

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ABSTRACT

Staying healthy has become increasingly important since the outbreak of COVID-19. People are becoming more concerned about their food and beverage intake while implicitly believing that "healthy is not tasty" at the same time. Many studies also paid attention to additional elements in packaging and their influence on consumer purchasing decisions, such as health and eco-friendliness claims. Thus, this study aimed to provide practical guidance for designers on its effective implementation in the post-COVID-19 era, particularly for healthy food products. To understand packaging design for healthy foods in today's market, this study used two main methods starting with direct observation of select healthy food and beverage items available in Thailand to ensure contextual relevance since several studies were conducted outside the Southeast Asia region, followed by a questionnaire addressed to Thai consumers to investigate the importance of packaging design elements influencing consumer purchase decisions. Our findings revealed shifts in the importance of packaging design elements. Graphics and colors were initially believed to make a great impression and stand out from all other similar products, but now, consumers place a higher priority on the appearance of food products in the packaging. Health claims are also more important than attractive colors. This study also gives insights into other packaging design elements, including material, shape, and size. Therefore, this article is relevant to those designers or other scholars interested in studying design, marketing, and communications issues.

Keywords: Packaging designs, Designer's guide, After Covid-19 pandemic

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Introduction

Nowadays, food trends during the COVID-19 pandemic have been influenced by health-conscious consumers. More people are looking for food and beverage products to consume that will help them maintain their immune systems and improve their overall wellness through the presence of healthy components such as vegetables, fruits, and various foods made from plant-based protein [1]. Meanwhile, when purchasing daily foods or beverages, consumers frequently believe that if something tastes good, it may be unhealthy, and vice versa [2]. Furthermore, the evaluation process for food products begins even before actual tasting [3]. Thus, it becomes a challenge to create packaging designs for food products in this situation. Marketers must consider packaging as a one-way medium of communication between the product and the consumer at the time of the first purchase [4], while the average duration of time spent deciding whether or not to buy groceries or make purchase decisions is 8.5 seconds [5].

In addition, information regarding the correlation between packaging design elements and consumers' purchase decisions of the packaged product has been discovered in a number of earlier studies available in public reports and published literature. Several studies were appointed as references in enriching the study material in this review. were obtained from *Science Direct*, *Taylor & Francis Online*, *Wiley Online Library*, *Emerald*, *Sage Publication*, *Mendeley*, *Research Gate*, and *others*. All the references were collected by manual screening; included in the review were read, notes taken, and key themes identified. The following sections reflect this categorization: packaging designs, food products, and consumers' expectations. A total of 34 papers met the inclusion criteria and were then selected for the final analysis.

Table 1 described packaging design as a creative business combining physical packaging and written communication elements in terms of shape, structure, material, color, image, typography, and design, as well as product information, in order to market the product [6–9]. A recent research claimed that packaging designs include both non-verbal and verbal elements [10]. Materials, colors, graphics, sizes, and shapes are examples of nonverbal elements, whereas labeling, brand information, and other information relating to product usage, expiration dates, ingredients, volume, weight, and disposal on packages are examples of verbal elements. It also indicates that studies on how packaging influences purchase decisions have been around for a long time. After the COVID-19 pandemic existed In several countries, some studies have been done on the packaging and how it affects taste expectations, health, and environmental friendliness at the same time. However, there is not much discussion on this issue in Thailand yet, whereas there may be certain differences among customs, cultures, and habits that could influence the cues received in the minds of consumers as well. Therefore, direct observation and a questionnaire addressed to the Thai market were conducted to ensure their relevance.

This background leads to the idea that a summary of knowledge on these subjects is required for designers' guidance as packaging design is becoming more important in today's market, particularly since we move into this transition phase to the post-COVID-19 era onwards.

