Content Analysis of Health Product Packaging Design

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Table of Contents

Executive Summary

This report aims to explore ***what constitutes a prototypical package design for health food brands in Denmark***. It does this by analysing 562 packages of newly launched products in Denmark for a period of 3 years (2012-2014) across six product categories (yogurt; bread products; sweet and savoury biscuits; breakfast cereals; carbonated beverages; and juice).

The results of the analysis show that <u>package design of health positioned food brands does differ from those that are not positioned as healthy</u>. As such, on top of information elements, graphic and structural elements are used in a consistent manner in the design of health positioned food brands. If a prototypical package of a health positioned brand would exist that would be on a package that had the keyhole label, in white colour, light/faded colour shade, displaying nature imagery, being in an angular and straight shape form, and in a plastic material. However, it should be noted that such a prototypical package design should not be universal, but should account for product category specificities and which is the dominant package design characteristics in that category.

The implications of this report are the following:

    a) <u>to enhance a product's image certain package design elements should be used</u>. In the case of a healthy food positioned brand, this should not just depend on informational elements such as health claims and labels, but also take into account graphic and structural elements.

    b) <u>these package design elements should not be used in isolation, but should be used on top of the health claim/label to enhance the brand's health image</u>. These elements have additional characteristics, such as those are being noticed more easily and elicit emotions to consumers.

    c) <u>if these elements convey healthfulness in isolation (i.e. consumers produce unconscious responses), then apart from the positive effect (i.e. helping consumers make unconscious health choices), it could also have a negative effect</u>. For example, if consumers make

unconscious choices, a product being designed using the prototypical package elements and is not healthy would easily mislead them.

1   Introduction

Packaging has often been characterized as the "silent salesman" within a retail store, and thus it plays an essential role for the branding strategy of a business (Silayoi & Speece, 2007; Underwood & Klein, 2002). Its role is dual, and apart from its functional role (i.e. to preserve and store the product), packaging has a communicative role. In this respect, packaging helps to communicate certain product characteristics (e.g. brand values, product messages) and break through the visual clutter (i.e. create attention) within the retail store (Orth et al., 2010; Underwood & Klein, 2002). In the case of food packaging design is even more important, because it is characterized with several brands and increased competition (>30,000 brands are found in supermarket) that fight to attract consumers' attention.

At the same time increased competition on the "healthier" and "better for you" foods market forces marketers to find effective ways to convey brand values to consumers. To this end package design plays an essential role. The most straightforward choice for marketers is to use package design elements that communicate healthfulness in a direct, explicit manner. This could be in the form of verbal claims or labelling symbols. In fact, existing literature has addressed this topic extensively by investigating consumers' response to nutrition information (Andrews et al., 2011; Grunert & Wills, 2007), health claims and labels (Lähteenmäki, 2012). While this is essential, package design also involves other considerations besides the straight-forward decisions regarding health claims, health labels and nutrition information. For example literature shows that other package design elements, such as colours (Schuldt, 2013), imagery (Chrysochou & Grunert, 2014) and size (Ordabayeva & Chandon, 2013), influence consumers' perceptions.

When it comes to which package design elements, are used to signal a product's healthfulness and position the brand as such, little is known. Besides some anecdotal evidence and common knowledge (e.g. light colours might be used to signal light products), there is little insight into what represents a typical package design for healthy food brands and what are the package design elements mostly used by marketers to convey healthfulness. This report aims to address this.

1.1 Aim and objective

The aim of the present report is to explore ***what constitutes a prototypical package design for health food brands in Denmark***.

This is done by addressing the following two objectives:

a) Explore package design elements in food package design of healthy food brands;

b) Identify if prominent package design elements exists in the design of healthy food brands.

2 Background

Following theories of Gestalt psychology and their contribution on part-whole perceptual differences, several studies have approached package design from a holistic perspective (Orth & Malkewitz, 2008). According to this approach, consumers' first impression of a package is awakened by its holistic appearance, meaning that response is derived when all elements of a package are blended together, in contrast to when these elements are presented in isolation. However, research focus concerning package design more often revolves around the elements that a package is composed of, taking an atomistic perspective (Rettie & Brewer, 2000; Silayoi & Speece, 2007; Underwood, 2003). According to this approach, an element of package design becomes salient to consumers, who in turn evaluate it separately affecting their overall response (Bloch, 1995; Orth & Malkewitz, 2008). Although we acknowledge the importance of the holistic perspective of package design, this report builds on the latter approach.

A look into the relevant literature indicates that there are various approaches to classifying the elements of package design. For example, Silayoi and Speece (2007) classifies them as either **informational** (information about the product, slogan, and labels) or **visual** (graphics, colour, imagery, shape, and size). On the other hand, Underwood (2003) classifies them as either **graphic** (colour, typography, image) or **structural** (shape, size, material). The first classification categorizes structural and graphic elements in the same block (visual), while the second classification fails to take informational elements into account.

In regards to health communication, distinguishing among these three categories is important. Informational elements are those that position the food product as healthy (e.g. low fat) and represent the basis for the decisions regarding the other package design elements. Furthermore, it is also necessary to distinguish between graphic and structural elements, as they communicate health in different ways. Graphic elements are those printed on the package, offering visual identity to the food product. Structural elements are those that give a form to the food product (e.g. shape, size, material). Although they also contribute to the visual identity of the food product, they are tied to their functional role (e.g. type of product, safety, transportation considerations). Considering this, the present report builds on the classification between **informational**, **graphic** and **structural** elements.

Informational elements are all relevant information sources found on packaging, such as brand name, manufacturer, price, nutrition facts, usage instructions, ingredients, country of origin, and food labels. In general, information elements assist consumers in making informed choices (Silayoi & Speece, 2007) and communicate product values. In regards to health communication, food labels and claims are those elements mostly used, and it is suggested to assist consumers to make more informed and healthier food choices. For example, nutrition information facilitates consumers' understanding of the nutritional content of the food (Grunert & Wills, 2007). In addition research suggests that when health claims and favourable nutrition information is present on the package, consumers' perception of product healthfulness is positively influenced (Kozup et al., 2003).

