Attribute importance segmentation of Norwegian seafood consumers:
The inclusion of salient packaging attributes

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Abstract
The main purpose of this study is to identify consumer segments based on the importance of product attributes when buying seafood for homemade meals on weekdays. There is a particular focus on the relative importance of the packaging attributes of fresh seafood. The results are based on a representative survey of 840 Norwegian consumers between 18 and 80 years of age. This study found that taste, freshness, nutritional value and naturalness are the most important attributes for the home consumption of seafood. Except for the high importance of information about expiration date, most other packaging attributes have only medium importance. Three consumer segments are identified based on the importance of 33 attributes associated with seafood: Perfectionists, Quality Conscious and Careless Consumers. The Quality Conscious consumers feel more self-confident in their evaluation of quality, and are less concerned with packaging, branding, convenience and emotional benefits compared to the Perfectionists. Careless Consumers are important as regular consumers of convenient and pre-packed seafood products and value recipe information on the packaging. The seafood industry may use the results provided in this study to strengthen their positioning of seafood across three different consumer segments.

Keywords: Consumer segmentation; Attribute Importance; Packaging; Home meals; Seafood; Norway.
1. Introduction

This study focuses on the relative importance of product attributes as the basis for consumer segmentation. The importance that consumers attach to different product attributes is a good indicator of underlying motives when consumers wish to buy or consume products or services for general or specific purposes or goals. Despite the theoretical and practical relevance of segmentation based on attribute importance, it is rarely applied in the food domain (Verain, Sijtsema, & Antonides, 2016).

Consumers’ food evaluations and choice depend on the type of product (Verain et al., 2016) and the type of context (Edwards, Meiselman, Edwards, & Lesher, 2003; Jaeger, Bava, Worch, Dawson, & Marshall, 2011). Because the importance of attributes may differ between different food contexts, this study examines attribute importance when consumers want to buy seafood for home preparation and consumption for their everyday main meals (Monday-Friday). About 80% of the seafood consumed in Norway is consumed at home (Norwegian Seafood Council).

The seafood industry is considered to be less innovative in marketing, branding and new product and new packaging development compared to, for example, the meat and chicken industry in Norway. Packaging has an important role in influencing in-store purchasing decisions (Liao, Corsi, Chrysochu, & Lockshin, 2015), and more and more fresh seafood is sold as chilled pre-packed fillets in various packing materials and formats in supermarkets. In a recent review of what motivates consumers to buy fish and seafood, Carlucci et al. (2015) confirmed that packaging attributes seem not to have received enough attention by researchers. Taking into account the relatively low consumption of seafood among some segments of consumers (e.g., young consumers), it is advantageous to achieve a better understanding of similarities and differences among segments. Thus, this study aims to provide more detailed knowledge about the evaluation of product and packaging attribute
importance across different consumer segments, allowing for a more efficient differentiating
and marketing strategy for the seafood industry.”

This study contributes to the existing food segmentation literature by analyzing the
relative importance of 33 attributes derived from previous studies on food choice in general
(Steptoe, Pollard, & Wardle, 1995), and seafood in particular (Carlucci et al., 2015). For
example, Onwezen et al. (2012; 285) focused on intrinsic attributes of food (e.g., taste,
nutritional value and convenience) and not on extrinsic attributes (e.g., packaging, labels,
brand). Also, Verain et al. (2016:105) ask for a broader set of attributes to be used in
consumer segmentation of food. Thus, this study’s inclusion of a wide range of packaging
attributes for segmentation purposes is an extension of the extant literature (Ares, Besio,
Gimnènez, & Deliza, 2010; Onwezen et al., 2012; Mueller & Szolnoki, 2010; Verbeke,
Vermeir, & Brunso, 2007; Verain et al., 2016). Another contribution is the introduction of
some new profiling variables such as price-quality inference (Campbell, DiPietro, & Remar,
2014; Völckner & Hofmann, 2007) and attitudes towards luxury foods (Dubois, Czellar &
Laurent, 2005; Vigneron & Johnson, 2004), not to our knowledge previously used for
profiling food consumer segments. A discussion of the selection and categorization of
attributes and profiling variables used in this study is presented in the following sections.