Table 1 Literature review

Author(s)	Year	Country	Product(s)	Packaging Design Elements	Healthy Claim	Environmentally Friendly	Taste Expectations	Quality Perceived	Purchase Decision
Bausell et al.	2004	USA	Medicine	Size				<input type="checkbox"/>	
Silayoi & Speece	2004	Thailand	General product	Size					<input type="checkbox"/>
Ampuero & Vila	2006	Spain	General product	Graphics & Text				<input type="checkbox"/>	<input type="checkbox"/>
Deng & Kahn	2009	Brazil	Snack bars	Layout					<input type="checkbox"/>
One decade before the pandemic									
Ahmadi	2013	Iran	General product	Size			<input type="checkbox"/>		
Ngo et al.	2013	British & Colombia	Fruit juices	Shape			<input type="checkbox"/>		
Otterbring et al.	2013	Sweden	Potato chips	Graphics & Text					<input type="checkbox"/>
Schuldt	2013	New York	Candy bar	Color	<input type="checkbox"/>				
Adam & Ali	2014	Pakistan	UHT Milk	Typography					<input type="checkbox"/>
Kobayashi & Benassi	2015	Brazil	Coffee Powder	Graphics					<input type="checkbox"/>
Tu, Yang, and Ma	2015	China	Spicy bean curd	Color			<input type="checkbox"/>		
Vladić et al.	2015	Serbia	Tea	Shape				<input type="checkbox"/>	<input type="checkbox"/>
Huang & Lu	2016	Canada	Potato chips, ice cream, iced tea, cereal, yogurt, & milk	Color	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
Mai et al.	2016	German	Chocolate snack	Color	<input type="checkbox"/>		<input type="checkbox"/>		
Velasco et al.	2016	UK	General product	Shape			<input type="checkbox"/>		
Krishna et al.	2017	USA	General product	Shape, Text & Graphics	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
Pinto et al.	2017	Brazil	Snack bars	Material	<input type="checkbox"/>				
Tijssen et al.	2017	Netherlands	Dairy drink and sausage	Color	<input type="checkbox"/>				
Sabo et al.	2017	Croatia	Cereals & candy	Material	<input type="checkbox"/>				<input type="checkbox"/>
Schulte-Holierhoek et al.	2017	Netherlands	Yogurt	Color	<input type="checkbox"/>		<input type="checkbox"/>		
Seo & Scammon	2017	USA	Fictitious brand of energy drink	Color		<input type="checkbox"/>			
Steenis et al.	2017	Netherlands	Tomato soup	Material		<input type="checkbox"/>			
Mead & Richerson	2018	USA	Potato chips and nutritious snack bar	Color	<input type="checkbox"/>				
Ferreira	2019	France	Chocolates	Material					<input type="checkbox"/>
Covid-19 pandemic breakout									
de Kerpel et al.	2020	Belgia	Sweets and potato chips and chocolate	Material	<input type="checkbox"/>				
Gil-Pérez et al.	2020	Spain	Nuts	Shape			<input type="checkbox"/>		
Pibernik et al.	2020	Croatia	Tea	Material		<input type="checkbox"/>			
Sawyer et al.	2020	Orlando	General product	Typography					<input type="checkbox"/>
Sousa et al.	2020	Brazil	Coffee	Shape			<input type="checkbox"/>		
Ye et al.	2020	Random country	Snacks	Material	<input type="checkbox"/>		<input type="checkbox"/>		
Di Cicco et al.	2021	Netherlands	Orange juice	Graphics			<input type="checkbox"/>	<input type="checkbox"/>	
Malešević & Stančić	2021	Bosnia	Cookies	Shape					<input type="checkbox"/>
Sucapane et al.	2021	Canada	Plant-based meat	Color	<input type="checkbox"/>	<input type="checkbox"/>			
Schifferstein et al.	2022	Netherlands	Orange juice, muesli bar, plain yogurt	Typography	<input type="checkbox"/>	<input type="checkbox"/>			

Methodology

The overall step in this study used the exploratory design method. This design starts with qualitative research, which is the type of research used to investigate, find, describe, and explain the qualities or features of social influences that cannot be explained, measured, or described using quantitative research [11]. First, an observation was conducted of some healthy food and beverage products sold in supermarkets and convenience stores in Thailand, such as 7-Eleven, Tesco Lotus, Big C, P&P Food Market, Agro Outlet, Tops Market, Kieng, and healthy food shops in Khon Kaen, Thailand, within one week from March 21 to 27, 2022, taking into account that these products sold in these places are also available in other cities in Thailand.