Graphic elements are elements such as colour and imagery. Colour is an important graphic element, as it has the ability to facilitate recognition of certain product categories, but also to communicate product positioning. In regards to health communication, anecdotal evidence suggests for instance, that lighter colours can be used to signal lighter food products. Another example is the use of white and green colours. White inspires purity and freshness, whereas green communicates down-to-earth, life, and organic, both of each trigger associations with health. To illustrate, one study reports that a candy bar was perceived as healthier when the package had a green as compared to a red calorie label, even though the labels had the same calorie content (Schuldt, 2013). Imagery also plays a significant role in how consumers evaluate a food product.

For example, consumers use pictures on the package to infer intrinsic product attributes, such as healthfulness (Chrysochou & Grunert, 2014).

Structural elements are elements such as shape and material. Shape can offer products identity and can also act as an identifier for a certain product category (Underwood, 2003). Furthermore, it can influence consumers' perceptions and preferences for a food product (Raghubir & Greenleaf, 2006). Other examples of structural elements that might have a role in the communication process are the size and materials used for the package. For example, the relative size of a package can influence consumers' perception about food product quality (Yan et al., 2014). Material can be used to signal the nature of a food product. For example, using recycled or paper materials could indicate to consumers that a food product as more natural.

Following the aforementioned description it is evident that these three categories work in a different manner in terms of how explicitly or implicitly they communicate the value of health (see Figure 2-1). As such, informational elements communicate the message more explicitly. Graphic elements carry certain symbolic meanings, which communicate the message in a more implicit way. Structural elements have mainly a functional role, but also have the capacity to connote certain meanings. Therefore, they communicate the message more implicitly.
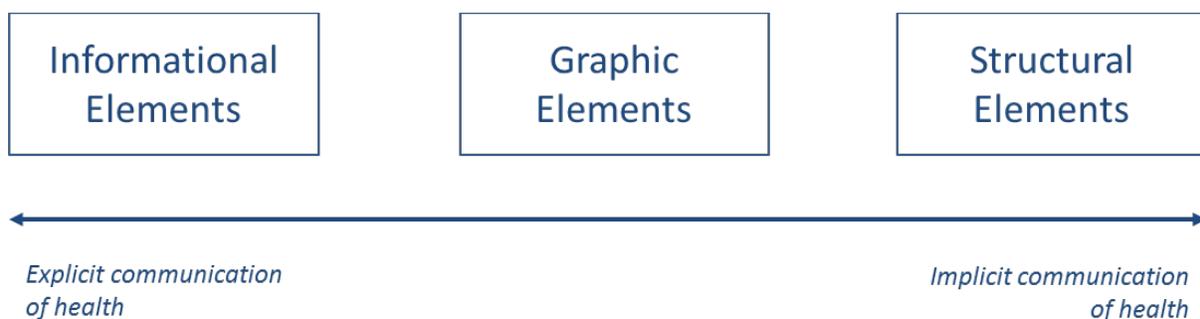

Figure 2-1 Conceptual categorization of health package design elements

3   Methodology

This chapter presents the methodology used in this report. More specifically, it presents the selection of product categories, coding and analytical procedures.

3.1   Product categories

Six products categories were analysed: 1) yogurt; 2) bread products; 3) sweet and savoury biscuits; 4) breakfast cereals; 5) carbonated beverages and 6) juice. The categories were selected based on having a high proportion of products that carried a health product claim (HPC). The products were those that were launched in Denmark between the beginning of 2012 until the end of 2014 (i.e. 3 years), and were registered in the Mintel Global New Product Database (www.gnpd.com). In total, 562 products were identified in the database, out of which 148 (26.3%) carried the category dominant health positioning claim (see Table 2-1).

Table 3-1 Product categories, health positioning claims, and number of products analysed

| Category | HPC* | With HPC* | | Total |
		N	%	N
Yogurt	Low/no/reduced fat	23	29.9	77
Bread products	Wholegrain	48	43.6	110
Sweet and savoury biscuits	Wholegrain	18	18.8	96
Breakfast cereals	Wholegrain	28	46.7	60
Carbonated beverages	Low/no/reduced sugar	11	22.4	49
Juice	Low/no/reduced sugar	20	11.8	170
Total		**148**	**26.3**	**562**

* HPC: Health Positioning Claim.

Source: Mintel Global New Product Database (www.gnpd.com).

The category dominant health positioning claim (HPC) refers to the health-related claim that is carried more frequently in each product category, based on the extracted sample. For yogurt products the HPC was "low/no/reduced fat", for carbonated beverages and juice the claim was "low/no/reduced sugar", while for remaining three product categories (i.e. bread products, breakfast cereals, and sweet and savoury biscuits) the claim was "wholegrain".

3.2 Procedure

A content analysis was conducted for each package. The method is proven to be useful in consumer research (Kassarjian, 1977; Kolbe & Burnett, 1991), including applications in package design (Elliott, 2008). To this end, a coding scheme was developed that was used for data entry purposes. The scheme covered the proposed categories of package elements described earlier: a) informational elements, b) structural elements and c) graphic elements. For each category specific questions and descriptions for the content analysis of each picture of product packaging was developed. In Appendix I the coding scheme is presented. The content analysis of each package was conducted by two independent judges. To further ensure objectivity, both judges were briefed and trained in order to increase familiarity with the coding scheme (Kolbe & Burnett, 1991).

3.3 Statistical analysis

The analysis was conducted by calculating frequencies and proportions for the whole sample of products, as well as for each product category separately. Differences between products with and without the health dominant positioning claim (HPC) were further estimated.

