Comparison of Organic Food Packaging in Denmark, Finland, Germany, Great Britain and Italy

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ABSTRACT

The objective of this study was to provide a snapshot of organic food assortments in supermarkets in Denmark, Finland, Germany, Great Britain, and Italy, and compare the packages used for five organic food products (eggs, meat, fish, mushrooms, berries). In addition, a comparison was made between packaging for regular and organic whole eggs. The highest number of organic products was found in the Danish supermarket. The main difference between the countries was in the use of national organic logos. Of the different food products, egg cartons had the most variation in materials and visual design. In all countries the product name was generally very plain, such as “organic beef”. The most common packaging material was plastic followed by molded pulp and glass. Green coloration was used especially on organic egg and mushroom packaging, whereas berry jams and meats were packed in conventional transparent packages. Molded pulp cartons, green color, and illustrations rather than photos were used more often for organic eggs than regular eggs. For faster recognition of organic products on the supermarket shelf, a standard dark green color is recommended to be used consistently to signify organic.

KEY WORDS

Organic food, food packaging, packaging materials, country differences

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INTRODUCTION

In the EU, organic food products are certified according to European Parliament and Council Regulation (EU) 2018/848 on organic production and labelling of organic products [1], which repealed the former Council Regulation (EC) No 834/2007. This primary regulation is already in force. However, the whole reform will be applied from the beginning of 2021. Although the organic food market is still relatively small, it is constantly growing in the EU countries.

Organic food products are sold through general retailers, organic retailers, and direct sales from farmer to consumer, such as box schemes, mail order, farmers markets or farm shops. In addition, indirect routes, such as sales to processing, catering or public procurement, constitute a fourth sales channel [2]. The local mix of sales channels varies by food product, country, and even geographic area.

In this study the focus is on supermarkets, as this has become a major channel for organic products. For example in Germany, 59% of organic food products in 2017 were sold through regular supermarket chains, 29% through specialized organic food stores, and 12% through other sales channels, such as direct sales from farmers, bakeries, butchers, and health food shops [3]. In addition, primary packaging of food plays a bigger role in supermarkets compared to other routes, such as direct sales or market places.

Consumers who buy organic food are not a homogeneous group in terms of their demographics or beliefs [4]. However, the motives to buy organic usually include health and nutritional aspects, superior taste, concern for the environment and animal welfare, food safety, support for the local economy, or curiosity in a fashionable trend [4]. On the other hand, factors hindering consumers from purchasing organic foods include, for example, high price, limited availability, or insufficient promotion.

In addition to distribution systems and consumer opinions, a range of other societal and environmental factors contribute to differences in consumption of organic food between countries. Key among these are national labelling systems, the size of the price premium for organic products, and political regulation [5]. Many of these factors are reflected in the food products on offer and their packaging.

1.1 Organic food packaging

In packaging design, all packaging elements, such as shape and structure, colors, text and images, are combined and organized in a purposeful manner to provide the consumer with the desired visual sales arguments [6], [7]. The combination of these elements enables a product with a desired positioning strategy, such as top category, reasonably priced accessible products, or products aimed at the middle class consumer [8].

Consumers can also be grouped according to the specific factor that increases their likelihood to buy, such as preference for convenience, images, or information [9]. As packaging design elements are of varying importance for shoppers in these groups, packaging design offers a tool to formulate a specific sales message [9]. A survey of the purchasing behavior of German consumers [10], for instance, showed that as much as 70% of consumers make their purchasing decision at the point of sale. Packaging creates a strong competitive advantage particularly in such sales situations [7].

Organic food packaging constitutes a packaging genre of its own [11]. Standards for organic foods focus mainly on the product itself, and include only limited demands on the packaging. Organic food packaging includes verbally and visually persuasive aspects, such as inclusion of one or several certified organic logos, nature connoting colors, indexical and other imagery, and narrative statements on
the company and its practices. Typical marketing claims include the lack of chemicals and general ‘goodness’ of organic food [11]. Gifford and Bernard [12] studied packages in the Newark, Delaware area in the U.S. Most of the packages for organic products had either positively framed messages or no additional information beyond “organic”.