Then, the questionnaire was conducted online using a Google Form. The population of this study were Thai consumers. The sampling technique used was simple random sampling because researchers considered it a homogeneous population. The criteria range from 20 to 39 years old, considering people at this age tend to be active, financially independent, and concerned about their food intake. In addition, healthy food is very popular among younger adults [12]. A total of 103 Thai respondents who met the criteria were successfully collected from September 09 to October 09, 2022. However, no participant was excluded from the study on these grounds.

The questionnaire used was divided into three sections. The first section was about respondents' characteristics. Participants are initially asked about their general information, such as gender, age, current location, and current diet, to determine their responses. A questionnaire is a checklist form. In the second section, participants were directed to answer how much they agreed with the statements submitted. A 5-point Likert scale was used in this study. This study addressed the indicators to determine whether changes in behavior were experienced during the pandemic, as follows:

Q1: I really pay attention to my food intake to stay healthy during the current covid-19 pandemic.

Q2: When I must choose between the same two products, I buy the one with the health claim (organic/meat-free/gluten-free/low fat/no sugar/high fiber/...).

Q3: I am trying to reduce meat consumption to protect health and the environment.

Q4: I have switched completely to organic/meat-free/plant-based products.

In the third section of the questionnaire, participants were asked to give a rating of several elements in the packaging design according to the preferences of consumers at the time of purchase. The elements were ranked from 1 to 9, with 9 being the lowest position and 1 being the highest ranking, meaning it is the most essential element for consumers. As the expert emphasized, the packaging design elements mentioned in this study include non-verbal elements such as color, product appearances, material, graphic design, shapes, and size, while verbal elements refer to product information, namely flavor/taste information, health information, and eco-friendly information, as well as brand information (logo).

Then, the data in this study were analyzed using Microsoft Excel 5.0 and SPSS 28 software for statistical analysis (licensed to Khon Kaen University). For the primary analysis, we calculated descriptive statistics. The interpretation of the data from responses in Section 2 was as follows:

Table 2 Likert-Scale Interval

Likert-Scale description	Likert-Scale	Likert-Scale interval
Strongly disagree	1	1.00 – 1.79
Disagree	2	1.80 – 2.59
Neutral	3	2.60 – 3.39
Agree	4	3.40 – 4.19
Strongly agree	5	4.20 – 5.00

Meanwhile, the interpretation of the data from Section 2 was conducted by ranking them from the highest mean value (rank 1) to the lowest mean (rank 9). However, the ranking 1 to 9 were converted into scores with - and + prior to calculating the mean of the responses, as shown below:

Table 3 Rank Conversion

Rank 9	Rank 8	Rank 7	Rank 6	Rank 5	Rank 4	Rank 3	Rank 2	Rank 1
-4	-3	-2	-1	0	+1	+2	+3	+4

Research Ethics

This research is preliminary research from the thesis research section that has passed ethical considerations based on the Khon Kaen University Human Research Ethics Committee granting clearance for this research project with submission number HE663059.

Results and Discussion

1. Healthy Food Trends

The questionnaire was spread out across Thailand, with a total of 103 participants. Table 4 illustrates that a large portion of participants were in northeastern Thailand, and most of the participants were female. The data above also reveals that it meets the criteria; none of the replies were younger than 20 or older than 39 years old. In addition, the global COVID-19 pandemic also influenced Thai people's preference for foods that can maintain their immune systems and improve their wellness. All at once, sustainable food and beverage products are growing in popularity as more people desire to eat healthier and become more aware of the environmental impact of meat as well as ethical issues regarding animal welfare [13]. Table 4 also displays the eating habits of the participants during this pandemic. As much as 1 participant claimed to be a vegetarian who did not eat meat or animal protein,

3 participants were vegans who did not eat meat but still ate other animal-derived foods, and the largest portion were flexitarians, with 55 participants.