4   Results

Table 3-1 presents the results for all package design elements analysed for the whole sample of products, and for each subcategory (with and without HPC). In Appendix II, results are also presented for every individual product category.

Table 4-1 Distribution of package design elements – aggregated results

	Total (%)	With HPC*(%)	Without HPC* (%)	χ^2	*p*
Informational elements					
HPC front package		73.7			
Other labels					
Keyhole	17.4	**50.7**	5.6	154.17	**0.000**
Calorie content	11.0	10.1	11.4	0.17	0.685
Danish organic	10.7	**16.2**	8.7	6.47	**0.011**
EU organic	10.1	**14.2**	8.7	3.61	**0.057**
Whole grain	7.5	**27.7**	0.2	118.90	**0.000**
GDA	5.2	4.1	5.6	0.50	0.479
Fair trade	0.7	0.7	0.7	0.00	0.952
Graphic elements					
Colour					
White	57.5	60.8	56.3	0.92	0.339
Blue	26.4	26.1	26.2	0.00	0.950
Green	21.0	20.9	21.0	0.00	0.986
Red	20.6	18.9	21.3	0.36	0.547
Yellow	15.7	14.2	16.2	0.33	0.567
Black	15.1	18.2	14.0	1.52	0.217
Orange	13.0	13.5	12.8	0.05	0.825
Brown	9.1	10.8	8.5	0.73	0.392
Pink	7.8	10.8	6.8	2.47	0.116
Purple	4.8	5.4	4.6	0.16	0.690
Colour shade					
Light/faded	48.9	**64.2**	43.5	18.72	**0.000**
Dark/intense	32.2	16.9	**37.7**	21.58	**0.000**
Balanced	18.9	18.9	18.8	0.00	0.983
Imagery					
Presence	89.9	88.4	88.8	0.23	0.629
Product image	79.8	80.5	79.5	0.05	0.817
Nature image	13.4	**19.5**	11.2	5.85	**0.016**
Health imagery	49.9	51.1	49.5	0.11	0.741
Structural elements					
Shape angularity					
Angular	66.0	**77.0**	62.1	10.86	**0.001**
Rounded	34.0	23.0	**37.9**	10.86	**0.001**
Shape form					
Straight	84.2	**88.5**	82.6	2.85	**0.091**
Concave	9.3	6.8	10.1	1.49	0.222
Convex	6.6	4.7	7.2	1.12	0.289
Transparency	41.1	36.5	42.8	1.77	0.184
Material					
Plastic	56.9	**64.9**	54.1	5.15	**0.023**
Board	22.2	18.2	23.7	1.86	0.173
Glass	6.8	0.7	**8.9**	11.80	**0.000**
Metal-based	5.7	4.7	6.0	0.35	0.555
Paper	3.9	**8.8**	2.2	12.66	**0.000**

* HPC stands for Health Positioning Claim

4.1 Informational elements

For 73.7% of the products a HPC was found on the front of the package. Across all product categories, the second most dominant claim after the HPC was the Keyhole (17.4%), followed by the calorie content (11.0%), the Danish organic (10.7%) and the EU organic labels (10.1%). Differences in the labels used between products with and without HPC were found (Figure 4-1). Products with a health related claim had more additional labels such as the keyhole, organic and wholegrain labels.
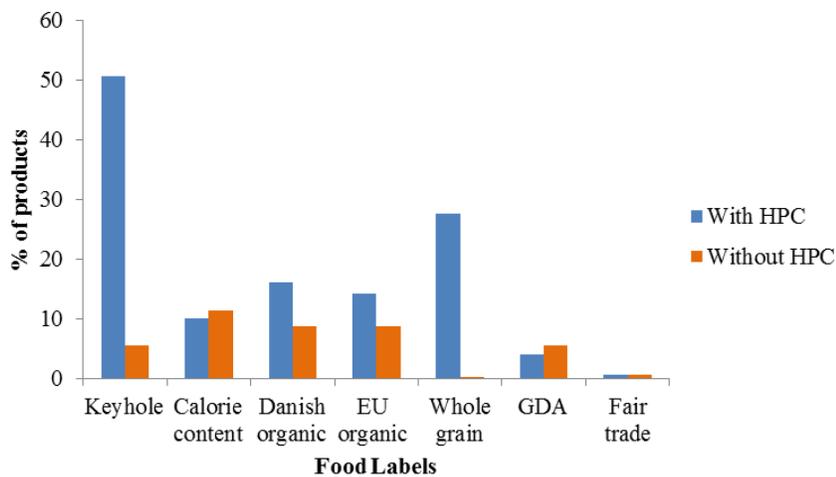
Figure 4-1 Distribution of additional food labels between products with and without an HPC

4.2 Graphic elements

In relation to colour, the majority of products had a white colour (57.5%), followed by blue (26.4%), green (21.0%), red (20.6%), yellow (15.7%), black (15.1%), orange (13.0%), brown (9.1%), pink (7.8%), and purple (4.8%). No significant differences in the use of colours between products with and without HPC were found (Figure 4-2).