2. Theoretical framework

2.1. Categorization of attributes for everyday main meals of seafood

Attributes are here defined as those characteristics of products or services that consumers
find relevant as predictors of the desired consumption experience (Smith & Deppa, 2009).
Attribute importance segmentation is an attitudinal approach to identify consumers’
motivation to buy or consume (Verain et al., 2016). Prior to consumption, such as going into
a store to buy ingredients for home meal consumption, consumers base their attribute
evaluation on the expected benefits from the products they consider and buy. The links
between expected attribute performance, benefits and values link the perception of products to the basic motivation emanating from a consumer’s value system (Grunert, 2010; Gutman, 1982).

Technical, functional and informative packaging attributes are given a specific focus in this study. Packaging has an important role in influencing in-store purchasing decisions, especially for food products where purchase decisions are characterized by low involvement, habits or impulsive processes (Liao, Corsi, Chrysochu, & Lockshin, 2015). Nowadays, more and more fresh seafood is sold as chilled pre-packed fillets in various packing materials and formats in supermarkets compared to the traditional fresh fish counters and fish shops. In Norway, the salmon industry has been the innovator in the seafood segment. This has increased consumption of prepacked salmon fillets from 106 tonnes in 2005 to 4,146 tonnes in 2015 (Norwegian Seafood Council). During the last 2-3 years, suppliers and distributors of chilled cod fillets and other fish (e.g., pollock, halibut) have started to copy the success of the salmon industry. In a recent review of what motivates consumers to buy fish and seafood, Carlucci et al. (2015) concluded that packaging attributes do not have received enough attention by researchers. Only two studies are included in their review. For example, Birch and Lawley (2012) found that a majority (50-60%) of regular fish consumers in Australia preferred to buy unpacked seafood because of price, freshness and local origin. The remaining consumers wanted packaged fish because of availability/convenience and availability of information on assurance of freshness (use-by date), assurance of quality (branding), price per portion, etc. Packaging attributes used in this study include the size, visual characteristics (design, colour, visibility of the core product), labelling (recipe, shelf life, product information) and whether the package signals a well-known brand (Jinkarn & Suwannaporn, 2015; Koutsimanis, Getter, Behe, Harte, & Almenar, 2012; Liao et al., 2015; Verbeke et al., 2007).
Freshness, taste and nutritional value are considered to be three of the most important attributes associated with a general perception of the quality of fish or seafood (Carlucci et al., 2015; Olsen, 2004). Some studies have investigated the associations consumers have with freshness in food consumption (Østli, Esaiassen, Garitta, Nøstvold, & Hough, 2013).

Common associations to freshness are “minimally processed”, “close to original form”, “natural” and “healthy” (Zhang, Lusk, Mirosa, & Oey, 2016). Its meaning differs across products and situations (Heenan, Hamid, Dufour, Harvey, & Delahunty, 2009). Thus, freshness is complex because it involves interactions with other aspects of product quality.

This study measures the importance of quality attributes by asking respondents for their evaluation of “mild taste”, “natural taste”, and “fresh smell” in addition to the traditional quality benefits such as “good taste”, “good quality” and “pleasant experience” (Carlucci et al., 2015). For example, “mild taste” is used to promote codfish in Norway. To assess nutritional benefits, this study uses “healthy”, “nutritious” and “natural – without additives” (Aikman, Crites, & Fabrigar, 2006; Carlucci et al., 2015).

Consumers’ desire to save time and effort, seems to be more and more important, and especially during busy weekdays (Buckley, Cowan, & McCarthy, 2007), and leads to the importance of convenience-related attributes. Fish and seafood are among foods that many consumers perceived to be inconvenient compared to other protein sources (Olsen, Scholderer, Brunso, & Verbeke, 2007). In addition to traditional convenience attributes (fast, easy and in-store availability), this study also includes attributes specific for some seafood products. Consumers often feel that fish is problematic to prepare because of smell/odour and spill/dripping. In addition, bones make it inconvenient to prepare and problematic to consume (Olsen et al., 2007). Thus, this study also included those attributes.