The role of packaging is strong in shaping perceptions of all food products. Packaging material is the main contributor to the perception concerning environmental impact of both the product and the package [13], [14]. Consumers’ assessment is also affected by graphics and colors. In addition, verbal features, claims and certified labels and logos are used to communicate ethical values [13], [14]. A specific food label can lead to an environmentally positive assessment of the packaging as well [13].

Relatively little research has been carried out on the characteristics of organic food packages in specific. In a thesis on the packaging of butter, cereals, juice, and milk products, subtle differences were observed between regular and organic packages in Denmark, Austria, Switzerland, and Sweden [15]. Organic product packages were characterized by the use of fiber-based materials, flexible packaging format, white and green colors, and photographic images of the product. Another study points out that organic and non-organic products are often packed differently in order not to mix these products, which can put the organic products at a disadvantage in terms of consumer choice [16].

Consumer response to a packaging attribute is often culturally dependent. Green is usually associated with relaxation, comfort and nature [17]. There is also a strong cultural bias associated with achromatic white, some of the positive associations being purity, cleanliness and naturalness [17]. In a Korean study, organic food packages displayed earthy colors, such as green and brown [18]. In the same study, packaging material for organics often had a matt surface finish, and glass was favored over plastic. Zhang [19] studied sensory responses to the materials of organic food packages [19]. Rough cardboard was associated warm, healthy and organic and scored higher than smooth cardboard or clear plastic. In another Korean study [20], test persons were most affected by typography among the following four attributes: excitement level of the product name, typography, color and type of imagery.

As consumer preferences and food markets differ to a certain extent from country to country, our hypothesis was that differences in packaging of organics between European countries could be detected by exploring packaging elements. The main objective of this study was to investigate these differences and furthermore to find out what kind of differences could be found between packaging used for organic and regular versions of the same products. Our results with data from five European countries supplement the previous results presented in the literature. We also provide a snapshot of the availability of packed organic food products in certain food groups in supermarkets. The results provide input for academia, food retailers, the food and packaging industry, labeling organizations, and authorities.

METHODS & MATERIALS

Five European countries were chosen for the study based primarily on organic market size and the share of organic food sales of the total domestic food and drinks market. Denmark is the leader in terms of organic share at 7.6% of a total market size of €912 million [21]. Germany, France, the UK and Italy are the four biggest organic markets in Europe [21]. In 2014 their market sizes were €7910 million (4.4%), €4830 million (2.5%), €2307 million (No data in [21] or [22]), and €2145 million (2.2%), respectively [21]. Finland is the domestic reference market for the authors, and had a market size of €225 million (1.7%) in 2014 [21]. The growth in
organic sales has continued strong since. Organic food sales exceeded €7 billion in France in 2016 [23], €10 billion in Germany in 2017 [3], and €3 billion in Italy in 2016 [24].

The data on organic food packages were collected from big supermarkets in Copenhagen in Eastern Denmark (all products), in Tampere (fresh eggs) and Espoo (other products) in Southern Finland, in Munich in Germany (all products), in London in Great Britain (all products), and in Bologna in Northern Italy (all products). The supermarkets were selected randomly. The data was gathered during the fall 2016 and winter 2017.

The study covers seven food product groups: whole eggs, berries (fresh, frozen, and jams), meat, fish and mushrooms. For each product group, regular and organic products available at the supermarket were located and their number was counted by their price tags. All found organic food products were photographed for further data retrieval and analysis of various aspects of the package. For the whole eggs, also the regular products were photographed. The food products were selected based on prevalence of the products and organic food in these categories.

The characteristics of the packages recorded from the images are provided in Table 1. Package type and material are structural components, and the rest graphical components of a package [8]. Hue is a property of the outer surface of the main body of the package. Also in the cases where a package has a transparent film lid or a rigid lid, or is wrapped in a plastic bag, the tray/box part of the package is considered.

One of the attributes in Table 1 is the number of products in a group (group products). A group product is produced and sold under the same brand name and brand image. These products making up a group may have some varying properties, such as flavor, main ingredient in the product, size of package, or label color. Individual packages nevertheless inherit the majority of their attributes from the group level, and are visually very similar. Reviewing packaging at this group level puts into focus the range of different packaging solutions instead of the number of individual packages that the consumer sees on supermarket shelves.