In relation to colour shade, the majority of products had a light/faded colour shade (48.9%), followed by dark/intense (32.2%) and balanced (18.9%). Differences between products with and without HPC were found (Figure 4-3). Products with a health related claim had more light/faded colour shade, compared to product without a health related claim that had more dark/intense colour shade.
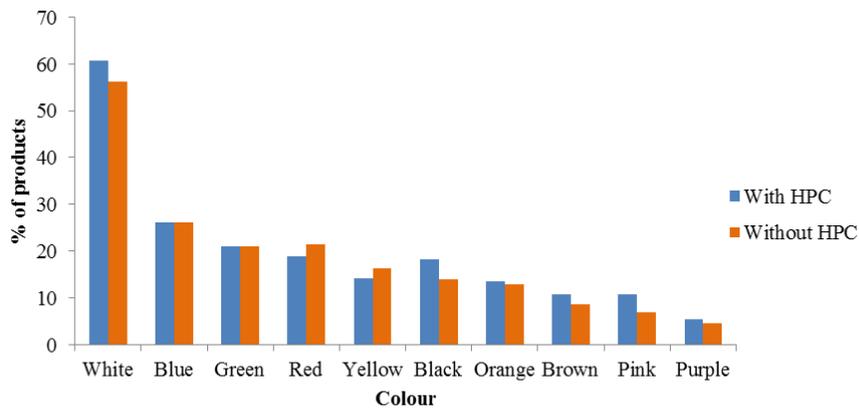
Figure 4-2 Distribution of dominant colour between products with and without an HPC
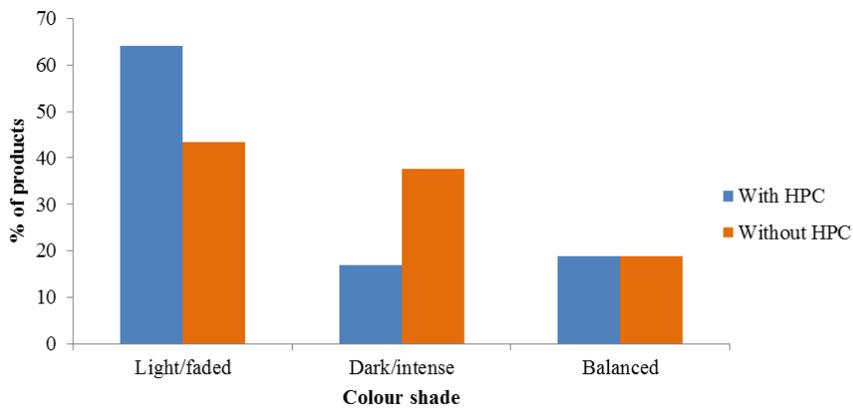
Figure 4-3 Distribution of colour share between products with and without an HPC

In relation to imagery, 79.8% represented the product inside, 49.9% had an image representing health, and 13.4% had an image representing nature. No differences between products with and without an HPC in the presence of an image were found. However, in relation to the type of image use products with a health related claim used more images that represented nature (Figure 4-4).
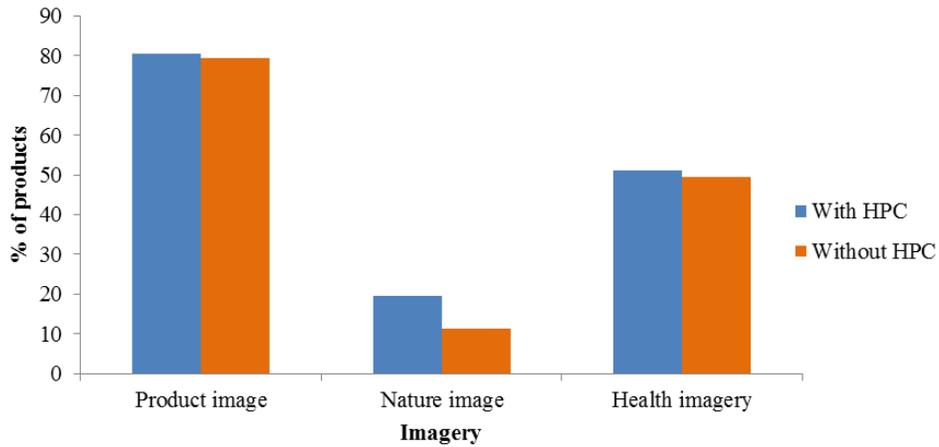
Figure 4-4 Distribution of imagery between products with and without an HPC

4.3   Structural elements

In relation to the shape angularity, 66.0% of the products had angular shape and 34.0% had a rounded shape. Significant differences between the two types of products were found (Figure 4-5). Products with a health claim had more packages with angular shape.
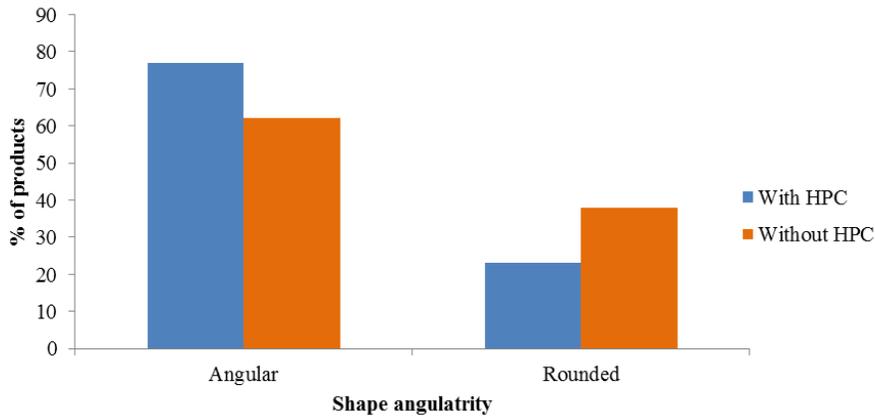
Figure 4-5 Distribution of shape angularity between products with and without an HPC