Affective, emotional and exclusivity attributes are becoming increasingly important for competitive advantage in food markets, because most products are similar with respect to
standard quality, convenience and price (Schifferstein, Fenko, Desmet, Labbe, & Martin, 2013). Desmet and Schifferstein (2008) have measured emotions with positive and negative words in two main dimensions; pleasant and unpleasant. This study includes two positive affective/emotional attributes (“exciting/enjoyable” and “popular/desirable”) and one negative affective/emotional attribute (“feeling guilt/shame”). In addition, we include “exclusivity” to assess an association with premium or luxury (Vigneron & Johnson, 2004). Finally, this study includes three attributes associated with price and value; “low priced, fair priced and value for money” (Xia, Monroe, & Cox, 2004). Figure 1 categorizes and summarizes the 33 different attributes used in this study.

<table>
<thead>
<tr>
<th>Quality (10 items):</th>
<th>Good quality; Pleasant feeling/ experience; Fresh (not frozen); Fresh smell; Good taste; Mild taste; Natural taste; Healthy; Nutritious; Natural/without additives.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging (10 items):</td>
<td>Prepacked; Correct size; Design; Colour; Visibility of the commodity; Product information; Recipe; Expiration date; Catch area; Well-known brand.</td>
</tr>
<tr>
<td>Convenience (6 items):</td>
<td>In store availability; Easy to prepare; Fast to prepare; No spill/odour when preparing; Without bones; No planning.</td>
</tr>
<tr>
<td>Affective/exclusive (4 items):</td>
<td>Popular/desirable; No guilt/shame; Exciting/enjoyment; Exclusive.</td>
</tr>
<tr>
<td>Price/Value (3 items):</td>
<td>Low priced; Fair priced; Value for money.</td>
</tr>
</tbody>
</table>

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**Figure 1.** Potential attributes when buying seafood for main meals during weekdays

2.2. Associations with general attitudinal and motivational variables

Individual differences in consumer attribute importance are suggested to be related to more general attitudinal and motivational variables. In accordance with previous research, this study includes product involvement (Ares et al., 2010; Verbeke et al., 2007), product knowledge (Rortvedt & Olsen, 2007), health involvement (Onwezen et al., 2012), willingness
to pay (Breidert, Hahsler, & Reutterer, 2006), and product preferences / evaluation (Mueller & Szolnoki, 2010) as profiling variables. In addition, we also measure frequency of consumption (Koutsimanis et al., 2012; Verbeke et al., 2007). A combination of these variables has previously been used to analyze drivers of seafood consumption or as profiling variables in consumer segments of seafood products (Carlucci et al., 2015).

Research in the past five to six decades suggests that consumers believe that price is an indicator of quality, especially in the absence of other clear quality indicators or when there is less knowledge about the product (Völkner & Hofmann, 2007). Price/quality inference is defined as consumers’ tendency to expect or infer that products with a higher price are of better quality compared to low-priced products (Campbell et al., 2014). Prepacked seafood may be more difficult to evaluate compared to seafood bought fresh from a seafood counter because of less availability of sensory cues (e.g., touch and smell). The lack of trust in quality may be one of the main reasons why consumers prefer to buy unpacked seafood (Carlucci et al., 2015). Thus, this study is to our knowledge the first study to explore a possible relationship between consumer food benefits segments and their general expectations about the relationship between price and quality (inferences).

The market for premium and luxury food is growing. Packaging is often used to signal quality or exclusivity of the product (Mueller & Szolnoki, 2010). The premium and luxury constructs imply expectations of excellent quality, hedonism, uniqueness and high price (Vigneron & Johnson, 2004). Attitude towards luxury is in this study defined and measured as consumers’ affect-related associations towards luxury (food) products (Dubois et al., 2005). Fresh seafood priced more than, for example, frozen seafood in Norway (Østli et al., 2013. It is also considered to be more exclusive and has a higher prestige among consumers (Carlucci et al., 2015). This study is to our knowledge the first to explore the possible relationship
between attitudes towards luxury and the attribute importance-based segments of seafood consumers.

2.3. Research objectives

The current study first aims to explore the relative importance of a wide range of attributes Norwegian consumers use when buying seafood products for preparing their everyday home-made meals on weekdays. Packaging attributes are given a special focus, but attributes associated with quality, convenience, emotions/exclusivity and price are included as well. Not all attributes are expected to be of equal importance for all consumers. Thus, our second objective is to identify possible consumer segments based on the importance of the 33 attributes. The third aim is to present a grid with one dimension showing attribute importance, and the other the ability of the attributes to differentiate between segments. Finally, consumer segments are profiled against consumers’ attitude/preferences for and consumption of fresh seafood (especially cod), involvement (in health and seafood), knowledge of seafood/quality, expected inferences about the price-quality relationship, willingness to pay for fresh seafood and attitudes towards food exclusivity/luxury. Such information gives a deeper understanding of similarities and differences between segments, and arguments for improving marketing strategies in the area of product- and packaging development, consumer communication/education, branding and pricing.