Table 4 Respondent Characteristics

Respondent Characteristics		Total	Percentage
Location	North-eastern	60	58.25%
	Central	22	21.36%
	North	10	9.71%
	South	6	5.83%
	East	5	4.85%
Gender	Female	71	68.93%
	Male	31	30.10%
	Prefer not to say	1	0.97%
Age	20 - 29 years old	85	82.52%
	30 - 39 years old	18	17.48%
Eating Behavior	Vegetarian	1	0.97%
	Vegan	3	2.91%
	Flexitarian	55	53.40%
	Not at all	44	42.72%

This shows that more than half of Thai people, namely 57.28%, are trying to reduce their intake of animal protein. The remaining 42.72% showed no change in diet during the pandemic. It was also confirmed with agreement as shown in table 5. Thai respondents agreed that they pay attention to their food intake to stay healthy during the current COVID-19 pandemic, and when they were asked to choose between the same two products, they would like to buy the one with the health claims. However, when they were asked about their behavior in trying to reduce meat consumption to protect health and the environment, they chose a neutral answer instead, leading to disagreeing answers, and most of them had not switched completely to organic, meat-free, or plant-based products.

Table 5 Healthy food trends

Thai Responses	Mean Scores	<div>Extremely Disagree ← → Extremely Agree</div>				
		1	2	3	4	5
I really pay attention to my food intake to stay healthy during the current covid-19 pandemic	4,14				●	
When I must choose between the same two products, I buy the one with the health claim (organic/meat-free/gluten-free/low fat/no sugar/high fiber/...)	4,01				●	
I am trying to reduce meat consumption to protect health and the environment	3,12			●		
I have switched completely to organic/meat-free/plant-based products	2,73		●			

2. Importance of Packaging Design Elements

Over the decade, graphics and colors have consistently occupied the most significant elements influencing consumer decisions [14,15]. However, the COVID-19 pandemic has accelerated the transition to a more digital world. 67% of all consumers claimed to have switched their shopping preferences to online shopping more than ever before, despite online shopping's lack of physical product experience [16].

Table 6 Packaging Design Elements Ranking by Consumers

Packaging Design Elements	Scores	Rank Position
Product Appearances	1.1456	Rank 1
Materials	0.7184	Rank 2
Graphic Designs	0.6214	Rank 3
Health Information	0.5728	Rank 4
Colors	0.3592	Rank 5
Flavor/Taste Information	0.0777	Rank 6
Sizes & Shapes	-0.4951	Rank 7
Logo	-1.2136	Rank 8
Eco-Friendly Information	-1.7864	Rank 9

The findings from our questionnaire indicated shifts in the importance of packaging design elements as shown in table 6. Respondents ranked product appearance as the most critical factor, followed by materials and graphic designs, while color ranked fifth, with sizes and shapes, logos, and eco-friendly information in the last three positions.

Product Appearance

As consumers become accustomed to predicting the packaged product at the point of purchase, there is a growing demand to see the product even without opening the package. This can be carried out through the inclusion of product photos [17]. Packaging featuring photos of food items was associated with a perception of higher cost, whereas less expensive products often featured photos of individuals [8], and actual product photos also have a greater influence on consumer preferences than illustrations [18]. This preference for product photos is particularly relevant to several healthy food products. It was observed in this study that the trend of using product photos is the most preferred at this time.

Furthermore, product photos can also set a positive mood and enhance consumers desires. Di Cicco et al. conducted follow-up research in 2021 on orange juice goods by modifying image aspects (texture attributes) on their packaging, which revealed that it could affect consumer perceptions of taste and quality in packaged products [19]. In line with them, our observation found that there are many products that pay more attention to textured images as well (see figure 1).

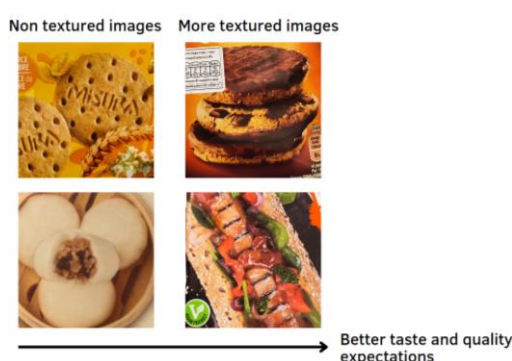


Figure 1 Overview of non-textured vs textured image on consumer expectations

Materials

Material is a second element that consumers pay attention to, whereas it is the most crucial element when designing a package to serve the product's safety and preservation properties to extend its shelf life. It is possible that some products require plastic, cardboard, and glass. Even some packaging materials must be designed to withstand sub-zero temperatures or high microwave temperatures. As a result, the use of materials in each package cannot be generalized. There is a significant difference in the market that is apparent on the surface. Some products have a glossy surface, while others have a matte surface. Thus, this review focused on the effects of glossy and matte surfaces on the packaging.