Regarding the shape form, 84.2% of the products had a straight form, 9.3% a concave form and 6.6% a convex form. Significant differences between the two types of products were found (Figure 4-6). Products with a health claim had more packages with a straight form.
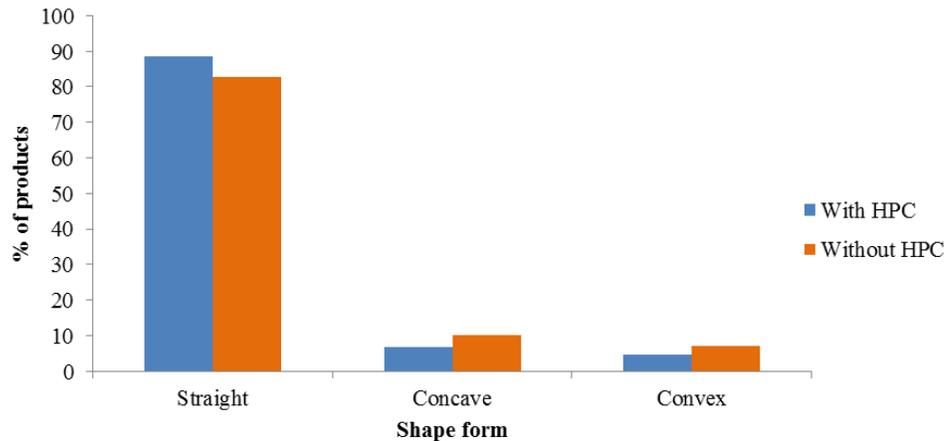
Figure 4-6 Distribution of shape form between products with and without an HPC

With regards to transparency, 41.1% of the products had a transparent package. No significant differences between the two types of products were found. Finally, in relation to package material, the majority of products consisted of plastic (56.9%), followed by board (22.2%) material. Significant differences in the use of material between the two types of products were found (Figure 4-7). Products with a health related claim consisted of more plastic (64.9%) and paper (8.8%) material, compared to products without a health claim that consisted of more glass (8.9%) material.
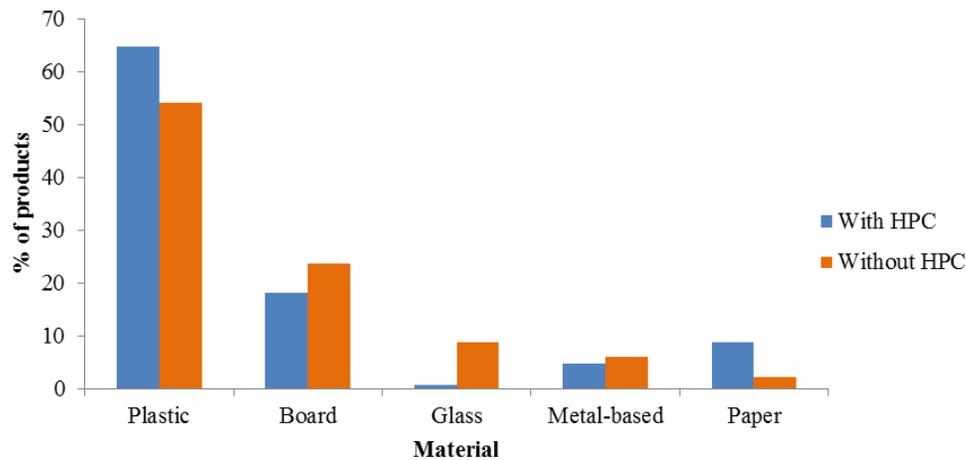
Figure 4-7 Distribution of material between products with and without an HPC

4.4 Differences across product categories

Appendix II presents the results for each product category separately. In summary, in each product category differences in each type of element is observed. These differences reflect that findings are category specific, but at the same time that package design elements do differ between products with and without HPC.

5   Conclusion

The results of the analysis show that package design of health positioned food brands does differ from those that are not positioned as healthy. As such, on top of information elements, graphic and structural elements are used in a consistent manner in the design of health positioned food brands. Furthermore, a health positioned brand is not the one that carries only one health claim, but has also additional product labels. It is evident that the majority of the health positioned brands carried the keyhole label, but also carried other labels such as the wholegrain and the organic ones.

In relation to graphic elements, light/faded colour shade and images of nature are used more often in health positioned food brands. Different colours are also used, but this is more category

specific (e.g. in yogurt products blue is used more often; in breakfast cereals white is used more often). Nevertheless, these differences further reflect some market structure specificities.

In relation to structural elements, angular shape, straight shape form, and plastic and paper material are used more often in health positioned food brands. Similarly, in every category specific differences were observed that reflect market structure specificities.

To sum up, if a prototypical package of a health positioned brand would exist that would be on a package that had the keyhole label, in white colour, light/faded colour shade, displaying nature imagery, being in an angular and straight shape form, and in a plastic material. However, it should be noted that such a prototypical package design should not be universal, but should account for product category specificities and which is the dominant package design characteristics in that category.

5.1 Implications

This report shows that to enhance a product's image certain package design elements should be used. In the case of a healthy food positioned brand, this should not just depend on informational elements such as health claims and labels. A product package should be carefully designed and package elements chosen should convey that the product is healthy. Therefore, marketers should investigate which elements are those used more often in the category to position the product as healthy.

However, some additional considerations should be made. First, these elements should not be used in isolation, but should be used on top of the health claim/label to enhance the brand's health image. These elements have additional characteristics, such as those are being noticed more easily and elicit emotions to consumers. Second, if these elements convey healthfulness in isolation (i.e. consumers produce unconscious responses), then apart from the positive effect (i.e. helping consumers make unconscious health choices), it could also have a negative effect. For example, if consumers make unconscious choices, a product being designed using the prototypical package elements and is not healthy would easily mislead them. This calls for certain policy measures, required to protect consumers from being misled from package design in unhealthy food products.