3. Methodology

3.1. Design and subjects

A cross-national web-based survey was conducted with a representative sample of 1,000 Norwegian adults (18-80 years of age). Respondents were randomly selected from a pool of pre-recruited respondents by a professional research agency. An effective sample size of 840 was used in this study after deleting the cases with the most missing values and answers of “don’t know”. A summary analysis of the main characteristics of the sample shows that 47.9
% of the participants were female, and 24.6% were living in single households. The average age was 46 years and approximately 40% of the respondents had an income level of 400,000–900,000 NOK (about 44,000–100,000 EURO). The descriptive statistics for demographics are shown in Table 1.

Table 1. Descriptive statistics for demographical characteristics

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>438</td>
<td>52.1</td>
</tr>
<tr>
<td>Female</td>
<td>402</td>
<td>47.9</td>
</tr>
<tr>
<td><strong>Family income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 300</td>
<td>127</td>
<td>15.1</td>
</tr>
<tr>
<td>300 – 600</td>
<td>229</td>
<td>27.3</td>
</tr>
<tr>
<td>600 – 900</td>
<td>177</td>
<td>21.1</td>
</tr>
<tr>
<td>From 900</td>
<td>307</td>
<td>36.5</td>
</tr>
<tr>
<td><strong>Age group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 30</td>
<td>149</td>
<td>17.7</td>
</tr>
<tr>
<td>30 – 60</td>
<td>497</td>
<td>59.2</td>
</tr>
<tr>
<td>From 60</td>
<td>194</td>
<td>23.1</td>
</tr>
<tr>
<td><strong>Family status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family households</td>
<td>633</td>
<td>75.4</td>
</tr>
<tr>
<td>Single households</td>
<td>207</td>
<td>24.6</td>
</tr>
</tbody>
</table>

Individuals completed a related experiment (not reported here) and an online survey about their fish/cod consumption, preferences, seafood- and health involvement, price-quality inferences, knowledge, willingness to pay, demographics, along with other constructs (some are not part of this analysis).

3.2. Questionnaire and variables

Each respondent had to rate their perceived importance of 33 attributes for general seafood consumption at main meals during the weekdays (Monday to Friday) on a 9-point scale from not important (1) to extremely important (9). A similar scale was previously used by Onwezen et al. (2012).
Cod is the most traditional and most consumed seafood (besides farmed salmon) in Norway (Norwegian Seafood Council). This study uses cod as a target reference for seafood. Pre-packed fresh cod is also the seafood item with the most rapidly growing consumption in Norway during the last 2-3 years (Norwegian Seafood Council). Thus, this study assessed consumption and preference variables for seafood in general and cod in particular to verify the consistency, variability and validity of the seafood construct.

Seafood consumption was measured on a nine-point scale in the form: “How often do you consume the following categories of seafood for dinner?”: 1 = three times or more a week (or about 160 times a year), 2 = two times a week (or about 100 times a year), 3 = 1 time a week (about 50 times a year), 4 = 2-3 times a month (about 30 times a year), 5 = 1 time a month (12 times a year), 6 = 4 times a year, 7 = 2 times a year, 8 = 1 time a year, 9 = seldom/never. The types of meals measured were: Total (all) seafood, total cod, and fresh fillets of cod. A second behaviour question about the relative amount of fresh seafood and fresh cod they bought pre-packed was added on a ten-point scale: 1 = less than 10%, 2 = 10-20%, etc. up to 10 = 91-100%.

Preferences for seafood was measured on a 7-point preference scale: “How much do you like the following categories of seafood for dinner?” 1 = Very little to 7 = Very much for seafood in general, cod in general, fresh fillets of cod and pre-packed fresh cod. Liking is previously used to assess general preferences for seafood (Cardoso et al., 2013).