Figure 2 Overview of glossy vs matte surface package on consumer expectations

Based on the healthy products we observed, many products are switching to a matte surface rather than a glossy surface. Glossy packaging looks tastier than matte, although it is considered less healthy since it perceives fatty and sugary products [20,21]. With all of that, it stands to reason that certain healthy snacks in the Thai market that continue to utilize glossy packaging do so in an effort to present their goods as more appealing ones with tasty and appetizing tastes (even though they are healthier than other snacks without health claims). Meanwhile, other products use a matte surface to attract among eating healthy food consumers. However, if consumers have become familiar with expecting healthy foods with matte packaging and unhealthy foods with glossy packaging, it is necessary to prove whether glossy packaging will be rejected by health-conscious consumers or not since some plant-based products that are considered healthy and environmentally friendly in the current market continue to have glossy surfaces on their packaging as well.

Graphics

Graphics assist consumers in locating their preferred brands and products, and if they do not have a strong brand preference, graphics at least retain their attention to certain products for evaluation [14]. In other words, graphics on packaging help to distinguish a product, preserve its uniqueness, and personality, as well as emphasize the product so it stands out on the shelves. In 2009, Deng & Kahn discovered the bottom-heavy association. The match between the image and its position influences product heaviness preferences in consumers' minds. Participants considered the product images on the top and left lighter than the images on the bottom and right of the packaging (heavy). Furthermore, textual elements could be detected faster when placed on the left side, whereas pictorial elements could be detected faster when placed on the right side [23]. It can be concluded that consumers will prefer packaging designs that are light and easy to look at and read.

Our observations found that there are many products that pay more attention to the placement between the pictorial and textual elements. For elongated packaging (portrait), more textual elements are placed on the top side of the design, and pictorial elements are placed on the bottom side of the design because of the natural tendency of humans to apply the law of gravity to visual space. As for the wider packaging (landscape), more textual elements are placed on the left side of the design, and pictorial elements are placed on the right side of the design because of the culture of reading from left to right.

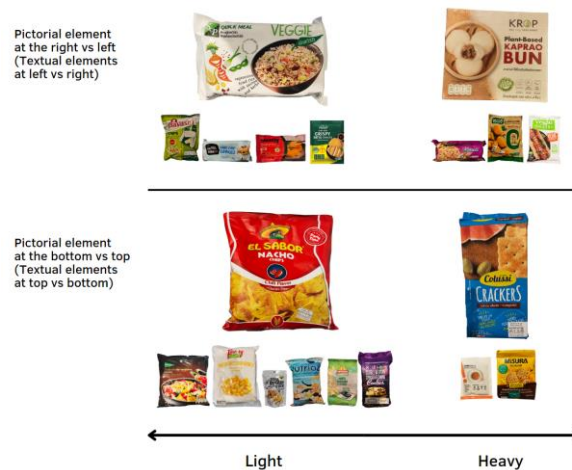


Figure 3 Overview of placing pictorial and textual elements affect consumer navigation

Product Information

Before purchase, consumers generally claimed to pay attention to the labeling on the front of the package [10]. Based on several samples of healthy food products observed in this study, it showed that the front packaging usually contains information about its benefits, such as taste and health claims. While along with the spread of COVID-19 and the current trend toward healthy food, consumers are also highly interested in products that have nutritional information and health claims on the packaging [24]. This is also in line with the study findings that health information is the fourth element to be considered and taste information is the sixth element.

According to [25], information in packaging is categorized into two elements, namely emotional elements (such as its tastiness) and rational elements (such as its healthiness), where a product's emotional elements (such as its tastiness) are considered more fluent when they are placed at the bottom of the packaging rather than at the top of the packaging designs, whereas information about a product's rational elements (such as its healthiness) is more fluent when it is placed in the upper part of the packaging rather than the lower. Following the observations in this study, the products available on the market have mostly implemented this concept.