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APPENDIX I: CODING SCHEME

	Question code	Question	Response type	Explanation
0.	CODER	Coder identification number	Text entry	Each coder assigns a code that identifies him/ herself.
1.	PROD_ID	Product ID	Text entry	ID number of each product.
BLOCK 1: INFORMATIONAL ELEMENTS				
2.	HCL_PRES	Does the product carry the **DOMINANT** health-related claim within the product category?	Yes; No	a) **"Yes"** if the **DOMINANT** health-related claim in the product category is carried by the product; b) **"No"** box if the **DOMINANT** health-claim in the product category is **NOT** carried by the product.
3.	HCL_FRONT	Can you see the category **DOMINANT** health-related claim at the front of this package?	Yes; No	a) **"Yes"** if the **DOMINANT** claim in the product category can be found on the front of the package; b) "**No"** if the **DOMINANT** claim in the product category can **NOT** be found on the front of the package.
4.	POSIT_HCL	Where the category **DOMINANT** health-related claim is positioned **BOTH** vertically and horizontally on the package?	**Vertical dimension**: top; middle; bottom **Horizontal dimension**: left; middle; right	a) **Vertical dimension** **Top** = the claim is positioned in the upper half of the package in its natural position; **Middle** = the claim is positioned in the central part of the package in its natural position ; **Bottom** = the claim is positioned in the lower half of the package in its natural position. b) **Horizontal dimension** **Left** = the claim is positioned in the left half of the package in its natural position; **Middle** = the claim is positioned in the central part of the package in its natural position; **Right** = the claim is positioned in the right half of the package in its natural position.
5.	OTHERLABEL	Are there any other labelling symbols on the front of the package?	Yes; No	a) **"Yes"** if there is **AT LEAST** one other label at the front of the package (e.g. GDA, calorie content, fair trade, organic etc.); b) **"No"** if there are **NO** other labels at the front of the package, besides nutrition information.
6.	WHAT_LABEL	What labelling symbols?	Whole-Grain; Keyhole; Danish Organic; EU organic; GDA; Calorie content; Fair trade; Gluten free; Other	Tick which labels are placed on the front of the pack: a) **"Whole-Grain"**; b) **"Keyhole"**; c) "**Danish organic"**; d) **"EU organic"**; e) **"GDA"**; f) **"Calorie content"**; g) **"Fair trade"**; h) **"Gluten free"**;

				i) **"Other".**

BLOCK 2: STRUCTURAL ELEMENTS				
7.	TRANSPAR	Can you see the product through the package?	Yes; No	a) **"Yes"** if the product inside the package is visible through the package; b) **"No"** box if the product inside is not visible through the package.
8.	SHAPE1	What is the shape of the package?	Angular; Rounded	a) **"Angular"** if the package has PREDOMINANTLY sharp, pointy corners/edges; b) **"Rounded"** if the package is PREDOMINANTLY round or has rounded/soft corners/edges
9.	SHAPE2	Is the shape of the package, in its natural position?	Convex; Concave; Straight	a) **"Convex"** if the package is curved outside on the sides; b) **"Concave"** if the package is curved inside on the sides; c) **"Straight"** if the package is **NOT** curved on the sides.

BLOCK 3: GRAPHIC ELEMENTS				
10.	PACK_COL	Which are the more prominent colours on the package?	White; Yellow; Orange; Red; Pink; Purple; Blue; Green; Brown; Black	Check the prominent colour(s) from the list: a) **"White"**; b) **"Yellow"**; c) **"Orange"**; d) **"Red"**; e) **"Pink"**; f) **"Purple"**; g) **"Blue"**; h) **"Green"**; i) **"Brown"**; j) "**Black"**. **NOTE**: Up to THREE can be chosen, but if NOT obvious, more could be chosen.
11.	COL_SHADE	The colours on the package are predominantly (more than 2/3 of the pack):	Dark and/or intense; Light and/or faded; Half and half.	a) **"Dark and/or intense"** if the colours on the package are more powerful, heavy colours (e.g. intense red, black, dark blue, dark brown, very bright yellow,/orange etc.); b) **"Light and/or faded"** if the colours on the package are more subtle, light colours (e.g. white/whitish, light blue (sky), washed/pastel nuances etc.); c) **"Half and half"** if the mix of dark and light colours is proportional on the package.
12.	IMAGE	Is there an image on the package of this product?	Yes; No	a) **"Yes"** if there is an image on the package; b) **"No"** if there is no image on the package.
13.	PROD_IMG	Is there an image of the product on the	Yes; No	a) **"Yes"** if there is an image of the product on the package;

		package?		b) **"No"** if there is no image of the product on the package.
14.	NAT_IMG	Is there an image of nature on the package?	Yes; No	a) **"Yes"** if there is an image of nature on the package; b) **"No"** if there is no image of nature on the package. **An image of nature** = an image that depicts an object that is not man-made (e.g. landscape, any kind of plant that is not in the composition of the final product, animal that does not classify as a character).
15.	HEALTH_IMG	Would you say that the image on the package communicates healthfulness to a certain extent?	Yes; No	a) **"Yes"** if the image communicates healthfulness to a certain extent – for example, the image could be depicting a training activity (a person running/exercising), wellness (a healthy person enjoying life/nature) – any image that triggers the slightest association with health. b) **"No"** box if the image does **NOT** communicate healthfulness at all.