Willingness to pay was assessed with three items. The consumers were shown a photo of pre-packed fresh cod and asked: “What is the highest price you are willing to pay in NOK for this product under three different freshness conditions: 12 hours, 48 hours and 4 days after catching. All respondents were given a reference price of 150 NOK (about 16.50 €) for products like this when sold in a supermarket. The assessment of this construct is adapted from Breidert et al. (2006).
Product involvement and health involvement are developed based on items from Bell and Marshall (2003) and from Pieniak et al. (2010). “Seafood is an important part of my diet” and “Good health is important to me” are examples of items used to assess these two constructs.

Product (quality) knowledge was assessed by 4 items on a 7-point Likert scale, such as “Compared with an average person, I know a lot about how to evaluate the quality of seafood” previously used by others (Heide & Olsen, 2011).

The question of price/quality inference was measured on a 7-point Likert scale using previously tested items by Campbell et al. (2014). Measurement items included three statements such as for example: “Prices of seafood are good indicators of its quality”.

Consumers’ attitudes towards luxury were measured on a 7-point Likert scale based on 4 items from Dubois et al. (2005) such as: “I feel attracted towards luxury food” and “Luxury food means a lot to me”.

3.3 Data analysis

The analysis of the data was performed in five steps. First, descriptive statistics were used to report the importance of attributes when consumers are buying seafood for their main meal during the weekdays. Secondly, in order to determine the clusters, the Two-Step Cluster procedure in SPPS was used, using the log-likelihood option for distance measure and Schwarz’s Bayesian Criterion (BIC) as the determinant of the number of clusters. The log-likelihood is a probability-based distance. The distance between two clusters is related to the decrease in log-likelihood as they are combined into one cluster. In addition, because the importance of the 33 attributes were measured by the same 9-point scale, the cluster-analysis was based on the unstandardized data’ (Moisl, 2015).

Third, a grid of discriminating-importance scores of attributes was presented. Fourth, a factor analysis of those profiling variables that were latent constructs was performed. Finally, the differences between clusters were analyzed by ANOVA for the profiling factors and a
crosstabs analysis with chi-squared test was performed to see if the clusters differ in their
demographic characteristics.

4. Results

4.1. Mean importance of attributes

The mean importance of the 33 attributes are shown in Table 2. The results reveal that the
most important attributes are related to perceived quality such as taste, freshness, healthiness,
nutritional value and naturalness. One packaging attribute, the information about expiration
date, is among the most import attributes. Most of the packaging attributes are of medium
(visible commodities, product and information and size) and low (information about catch
area, brand, recipe, design or colour) importance. Value for money and price are ranked
second after perceived quality, while convenience attributes are of medium o importance.

4.2. Cluster analysis

The result from the two-step cluster analysis shows that the lowest BIC coefficient and
the largest ratio of the distances is for three segments of consumers (see Table 2). The first
segment (N = 252; 30.0%) is termed “Perfectionists”. Consumers in this segment have the
highest scores on almost all the attributes associated with price/value, convenience and
packing information, including labelling and brand. Also, other attributes are evaluated as
relatively high compared with other clusters. The second segment (N = 334; 39.8%) is named
“Quality Conscious”. Consumers in this segment are characterized by the highest scores on
the quality attributes (e.g., good general quality, taste, healthy, smells fresh, nutritional
value), while the importance of the affective and convenience attributes and some aspects of
packaging information are the lowest. The difference between the Perfectionists and Quality
Conscious are largest regarding the packaging (colour, design, recipe, prepacked, brand) and
affective / exclusive attributes (popular/desirable, exclusive, and guilt free /shame free).
Finally, the last segment called “Careless” (N = 254; 30.2%) includes consumers who evaluate almost all attributes by low to average importance when buying seafood for their daily meals. The Careless Consumers are less concerned about quality, but expect and desire low price products. They have a similar profile as the Quality Conscious when it comes to convenience attributes (no spill, planning, fast and easy to prepare) and brand, but care more about bones. The Careless Consumers perceive some packaging attributes (colour, design, recipe and pre-packaging) to be more important than the quality conscious. The Careless Consumers and Perfectionist differ on all attributes, and the differences are most prominent on packaging attributes (brand, catch area, visibility of the commodity, product information, correct size, design, colour, and pre-packaging), quality attributes (natural – without additives, natural taste, pleasant experience, nutritious, smells fresh, no spill/odour when preparing and healthy), and some affective attributes (exclusive and exciting).