Table 1: Package information gathered.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of series</td>
<td>Number of variants in a group product.</td>
</tr>
<tr>
<td>Food product</td>
<td>Whole egg, meat, fish, mushrooms, fresh berry, frozen berry, berry jam.</td>
</tr>
<tr>
<td>Package type</td>
<td>Bag, bottle, box, egg carton, jar, tray.</td>
</tr>
<tr>
<td>Material</td>
<td>Glass, molded pulp, paper, paperboard, plastic, wood.</td>
</tr>
<tr>
<td>Package color</td>
<td>Blue, green, orange, purple, red, yellow, brown, white, black, transparent.</td>
</tr>
<tr>
<td>Imagery</td>
<td>Illustrative drawing, abstract drawing, photo, none.</td>
</tr>
<tr>
<td>Typography</td>
<td>Print, script (i.e. handwriting imitation).</td>
</tr>
<tr>
<td>Name type*</td>
<td>Plain, innovative.</td>
</tr>
<tr>
<td>Organic logo**</td>
<td>EU leaf, additional organic logo.</td>
</tr>
</tbody>
</table>

* Plain, such as Organic Eggs, or innovative, such as Fancy Country Eggs
**Options: One logo, two logos, no logos.
RESULTS & DISCUSSION

Assortment of organic food products

The volume and share of organic product retail sales vary from country to country [22]. In Finland, organic bread and bakery products and organic eggs were the products with the highest total market shares in 2011 (10% and 9%, respectively). The most common organic products in European supermarkets were eggs, followed by fruits and vegetables [21]. In Italy, the top two selling products by market share were fruits and vegetables (25% of the organic market), and dairy products (18%) [25]. Individual products can have a very high market share, such as 30% for fresh carrots in Germany [21].

Table 2 shows the number of all products (regular and organic) and shares of organic products for each product group and country. The total number of organic products was the highest in the Danish supermarket and the lowest in the British supermarket. The share of organic products was equally high in Denmark and Italy (17%). In Denmark, organic products were found in five of the seven product groups included in the study, in Finland in four groups, and in Italy in three groups. Organic eggs, as expected, were found in all three countries. Berry jam was a popular organic product type, and it was found in each country, except of Great Britain. In the other food groups, organic products were found only in some countries. Organic fish was available only in Germany.

The German data was gathered in late March 2017. Of the whole egg products, five were sold only at Easter time. The products are included in Table 2.

Table 3 shows the numbers of organic group products in each organic food group. The number of organic berry jam products was high in Denmark and Italy, although these were often variants of the same group product. A single food product was considered as a group of its own if no other package sizes or flavors existed.

The numbers provided in Tables 2 and 3 are sensitive to supermarket size and location. However, as all the chosen supermarkets were located in big cities and were either big supermarkets or hypermarkets, the results should be reasonably comparable.

Table 2: Share of organic products (Org) in supermarkets in Denmark, Finland, Germany, Great Britain and Italy. Different package sizes and flavors are considered as different products.

<table>
<thead>
<tr>
<th>Packed food product</th>
<th>Denmark</th>
<th>Finland</th>
<th>Germany</th>
<th>Great Britain</th>
<th>Italy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nbr of products %</td>
<td>Nbr of products %</td>
<td>Nbr of products %</td>
<td>Nbr of products %</td>
<td>Nbr of products %</td>
</tr>
<tr>
<td>Whole eggs</td>
<td>12 - 6 6 50 %</td>
<td>30 6 20 %</td>
<td>28 3 11 %</td>
<td>18 1 6 %</td>
<td>12 2 17 %</td>
</tr>
<tr>
<td>Meat</td>
<td>86 8 9 275 %</td>
<td>9 3 49 %</td>
<td>14 29 %</td>
<td>246 1 0 %</td>
<td>81 0 %</td>
</tr>
<tr>
<td>Fish</td>
<td>10 - 0 - 0</td>
<td>15 1 7</td>
<td>32 - 0</td>
<td>26 0</td>
<td></td>
</tr>
<tr>
<td>Mushrooms</td>
<td>13 9 69 9</td>
<td>4 44</td>
<td>7 - 0</td>
<td>17 2 0</td>
<td>3 - 0</td>
</tr>
<tr>
<td>Fresh berries</td>
<td>5 - 0 3</td>
<td>0 11 3 27</td>
<td>17 - 3</td>
<td>18 5 1 20</td>
<td></td>
</tr>
<tr>
<td>Frozen berries</td>
<td>12 2 17 19</td>
<td>0 6 1 17</td>
<td>0 - 0</td>
<td>1 - 0</td>
<td></td>
</tr>
<tr>
<td>Berry jams</td>
<td>128 19 15 63</td>
<td>6 10 54</td>
<td>1 2</td>
<td>96 - 0</td>
<td>39 26 67</td>
</tr>
<tr>
<td>TOT</td>
<td>266 44 17 399</td>
<td>25 6 170</td>
<td>14 426</td>
<td>7 2</td>
<td>167 29 1</td>
</tr>
</tbody>
</table>