APPENDIX II: RESULTS BY PRODUCT CATEGORY

Table 5-1 Distribution of package design elements for yoghurt products

	Total (%)	With HPC (%)	Without HPC (%)	χ^2	p
Informational elements					
HPC front package	-	60.9	-	-	-
Other labels					
Danish organic	35.1	21.7	40.7	2.56	0.110
Keyhole	24.7	34.8	20.4	1.80	1.179
EU organic	15.6	4.3	**20.4**	3.15	**0.076**
Calorie content	11.7	17.4	9.3	1.03	0.309
Graphic elements					
Colour					
White	88.3	91.3	87.0	0.29	0.594
Blue	37.7	**52.2**	31.5	2.94	**0.086**
Green	26.0	8.7	**33.3**	5.09	**0.024**
Red	22.1	21.7	22.2	0.00	0.963
Orange	13.0	13.0	13.0	0.00	0.992
Black	10.4	13.0	9.3	0.25	0.618
Yellow	9.1	13.0	7.4	0.62	0.431
Brown	5.2	4.3	5.6	0.05	0.827
Pink	5.2	8.7	3.7	0.82	0.366
Purple	3.9	4.3	3.7	0.02	0.894
Colour shade					
Light/faded	54.5	56.5	53.7	0.05	0.820
Balanced	32.5	39.1	29.6	0.66	0.415
Dark/intense	13.0	4.3	16.7	2.17	0.141
Imagery					
Product image	31.2	43.5	25.9	2.32	0.128
Health imagery	28.6	8.7	**37.0**	6.35	**0.012**
Nature image	23.4	8.7	**29.6**	3.95	**0.047**
Structural elements					
Shape angularity					
Rounded	61.0	56.5	63.0	0.28	0.596
Angular	39.0	43.5	37.0	0.28	0.596
Shape form					
Straight	75.3	73.9	75.9	0.04	0.851
Convex	15.6	13.0	16.7	0.16	0.688
Concave	9.1	13.0	7.4	0.62	0.431
Transparency	9.1	4.3	11.1	0.89	0.345
Material					
Plastic	63.6	65.2	63.0	0.04	0.851
Board	32.5	34.8	31.5	0.08	0.777
Metal-based	1.3	0	1.9	0.43	0.511

Table 5-2 Distribution of package design elements for bread products

	Total (%)	With HPC (%)	Without HPC (%)	χ^2	*p*
Informational elements					
HPC front package	-	91.7	-	-	-
Other labels					
GDA	92.7	**100.0**	87.1	6.68	**0.010**
Keyhole	42.7	**81.3**	12.9	51.64	**0.000**
Wholegrain	34.5	**77.1**	1.6	68.15	**0.000**
EU organic	8.2	12.5	4.8	2.11	0.146
Danish organic	5.5	8.3	3.2	1.37	0.242
Calorie content	2.7	2.1	3.2	0.13	0.715
Graphic elements					
Colour					
White	57.3	58.3	56.5	0.04	0.843
Blue	32.7	35.4	30.6	0.28	0.597
Black	29.1	31.3	27.4	0.19	0.661
Green	20.0	20.8	19.4	0.04	0.848
Red	19.1	12.5	24.2	2.40	0.122
Brown	16.4	20.8	12.9	1.24	0.265
Orange	12.7	6.3	**17.7**	3.22	**0.073**
Yellow	10.2	12.5	9.7	0.22	0.638
Pink	5.5	**12.5**	0.0	8.20	**0.004**
Purple	1.8	4.2	0.0	2.63	0.105
Colour shade					
Dark/intense	33.6	18.8	**45.2**	8.45	**0.004**
Light/faded	49.1	**68.8**	33.9	13.17	**0.000**
Balanced	17.3	12.5	21.0	1.36	0.244
Imagery					
Product image	74.2	69.2	77.6	0.85	0.356
Health imagery	13.4	**25.6**	5.2	8.42	**0.004**
Nature image	10.3	**23.1**	1.7	11.5	**0.001**
Structural elements					
Shape angularity					
Angular	98.2	100.0	96.8	1.58	0.209
Rounded	1.8	0.0	3.2	1.58	0.209
Shape form					
Convex	3.6	0.0	**6.5**	3.21	**0.073**
Straight	96.4	**100.0**	93.5	3.21	**0.073**
Transparency	75.5	77.1	74.2	0.12	0.727
Material					
Plastic	95.5	**100.0**	91.9	4.06	**0.044**
Paper	0.9	0.0	1.6	0.78	0.377
Board	0.9	0.0	1.6	0.78	0.377

Table 5-3 Distribution of package design elements for sweet and savoury biscuits

	Total (%)	With HPC (%)	Without HPC (%)	χ^2	*p*
Informational elements					
HPC front package	-	77.8	-	-	-
Other labels					
Calorie content	13.5	11.1	14.1	0.11	0.738
EU organic	9.4	16.7	7.7	1.39	0.239
Keyhole	7.3	**33.3**	1.3	22.23	**0.000**
Whole grain	4.2	**22.2**	0.0	18.09	**0.000**
Graphic elements					
Colour					
White	59.4	61.1	59.0	0.03	0.868
Blue	34.5	16.7	**38.5**	3.08	**0.079**
Red	31.3	22.2	33.3	0.84	0.359
Black	20.8	22.2	20.5	0.03	0.872
Yellow	16.7	16.7	16.7	0.00	1.000
Green	14.6	**27.8**	11.5	3.10	**0.078**
Brown	12.5	22.2	10.3	1.92	0.166
Orange	10.4	16.7	9.0	0.93	0.336
Colour shade					
Light/faded	40.6	50.0	38.5	0.81	0.369
Dark/intense	38.5	22.2	42.3	2.49	0.115
Balanced	20.8	27.8	19.2	0.65	0.421
Imagery					
Product image	87.4	93.8	85.9	0.73	0.394
Health imagery	11.5	18.8	9.9	1.02	0.314
Nature image	6.9	12.5	5.6	0.96	0.328
Structural elements					
Shape angularity					
Angular	89.6	88.9	89.7	0.01	0.915
Rounded	10.4	10.3	11.1	0.01	0.915
Shape form					
Straight	94.8	94.4	94.9	0.01	0.941
Convex	5.2	5.6	5.1	0.01	0.941
Transparency	27.1	16.7	29.5	1.22	0.270
Material					
Plastic	59.4	55.6	60.3	0.13	0.714
Metal-based	18.8	16.7	19.2	0.63	0.802
Board	6.3	11.1	5.1	0.89	0.345
Paper	3.1	5.6	2.6	0.43	0.511