Table 2. The characteristics of the clusters

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Segments (95% confidence interval for means)</th>
<th>ANOVA F-values</th>
<th>Post hoc test multiple comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perfectionists (n = 252; 30%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good taste</td>
<td>8.07-8.28</td>
<td>205.00</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>Good quality</td>
<td>8.08-8.31</td>
<td>289.50</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>Smells fresh</td>
<td>7.76-8.04</td>
<td>232.00</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>Healthy</td>
<td>7.89-8.12</td>
<td>204.70</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>Expiration date</td>
<td>7.89-8.13</td>
<td>87.90</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>Nutritious</td>
<td>7.74-7.99</td>
<td>201.40</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>Natural – without additives</td>
<td>7.76-8.03</td>
<td>217.30</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>Natural taste</td>
<td>7.62-7.89</td>
<td>183.90</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>Gives value for money</td>
<td>7.22-7.55</td>
<td>49.90</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>Pleasant feeling</td>
<td>7.40-7.71</td>
<td>124.10</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>Visibility of the commodity</td>
<td>7.31-7.60</td>
<td>119.70</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>Has a fair price</td>
<td>7.05-7.37</td>
<td>53.60</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>In store availability</td>
<td>7.27-7.56</td>
<td>71.60</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>Product information</td>
<td>7.20-7.51</td>
<td>86.60</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>Easy to prepare</td>
<td>7.22-7.49</td>
<td>60.30</td>
<td>= &gt; &gt;</td>
</tr>
<tr>
<td>Correct size</td>
<td>7.38-7.63</td>
<td>79.30</td>
<td>= &gt; &gt;</td>
</tr>
</tbody>
</table>
286 | Without bones | 7.19-7.60 | 5.18-5.79 | 5.82-6.32 | 49.30 | 0.00 | > | > | <
| Fast to prepare | 7.07-7.38 | 5.36-5.86 | 5.41-5.82 | 64.40 | 0.00 | > | > | =
| No planning | 7.00-7.31 | 5.25-5.75 | 5.33-5.72 | 68.50 | 0.00 | > | > | =
| Fresh (not frozen) | 6.43-6.89 | 5.41-5.94 | 4.49-4.96 | 50.90 | 0.00 | > | > | >
| Is exciting / enjoyable | 6.78-7.11 | 4.82-5.26 | 4.65-5.09 | 81.90 | 0.00 | > | > | =
| Is cheap (low priced) | 5.89-6.36 | 4.99-5.49 | 5.27-5.70 | 13.20 | 0.00 | > | > | >=
| Mild taste | 6.73-7.09 | 4.67-5.20 | 4.83-5.26 | 81.80 | 0.00 | > | > | =
| No spill / odour when preparing | 6.52-6.94 | 4.30-4.84 | 4.49-4.91 | 89.10 | 0.00 | > | > | =
| Catch area | 6.24-6.68 | 4.86-5.44 | 3.94-4.43 | 63.40 | 0.00 | > | > | >
| Well-known brand | 6.61-6.96 | 3.79-4.32 | 3.97-4.42 | 152.30 | 0.00 | > | > | =
| Prepacked (in store) | 6.30-6.69 | 3.64-4.14 | 4.18-4.62 | 153.60 | 0.00 | > | > | <
| Not gives me guilt / shame | 5.90-6.45 | 3.51-4.14 | 3.94-4.46 | 70.90 | 0.00 | > | > | =
| Is exclusive | 5.90-6.34 | 2.86-3.37 | 3.69-4.18 | 152.20 | 0.00 | > | > | <
| Recipe | 5.72-6.20 | 2.53-2.94 | 3.78-4.28 | 194.10 | 0.00 | > | > | <
| Is popular / desirable | 5.62-6.13 | 2.49-2.97 | 3.66-4.18 | 153.80 | 0.00 | > | > | <
| Design | 5.46-5.94 | 1.97-2.31 | 3.36-3.82 | 282.10 | 0.00 | > | > | <
| Colour | 5.21-5.74 | 1.71-2.03 | 3.14-3.61 | 280.90 | 0.00 | > | > | <

287 4.3. A grid of important and discriminating attributes

As discussed in the section on theoretical background, the most important attributes as measured by their mean values may not be those that discriminate best between clusters, because all consumers may perceive these as very important (Onwezen et al., 2012).