Legend: Highest share of organic products (per country)
The high number of organic products found in Denmark was not surprising taking into account the high market share of organic foods in the country. The number of products found in Great Britain was quite low considering the large size of the British organic market. This can be partly explained by the fact that the top-selling products in the UK; milk and dairy, fresh vegetables and potatoes, baby foods, and fresh fruits [25], were not included in the studied product groups. In the meat and jam groups in all countries, high numbers of products were actually variants of a small number of group products using the same packaging solution.

The market share of organic food in a country is dependent on a very large number of factors in addition to the attitudes of individual consumers. According to Thøgersen [5], the factors range from political regulation and financial support to farmers, soil conditions and structure of distribution systems, to food culture and the level of post-materialism and environmentalism in society.

With a few exceptions, organic products were produced locally in the same country where they were on sale. Danish organic berry jams and Lithuanian mushrooms were also found in Finnish supermarkets, Spanish organic blueberries in Britain, and Norwegian organic fish in Germany. If prevalent beyond this study, this phenomenon may partly reinforce the confusion that some consumers have regarding the concepts “local” and “organic”. Local and organic are sometimes considered as overlapping. Indeed, Canadian and US consumers have been shown to have inaccurate perceptions especially regarding local production [26], [27]. Approximately one fifth of the persons perceived local food as being grown organically and without synthetic pesticides.

### Organic food packages – Packaging types and materials

Our study aimed at evaluating the organic food packages that producers choose for their products in Denmark, Finland, Germany, Great Britain and Italy. Figures 1 and 2 show the package types and materials. It should be noted that all reported figures represent data at the group product level, thus moving the focus to the packaging solutions found in the data set.

Of all the (group) products, the most common packaging material for organic food was plastic (19 packages), followed by molded pulp (egg cartons, 12 packages) and glass (jams, 8 packages). Six paperboard packages were found; an egg carton...
Figure 1: Packaging types of the organic (group) food products.

Figure 2: Packaging material of the organic food products.
in Denmark, a tray for mushrooms in Denmark, a tray for meat in Finland, a tray for fresh berries in Germany, and boxes for frozen berries and fish in Germany. On supermarket shelves there were 52 organic products sold in glass packages (all jars), 15 in molded pulp, none in paper, 11 in paperboard, 45 in plastic, and 5 in wooden packages.

In most cases meat was packed in a plastic tray sealed with a transparent film lid. In Denmark, one organic meat product was packed in a plastic vacuum bag. In Finland, a meat product group was packed in a paperboard tray with a plastic film lid, which is a relatively new packaging innovation. Frozen berries were packaged in plastic bags or paperboard boxes, fresh berries in plastic boxes or plastic/paperboard trays, and berry jams in transparent glass jars, letting the color of the jam itself be seen. Mushrooms were packed in trays and wrapped with a shrink film or a transparent bag, or covered with a lid. In Denmark and Finland, trays made of wood strips were also found.

Table 4 shows the egg carton types for organic eggs from each country as an example. A regular egg carton made of molded pulp was the most common packaging solution. In Finland all organic egg packages had this same format, and were either white or green. Since this study, a new organic egg product has been launched on the Finnish market using new ecologically friendly packages made of 50% natural grass fiber and 50% recycled fiber. Organic egg packages in plastic were found in Italy and Denmark. In Italy the packages had a paperboard sleeve around them, and in other countries the label was glued onto the egg carton. In Denmark plastic crates were used to pack large numbers of organic eggs.