Table 5-4 Distribution of package design elements for breakfast cereals

	Total (%)	With HPC (%)	Without HPC (%)	χ^2	*p*
Informational elements					
HPC front package	-	78.6	-	-	-
Other labels					
Keyhole	41.7	**78.6**	9.4	29.42	**0.000**
EU organic	23.3	32.1	15.6	2.28	0.131
Danish organic	21.7	**35.7**	9.4	6.10	**0.013**
GDA	18.3	14.3	21.9	0.57	0.448
Calorie content	6.7	3.6	9.4	0.81	0.369
Graphic elements					
Colour					
White	51.7	**67.9**	37.5	5.51	**0.019**
Blue	26.7	21.4	31.3	0.74	0.391
Red	23.3	17.9	28.1	0.88	0.348
Yellow	15.0	7.1	21.9	2.54	0.111
Brown	13.3	3.6	**21.9**	4.33	**0.037**
Green	11.7	3.6	**18.8**	3.34	**0.068**
Pink	8.3	14.3	3.1	2.44	0.119
Orange	6.7	10.7	3.1	1.38	0.240
Purple	6.7	7.1	6.3	0.02	0.890
Colour shade					
Light/faded	51.7	**82.1**	25.0	19.53	**0.000**
Dark/intense	31.7	3.6	**56.3**	19.15	**0.000**
Balanced	16.7	14.3	18.8	0.21	0.643
Imagery					
Product image	98.2	100.0	96.6	0.95	0.330
Health imagery	78.6	**96.3**	62.1	9.73	**0.002**
Nature image	16.8	**44.4**	10.3	8.29	**0.004**
Structural elements					
Shape angularity					
Angular	90.0	89.3	90.6	0.03	0.863
Rounded	10.0	10.7	9.4	0.03	0.863
Shape form					
Straight	93.3	92.9	93.8	0.02	0.890
Convex	6.7	7.1	6.3	0.02	0.890
Transparency	18.3	**71.1**	28.1	4.39	**0.036**
Material					
Plastic	53.3	42.9	62.5	2.32	0.128
Paper	30.0	**42.9**	18.8	4.13	**0.042**
Metal-based	3.3	3.6	3.1	0.00	0.923
Board	1.7	3.6	0.0	1.16	0.281

Table 5-5 Distribution of package design elements for carbonated beverages

	Total (%)	With HPC (%)	Without HPC (%)	χ^2	*p*
Informational elements					
HPC front package	-	45.5	-	-	-
Other labels					
Calorie content	28.6	27.3	28.9	0.01	0.914
GDA	10.2	9.1	10.5	0.02	0.890
Graphic elements					
Colour					
Yellow	30.6	27.3	31.6	0.07	0.785
Blue	28.6	0.0	**36.8**	5.67	**0.017**
White	24.5	18.2	26.3	0.31	0.581
Green	20.4	**54.5**	10.5	10.18	**0.001**
Orange	14.3	**45.5**	5.3	11.25	**0.001**
Red	14.3	9.1	15.8	0.31	0.576
Black	12.2	9.1	13.2	0.13	0.717
Pink	8.2	0.0	10.5	1.26	0.261
Colour shade					
Dark/intense	44.9	27.3	50.0	1.78	0.182
Light/faded	34.7	54.5	28.9	2.47	0.116
Balanced	20.4	18.2	21.1	0.04	0.835
Imagery					
Product image	84.0	100.0	75.0	2.68	0.102
Nature image	12.0	0.0	18.8	1.92	0.166
Health imagery	60.0	**88.9**	43.8	4.89	**0.027**
Structural elements					
Shape form					
Straight	36.7	36.4	36.8	0.00	0.977
Convex	8.2	0.0	10.5	1.26	0.261
Concave	5.1	63.6	52.6	0.42	0.518
Transparency	83.7	72.7	86.8	1.24	0.265
Material					
Plastic	57.1	63.6	55.3	0.24	0.621
Glass	26.5	9.1	31.6	2.21	0.137
Metal-based	16.3	27.3	13.2	1.24	0.265

Table 5-6 Distribution of package design elements for juice

	Total (%)	With HPC (%)	Without HPC (%)	χ^2	*p*
Informational elements					
HPC front package	-	73.0	-	-	-
Other labels					
Calorie content	11.2	20.0	10.0	1.78	0.182
Danish organic	4.7	**15.0**	3.3	5.36	**0.021**
EU organic	6.5	5.0	6.7	0.08	0.776
Graphic elements					
Colours					
White	54.1	45.0	55.3	0.76	0.384
Green	26.5	35.0	25.3	0.85	0.357
Yellow	17.1	20.0	16.7	0.14	0.710
Orange	16.5	15.0	16.7	0.04	0.850
Red	15.9	**35.0**	13.3	6.20	**0.013**
Pink	12.9	15.0	12.7	0.09	0.770
Blue	11.2	5.0	12.0	0.87	0.351
Black	10.6	20.0	9.3	2.12	0.145
Purple	7.1	5.0	7.3	0.15	0.702
Brown	4.1	0.0	4.7	0.97	0.324
Colour shade					
Light/faded	54.1	55.0	54.0	0.01	0.933
Dark/intense	32.9	35.0	32.7	0.94	0.835
Balanced	12.9	10.0	13.3	0.17	0.677
Imagery					
Product image	95.5	100.0	94.9	1.01	0.315
Health imagery	92.4	100.0	91.3	1.79	0.181
Nature image	9.6	5.3	10.1	0.46	0.497
Structural elements					
Shape angularity					
Angular	54.7	**75.0**	52.0	3.77	**0.052**
Rounded	45.3	25.0	**48.0**	3.77	**0.052**
Shape form					
Concave	10.6	0.0	12.0	2.68	0.101
Convex	4.7	5.0	4.7	0.00	0.947
Straight	84.7	95.0	83.3	1.85	0.173
Transparency	37.1	15.0	**40.0**	4.73	**0.030**
Material					
Plastic	28.8	20.0	30.0	0.86	0.439
Board	54.1	**80.0**	50.7	6.11	**0.016**
Glass	14.7	0.0	**16.7**	3.91	**0.047**