Therefore, a presentation of an importance – discriminating grid based on both the importance by mean values and the discriminating score (“predictor importance”) for each attribute to the cluster solutions will provide more information about unique positioning opportunities. Normally, F-values in an ANOVA to test the mean differences between the clusters on each attribute are used to assess how distant the clusters are (Burns & Burns, 2008). However, because most attributes are highly correlated with each other, and the F-values may therefore contain overlapping discriminant information, a multinomial logistic regression was used to determine the predictor importance of 33 attributes for the three-cluster solution (Hair, Black, Babin & Anderson, 2010). As discussed by Cohen, Cohen, West, and Aiken (2003), for a logistic model a Chi-squared test indicates the statistical
strength of the fit of the estimated model. Two models may have an equal predicting power
or an equal $R^2$, but the model with a bigger chi-squared value would have a better fit.
Therefore, the discriminating score or the predicting power of a predictor is reflected by the
difference in Chi-squared statistics if the predictor was eliminated from the model.

Insert figure 2 here

The results in Figure 2 provide additional information by placing the attributes in a
diagram according to their mean importance values and their discriminating scores. Fresh
smell and good general quality are both important and have good discriminatory power.
Visible commodity and natural taste are attributes that are relatively high for both importance
value and discriminatory power. Recipe on the package has good discriminatory power, but is
not so important – especially for the Quality Conscious. Design, colour and expiration date
on the package, as well as exclusive, have some possibilities as unique selling positioning for
some customers. Only a few quality attributes (smells fresh, good quality, natural taste and
pleasant feeling) make an important contribution to the difference between the three clusters.
The packaging attributes, such as recipe on package, design of the package, visible
commodities, colour of the package or marked with expiration date have significant
discriminatory power in differentiating between the clusters. However, other packaging
benefits, such as correct size of the package, information about the product, catch area or
well-known brand are less effective in differentiating between the clusters. The attributes
price/value, convenience and exciting are the least effective in discriminating between the
clusters. In Figure 2, 9 attributes, marked in blue, have mean values above 5.0 and a
discriminatory score above 10. These include 7 quality attributes (smells fresh, good quality,
natural taste, good taste, nutritious, natural without additives and pleasant feeling) and 2

packaging attributes (visible commodities and marked with expiration).

4.4. Confirmatory factor analysis for attitudinal and motivational constructs

Multiple items are recommended for latent or unobservable constructs (Hair et al., 2010).

Therefore, before the profiling analysis was carried out, a confirmatory factor analysis was

conducted for the latent constructs (e.g., preferences, involvement, knowledge, willingness to

pay) in order to ensure the internal consistency and the convergent and discriminant validity

of the constructs (Anderson & Gerbing, 1988). The result is shown in Table 3.

Table 3. Factor analysis for profiling attitudinal and motivational constructs

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Factor loadings</th>
<th>CR</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Willing to pay</td>
<td>What is the highest price you are willing to pay for this product? (48 hours after catching – very fresh)</td>
<td>0.98</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>What is the highest price you are willing to pay for this product? (12 hours after catching – extremely fresh)</td>
<td>0.89</td>
<td>0.98</td>
<td>0.86</td>
</tr>
<tr>
<td></td>
<td>What is the highest price you are willing to pay for this product? (4 days after catching – fresh)</td>
<td>0.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product involvement</td>
<td>I am very concerned about eating fish for dinner</td>
<td>0.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>It means a lot for me to have fish for dinner</td>
<td>0.92</td>
<td>0.93</td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td>Fish is an important part of my diet</td>
<td>0.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health involvement</td>
<td>Good health is important to me</td>
<td>0.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Good health means a lot to me</td>
<td>0.91</td>
<td>0.90</td>
<td>0.69</td>
</tr>
<tr>
<td></td>
<td>I often think about my health</td>
<td>0.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I take good care of my health</td>
<td>0.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price-Quality inference</td>
<td>Price of seafood is a good indicator about its quality</td>
<td>0.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In my opinion, higher price of seafood means better quality</td>
<td>0.85</td>
<td>0.89</td>
<td>0.68</td>
</tr>
<tr>
<td></td>
<td>Cheap fish means bad quality</td>
<td>0.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>Compared with other persons, I know a lot about how to evaluate the quality of fish</td>
<td>0.92</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I know a lot about what is good and bad quality of seafood</td>
<td>0.87</td>
<td>0.99</td>
<td>0.69</td>
</tr>
<tr>
<td></td>
<td>Persons who know me think I am an expert on seafood quality</td>
<td>0.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I like to learn new things about quality of seafood</td>
<td>0.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes to luxury food</td>
<td>Luxury food means a lot to me</td>
<td>0.93</td>
<td>0.92</td>
<td>0.75</td>
</tr>
<tr>
<td></td>
<td>Luxury food is very important to me</td>
<td>0.92</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I feel attached towards luxury food 0.81
I could talk about luxury food for hours 0.80