The choice of packaging type and material is often dependent on the food product, the packaging machinery, and also the practices of the industry. Most packaging choices in the data set were relatively traditional. However, Denmark had the most variation in egg packaging. In addition to traditional egg cartons and plastic egg crates, eggs were protected with wood wool and packed in corrugated boxes with a distinctive visual design. Corrugated boxes and folded cartons have been explored as packaging for eggs over the years, but these are not widespread in the market. Also mushroom trays made of wood strips were relatively uncommon.

**Organic food packages – Graphic packaging elements**

Different combinations of graphic elements are used to position a product into a specific consumer segments [8], whereas the EU leaf logo and optional organic logos are printed on packages in specific to indicate compliance of the product with organic regulations. The food products in this study were all commodity goods.

Figure 3 shows the hue of the packaging on the outside. Packages were transparent in 20 cases out of a total 47. All jams were packed in a transparent glass jar, fully utilizing the intense color of the product itself. Meat was also typically packed in transparent packaging (4 out of 6). In cases where the meat package was blue or green, the lid was transparent to enable the product to be easily observed. Green was the second most popular color (13 packages), followed by white (6 packages). In Germany, Finland and Italy light or dark green organic egg packages and in Denmark, Finland and Great Britain white molded pulp egg cartons were found.

Four package types were colored brown: a paperboard egg package (Denmark), a brown molded pulp egg carton (Denmark), a paperboard fish box (Germany), and a paperboard fresh berry tray (Germany). The German fresh berry tray had a wood imitation print on it, and the color of the other packages imitated the traditional brown of non-bleached paper products. The most uncommon solutions were a blue paperboard meat package and black paperboard tray for organic mushrooms, both in Finland.
Table 4: Packaging solutions found for organic eggs in supermarkets in five countries, and the number of variants per group product.

<table>
<thead>
<tr>
<th>Country</th>
<th>Packaging Solutions</th>
<th>Number of Variants</th>
</tr>
</thead>
</table>
| Denmark   | ![Packaging Solution](image1.png)  
Number of variants: 2  
![Packaging Solution](image2.png)  
Number of variants: 1  
![Packaging Solution](image3.png)  
Number of variants: 1  
![Packaging Solution](image4.png)  
Number of variants: 1 |
| Finland   | ![Packaging Solution](image5.png)  
Number of variants: 2  
![Packaging Solution](image6.png)  
Number of variants: 1  
![Packaging Solution](image7.png)  
Number of variants: 1  
![Packaging Solution](image8.png)  
Number of variants: 2 |
| Germany   | ![Packaging Solution](image9.png)  
Number of variants: 1  
![Packaging Solution](image10.png)  
Number of variants: 1  |
| Great Britain | ![Packaging Solution](image11.png)  
Number of variants: 1  |
| Italy     | ![Packaging Solution](image12.png)  
Number of variants: 1  
![Packaging Solution](image13.png)  
Number of variants: 1 |
Figure 3: Package color.

Figure 4: Type of illustration.
If all individual organic packages found on the supermarket shelves are considered (total 129), as much as 65% of all packages were transparent, mainly due to the high number of different jam products. In total, 18% of the packages were green, 6% white or gray, 4% yellow, 4% brown, and 2% blue. There was one black package, and no orange, purple or red packages were found.

Figure 4 presents the possible illustrations found on the package: an abstract drawing, an illustrative drawing or a photo. Some brands had an illustration as a part of their brand or producer name. These are usually small images and were not considered part of the packaging design. In 17 cases the illustration was a drawing, only 3 of them abstract, and in 16 cases a photograph. The mushroom packages were relatively simple in design and did not include illustrations, but most had a flag printed on the label or the package. Labels on egg packages were relatively rich in illustrations and had motifs of chickens, eggs, flowers, people or landscapes. Berry jams usually had an image or drawing of the berry. Two German meat products carried a very plain leaf texture on the label.

The typeface of the most prominent and biggest written element on the package, usually the product title or in some cases the brand name, was recorded and is shown Figure 5. Arial or similar contemporary sans-serif typeface was used in 72% of the (group) packaging solutions. A script typeface imitating handwriting was used as a part of richer visual designs, such as for some Danish eggs or one Finnish meat product. In some cases, as for Italian berry jams, the visual design was simple, with only script type fonts used.