Figure 4 Overview of placing rational and emotional elements on packaging designs

Colors

When consumers walk down the supermarket aisles, they usually see a variety of products in different kinds of packages and different colors [26]. Color could elicit feelings and emotional responses in a variety of consumers [27]. For example, a product packaged in red was perceived as spicier than that packaged in yellow, green, and white [28]. Moreover, the cool color (such as blue) is appropriate for utilitarian foods since it serves practical purposes such as being inexpensive, low in calories, or high in nutritious content, while the warm color (such as red) is more suitable for hedonic foods that place more emphasis on pleasure than health [29].

It leads to the conclusion that warm colors, such as red, are more frequently used to convey the level of spiciness. In this case, a darker color means spicier. The blue color, on the other hand, is commonly used to package the original product, which has a standard taste level, while green is typically associated with bitter flavors (such as green tea). In the case of the snack product, this research found tortilla chips with wasabi-flavored packaging in green colors (see figure 5), while wasabi is known to be spicy. This may be to point out the color of wasabi. However, it raises the question of how this product measures up to consumer expectations. Will consumers notice that this is a spicy chip product with wasabi flavor? Or even not spur the level of spiciness of the product at all.

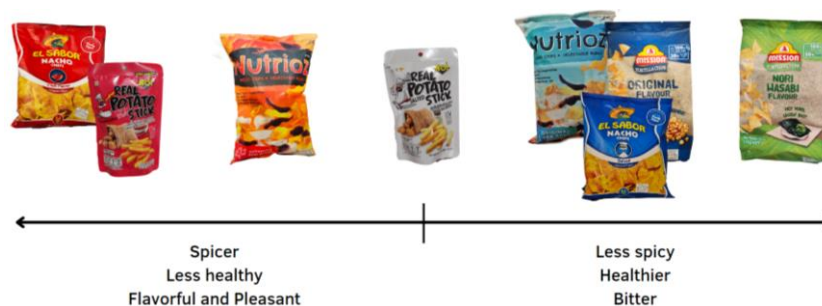


Figure 5 Overview of warm colors vs cold colors package on consumer expectations

Meanwhile, there are many hedonic foods nowadays with health claims. To impersonate them as healthy food, they were light and pale color, even though they were perceived as less tasty [30,31]. A number of market biscuit product samples (see figure 6) demonstrate how each one competes to display health claims. The overall impression of products with gluten-free and sugar-free claims (right side), which use light, vibrant, and low-saturation colors, causes the product to look less sweet. In contrast, products with dietary fiber claims, such as multigrain and whole wheat (left side), appear to retain their sweet taste while displaying bright, vibrant, and saturated colors. Aside from these factors, packages with brighter and more saturated colors were more attractive to consumers [26].



Figure 6 Overview of regular colors vs pale colors package on consumer expectations

Along with many consumers who are looking for healthier foods and are concerned about environmental issues, consumers are becoming smarter in their product selection due to the variety of products on the market. As a result, green is becoming more popular since it is considered to improve health perceptions [32] and be more environmentally friendly [33] compared to red and white. Based on our observations, healthy food is not only about less sugar, less fat, and other plant-based products, but also meat alternatives manufactured from plants, which appear to be admired by many consumers nowadays. It seems that there are already a variety of alternative meat products available under various brand names (see figure 7). Green-colored packaging refers to plant-based products since it is thought to enhance health perceptions and be more environmentally friendly. Although the actual impact is not greater on the environment, products packaged in green are still considered more environmentally friendly than red (which refers to meat) [33,34].

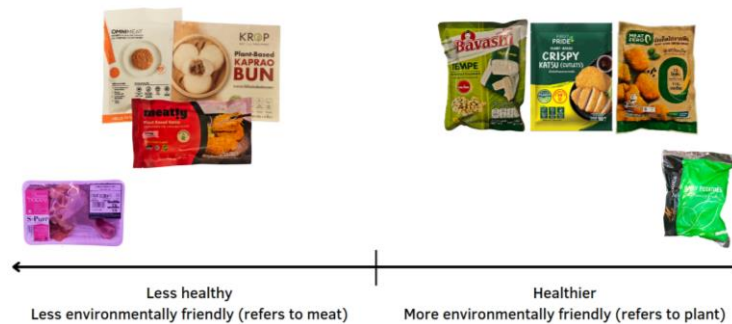


Figure 7 Overview of plant-based (meat alternatives) products packaged with red vs green color

Size and Shapes

Consumers interact with size and shape to judge volume and economic value. Consumers with smaller families prefer smaller packages, while large packages imply product waste for them and could increase product consumption. On the other hand, consumers will prefer small packages over large packages when products have a shorter expiration date [14,25,35,36]. In other words, the size and shape of the packaging also depend on product features and the target market [37].