It has been shown [28] that typefaces used on the package convey meaning, as people match the typeface, particularly the degree of visual roundness of it, with basic taste words, such as sweet, sour, salty and bitter. In this study, the visual design of some packages included a combination of print type and script type fonts. Script was usually used to accentuate a detail, such as the brand or product name or an additional piece of information, such as 50% berry content.

The majority of the product names were plain and simple. A plain and simple product name, such as Organic minced beef, Organic redcurrant jam, or Organic eggs, describes the content without any explicit attempt to create an emotion about the product. If the product name was more descriptive or had a catchy slogan as an integral part of it, it was considered innovative. The product name “Speedy...
wings – beak first towards something better” (found in Finland, translated from original) was considered an innovative product name for chicken wings, and “Organic eggs from chicken madams” and “We love organic eggs” (both Danish, translated from original) as innovative product or brand names for eggs.

**Organic food packages – Organic logos**

Figure 6 shows whether the compulsory EU leaf organic farming logo and an additional, national organic logo were printed on the package. Only one product package did not carry the EU leaf logo communicating certified organic production.

Eleven out of the 13 Danish products carried a national organic certification logo on the label in addition to the EU leaf. This is understandable, as the percentage of Danish consumers who recognize the national organic logo is as high as 97% [29]. The Danish flag is often also shown on the product label. In contrast, Finnish products usually carried the so-called “Good from Finland” (Hyvää Suomesta) swan logo indicating domestic sourcing of raw materials and processing. According to a 2015 survey [30], 100% of Finnish consumers recognize the swan logo. The Finnish products did not, however, carry national organic logos, although such logos do exist. On the label of one Finnish egg carton was an arrow pointing to the EU leaf logo with a text explaining that “This product is organic, of course”.

Placement of the EU leaf varied. Usually it was printed on the product label, but, for example, on jars it was placed on the paper seal running over the lid. A variety of other logos were shown on

<table>
<thead>
<tr>
<th>Packed Food Product</th>
<th>FINLAND</th>
<th>GERMANY</th>
<th>GREAT BRITAIN</th>
<th>ITALY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole eggs</td>
<td>Number of Reg. prod.</td>
<td>Number of Group prod</td>
<td>Number of Reg. prod.</td>
<td>Number of Group prod</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>9</td>
<td>25</td>
<td>20</td>
</tr>
</tbody>
</table>

*Comparison of Organic Food Packaging*
packages, such as the green keyhole logo on Danish products indicating a healthy food choice, logos on how to prepare the product, or logos denoting how to recycle the package.

**Whole egg packages – Comparison between regular and organic**

To enable a comparison between organic and regular product packaging, data was gathered on regular whole eggs in four countries (see Table 5).

The number of regular egg products was highest in Germany, and the majority of the products were individual products not belonging to any group product. In Finland the number of products was almost equivalent, but with half as many group products. In Great Britain there were two quail egg products and one duck egg product. All other products in the four countries were chicken eggs.

Figures 7 and 8 show the attributes of regular egg packages in the four countries. As with organic eggs, the standard package shape for regular eggs was the common egg carton. One product in Italy had a tray with a film lid instead of a traditional carton.

In Finland and Great Britain all molded pulp egg cartons had a paper label attached to the lid of the carton. In Italy the majority of egg cartons had a paperboard sleeve with print on it, and only one carton was made of molded pulp. The rest (7 products) were made of plastic. In Germany two molded pulp egg cartons had a label printed directly on the package, the rest had a glued label.

Of the 48 regular egg group products in all four countries, 67% were made of molded pulp and 33% of plastic. For organic egg group packages (15 in total), the share of molded pulp was 80%, plastics 7%, and paperboard 13%. In all four countries regular products were more often packed in plastic than organic products. In Italy the share of plastic packaging was the highest. This reflects the general trend that paper and paperboard are perceived as environmentally friendly materials [31]. In the thesis of Zhang [19], it is reported that rough cardboard

![Figure 7: Packages for regular eggs in the four countries. A) Packaging type, B) Material of the container part of the package, C) Color of outer surface of the package.](image-url)
material was associated with the keywords warm, healthy and organic. The German data also includes colored fresh and cooked Easter eggs (5 products) which were all packed in plastic egg cartons.

Of all regular egg packages, 30% were transparent (plastic), 35% white or gray, and 17% green. Green was the most common color for organic packages (33%), seconded by white/gray 17% and transparent (plastic) 6%. Yellow and blue regular egg packages were also found. The choice of color was motivated by a special feature of the eggs, e.g., in Great Britain bluish Araucana eggs were packed in blue molded pulp egg cartons. These colors were not used in organic packaging.

The use of green in egg packaging was a clear indicator of organic in Germany especially, but also in Finland and Italy. In Italy, no regular egg cartons were found in green. Some green regular egg packages in Germany were, however, very similar to organic green packages, except the organic package labels were printed with the word Bio and suitable logos.

According to Ampuero [8], black is often used in products aimed at the upper classes and is associated with high price and elegance. In our data set this is true for the regular quail egg carton, which had a large black label with gold and yellow script style text.

Organic egg packages (see Figure 4) always had an illustration, whereas some regular packages had no illustration at all (see Figure 8A). The latter were very simple and affordable with minimal printing on the package itself instead of a label or a sleeve. Regular egg packages carried a photo (52% of all packages) more often than organic egg packages (39%).

In many cases the label featured a combination of different fonts, with the focus on the most distinctive text element, usually the brand or product name. The font used on the quail and duck egg packages in Great Britain was a decorative script, which distinguished...
the products from chicken eggs. The script font used on the other products was more restrained in style, and there was no obvious reason for its use. The percentage of script font was similar on regular and organic egg packaging (31% and 33%, respectively).

In Germany, 15% of the names of regular products were categorized as innovative and more descriptive. Examples include “Fitness eggs”, or “Eggs directly from Renner family farm in Oberbayern”. In the latter example, the origin of the product is clearly emphasized, and the label also shows a photo of the family and what their chickens are fed with. With these slogans the product is positioned as local food. In Great Britain, “Happy eggs” was the only regular package with very bright yellow and red colors and illustration in a comic style. On another regular package, the slogan “Committed to higher welfare” supplemented with a photo of a person could have been found also on an organic product. The judgement between innovative and plain is open to interpretation, but the percentage of innovative product names was the same, 17%, for both organic and regular products (see Figure 5 and Figure 8C).

The use of logos varied in the four countries. In Finland, 7 products (total 11) bore the “Ruokaa omasta maasta” (Food from own country/soil) logo. Only one product in Finland featured a GMO-free logo, whereas in Germany 9 (total 20) bore the GMO-free logo Ohne gentechnik. The German egg products had usually two or three different logos, most commonly the certification logo for egg tracing (KAT kontrollierte bodenhaltung) on 50% of packages, a logo telling about the origin (Geprüft qualität Bayern) on 50% of packages, GMO-free logo on 15% of packages, and PRO planet logo on 15% of packages. The “British Lion Quality” logo that confirms production in accordance with UK and EU law and the British Lion Quality Code of Practice was found on all chicken egg products. There were no other logos. No systematic use of logos was observed in Italian egg products.

In our study, organic egg packaging was more often made of molded pulp than regular egg packaging and more often featured green coloration and imagery instead of photos. This suggests that the organic producers want to communicate the environmental aspects also with the packaging material and color selection. The low number of products in each group keeps the analysis semi-qualitative.

**Remarks**

The approach of this study was to take a snapshot of the assortment of organic products available at five supermarkets in five countries. Although the supermarkets were large, there were relatively few organic food products on sale. Among the 128 organic products found, a total of 47 individual packaging solutions and designs (group products) were identified across all countries and product groups. This number is too low to offer a reliable analysis of the differences between countries and, therefore, most of the studied packaging elements cannot be used for that purpose.

However, the clearest observed difference between the countries is in the use of national organic logos. In Denmark and Germany the EU leaf logo was always accompanied either by the national German “BIO-Siegel” or the Danish “Ø-mærket”. This was not the case in other countries. Two (a fresh berry and a berry jam product) out of five Italian group products had the “Prodotto biologico” logo. None of the Finnish products had the national organic logo, although in many cases the package communicated the concepts of organic and local/domestic simultaneously. Except for jams and some mushrooms, Finnish organic food packages all bore the national logo denoting the origin and processing in Finland. Some Finnish and many Danish and British packages bore the national flag, highlighting the domestic origin of the product.