However, this gives them a bias since consumers often refuse to read size information on packages [38]. They infer how much the content of the packaged product is based on size and shape.

Consumers consider more elongated packages (tall containers) to be larger and have more content than shorter (but wider) containers [39], even though it is not as large as they had expected [25].

For example, it would be more visible in liquid products, with this study using cough syrup containing herbal ingredients as an example (Figure 7). Products with elongated packaging look larger than those with widened packaging. If observed, these two products each have the same size. Besides being considered to have more content, a study conducted on medicine products also found that larger packages could also be considered to have higher quality [40].



Figure 8 Overview of herbal cough syrup with wider vs taller container

Typography

Typography could also influence consumer purchase decisions [41]. As can be observed, products often use typography to make them stand out from the crowd (see figure 8). Unique typography could evoke expectations about packaged products such as playfulness, sophistication, modernism, futuristic, and so on [42].

However, besides aesthetics, the most important aspect of typography is legibility and ease of reading for audiences with limited attention and visual acuity [27,42]. Thus, the purpose of typography in packaging design is to reduce the amount of time people spend looking for a brand by making the product easier to find and identify when displayed. The proper typography could also demonstrate their product's quality and price. For example, bold, huge, roman, and upper-case with expanding characters were typically used for premium products, whereas serif and sans-serif typographies were associated with affordable products. Sans-serif typography conveys a serious brand, making it ideal for emphasizing health claims and organic characteristics. Meanwhile, handwritten typography perceives handmade products as having small-scale production [8,43].



Figure 9 Overview of product with different typography

Some observed healthy food packaging designs appear to have experimented with this role. The typography used varies greatly. A combination of serif and sans-serif fonts is used to explain product information, while decorative fonts are mostly used to highlight a brand on a logo. Most alternative meat products (see figure 10) use a combination of serif and sans-serif typography to implicitly highlight healthiness and environmentally friendly expectations. They use sans serif on "veggie sausages" and "meatless" stimuli to emphasize that, despite being a meat product, it is made meat-free. Furthermore, they use serif typography to imply that this meat alternative is made from organic ingredients (no animals are used), making it more environmentally friendly.



Figure 10 Overview of plant-based product using sans serif and serif typography

Conclusion and Recommendation

To sum up the previous arguments after conducting this research, there are seven highlights that were offered to be able to guide designers when designing packaging, especially for healthy food products. They were:

1. Product appearance: There is a need to emphasize texture in photos of food surfaces, such as highlighting the freshness of products by the presence of orange blossoms or showcasing the broken biscuits and their powder, to enhance the sensory experience for consumers.

2. Material: The packaging material must be able to protect the product well, and the addition of a matte layer can convey healthy and environmentally friendly perceptions.

3. Graphic design: The arrangement of the pictorial and textual elements should take into account the human natural tendency, either following the principles of gravity within visual space or cultural reading patterns. This aids consumers in easily navigating packaging design elements.

4. Product Information: Emotional information, such as taste appeal, should be positioned towards the bottom of the packaging, while rational information, such as healthiness claims, should be placed towards the upper part. Meanwhile, eco-friendly information is not really paid attention to through text; it can be effectively conveyed through color implementation.

5. Color: Green is suitable for plant-based food products, while red is more suited to meat products. Moreover, pale and light colors are perceived as healthier and more environmentally conscious. However, an excess lower saturation color may convey the perception of being less tasty and unflavored.

6. Size and Shapes: These two aspects significantly influence consumers' volume perceptions. For instance, consumers will think that elongated packages have more volume than wider ones.

7. Typography: Sans-serif typography works for highlighting health claims, while serif and sans-serif typography also work well to highlight environmental claims. Decorative fonts, on the other hand, are commonly employed for logo design.

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