Organic egg cartons had the most variation and richest visual designs, especially in Denmark. In this group, packages were not restricted to egg
cartons/crates made of molded pulp. In Denmark a paperboard egg box and also a plastic egg carton were found. Molded pulp egg cartons in four colors were found, and innovative brand names were used. In Denmark all egg packages had an illustrative drawing as a part of the visual design instead of an abstract drawing, photo or no illustration. In other countries photos were more common.

The paperboard tray for meat represented a recent packaging innovation. The wood strip tray for mushrooms was another example of an uncommon packaging solution. Other than these, organic food packages were generally not strikingly different from regular packages, if at all. In most cases only the word organic and the EU leaf differentiated the organic product. The visual appearance of the products seemed relatively modest, especially for the meat and mushroom products.

In the organic meat group, all 14 products in Germany, one (the only) in Great Britain, one (of total 9) in Finland, and none in Denmark (of total eight) were private label products of the supermarket chain.

This study covered commodity food products with low price margins. Packaging solutions for these products are chosen from a number of standard packaging products within a suitable price category. Structural factors such as shape, size and material are often standardized and not easy to change. However, graphic elements can be designed as desired.

In the study, packages of organic food products collected in supermarkets in five countries in Europe were examined. In 2014, in these countries organic retail sales exceed 13 billion euros in total [21]. The results obtained were in line with observations perceived earlier when studying the organic food packages' of the same food groups, collected from countries having notably smaller organic retail sales, e.g. the most common packaging material for organic food was still plastic, followed by molded pulp and glass. Similarly, in the study the clearest observed difference was related to use of organic logos as was the situation in the former study [32].

In a 2002 survey carried out in the UK on organic milk [33], interviewed shoppers considered organic milk packages to be slightly subdued on the shelf. The same was observed in the present study with other food groups. There

Table 6: Examples of color use in organic and conventional packaging.
were no striking differences between organic and regular products. In many cases only the word BIO, organic or luomu (Finnish for organic), the EU leaf logo, and possibly a national organic logo communicated the nature of the product.

With the exception of the EU leaf logo, there was no consistent way of visually communicating organic within or between the studied food types and countries. Our suggestion is that a dark green color should be used on packaging labels to achieve this impact. Studies have shown that when people make fast decisions based on their initial interaction with products (or people), and about 62-90% of product assessment is based on color [34].

As this study shows, green is already a common color for organic packaging, but it is not used consistently. In Table 6 the Finnish product pair A shows how green is used on the label to indicate an organic product, but in the two other product pairs (Finnish product B, British product) green is used for a regular product. By pairing dark green with organic, consumers would gradually start to associate [35] green with the organic attribute of any food product and be able to locate organic products faster on the supermarket shelf. This could also be applied to other product groups. A more comprehensive comparison between regular and organic products in the future would be an interesting topic for further research. This could provide insight on how organic producers could distinguish their products more effectively from regular products.

**CONCLUSIONS**

The clearest observed difference between the five countries was in the use of organic logos on organic packages. In Denmark, the EU leaf was always accompanied by the national organic logo. In Finland and Italy, national logos are not regularly used.

Among the organic food groups examined, organic egg cartons had the most material variation and the richest visual designs. The other recorded packaging elements did not enable detailed qualitative analysis as the number of organic products in the supermarkets was still relatively low.

The only food group that contained organic products in all five countries was organic eggs. Organic fish was available only as an imported product in Germany. The total number of organic products was the highest in the Danish supermarket, and lowest in the British supermarket. Organic berry jams in glass jars were often variants (flavors) making a group product.

Comparing organic and regular egg products, packaging for organic was more often made of molded pulp, had green color and had drawings rather than photos as illustrations. These observations were most evident in Germany. German regular egg packaging also bore a wide range of other non-organic logos.

The most common material of organic food packages was plastic (mainly for meat and mushrooms), followed by molded pulp (egg cartons) and glass (jams). The clear majority of organic food packages were transparent, followed by green and white/gray packages.

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Comparison of Organic Food Packaging