Notes. Chi-squared = 708.1, df = 195, p = 0.000; GFI = 0.93; CFI = 0.97; RMSEA = 0.056; CR: Composite reliability; AVE: Average variance extracted; all t-values > 21.0.

The results of the confirmatory factor analysis indicate a good fit with the data ($\chi^2 = 708.1$, $df = 195$, $p = 0.000$; $GFI = 0.93$; $CFI = 0.97$; $RMSEA = 0.056$) (Browne & Cudeck, 1992). All factor loadings on the constructs are highly significant ($p < 0.001$: $t$-value > 21.0) with values ranging from 0.68 to 0.98, which shows the convergent validity of the constructs.

The composite reliabilities exceed the minimum value of 0.80 and the variances extracted surpass the recommended threshold of 0.50 (Anderson & Gerbing, 1988). Therefore, all of the measures show highly reliability. The correlations among the latent constructs are less than 0.50, and the squared correlation between each of the constructs (highest value 0.24) is less than the average variance extracted (AVE) from each pair of constructs (lowest value 0.68), demonstrating discriminant validity (Fornell & Larcker, 1981). The scores of the latent constructs were generated by averaging the items of the measurements.

4.5. Profiling the clusters on seafood and cod consumption and preference

Consumer segments are profiled by the consumption of fresh seafood (especially cod) and consumers’ attitude/preferences (Table 4). Both Perfectionist consumers and Quality Conscious consumers have a similar consumption frequency of seafood in general (5.74 vs. 5.98) and cod fish in general (4.75 vs. 4.51). However, our results confirm that the Perfectionists have slightly higher consumption of cod fillets (4.87 vs. 4.43) and for pre-packed consumption of seafood in general (6.49 vs 5.59) and prepacked cod (5.31 vs. 4.45) compared to the other two segments. In the area of pre-packed seafood, cod included, the Perfectionists are the most attractive segment. On the other hand, Careless Consumers eat somewhat less seafood in general and cod fish in both types of unpackaged and pre-packaged formats.
Table 4. Profiling the different segments based on seafood consumption and preferences

<table>
<thead>
<tr>
<th>Profile variables</th>
<th>Segments</th>
<th>ANOVA</th>
<th>Post hoc test multiple comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perfectionists</td>
<td>Quality Consciousness</td>
<td>Careless Consumers</td>
</tr>
<tr>
<td>Seafood consumption</td>
<td>5.74 (0.09)</td>
<td>5.98 (0.08)</td>
<td>5.25 (0.10)</td>
</tr>
<tr>
<td>Cod</td>
<td>4.41 (0.11)</td>
<td>4.51 (0.10)</td>
<td>4.03 (0.12)</td>
</tr>
<tr>
<td>Cod fillets</td>
<td>4.87 (0.12)</td>
<td>4.43 (0.12)</td>
<td>4.18 (0.13)</td>
</tr>
<tr>
<td>Pre-packaged consumption</td>
<td>6.49 (0.20)</td>
<td>5.59 (0.20)</td>
<td>5.42 (0.21)</td>
</tr>
<tr>
<td>Cod</td>
<td>5.31 (0.22)</td>
<td>4.45 (0.21)</td>
<td>4.35 (0.22)</td>
</tr>
<tr>
<td>Seafood in general</td>
<td>5.68 (0.08)</td>
<td>6.26 (0.07)</td>
<td>4.82 (0.09)</td>
</tr>
<tr>
<td>Cod in general</td>
<td>5.56 (0.09)</td>
<td>5.94 (0.09)</td>
<td>4.48 (0.10)</td>
</tr>
<tr>
<td>Cod, fresh fillets</td>
<td>5.70 (0.09)</td>
<td>6.00 (0.08)</td>
<td>4.56 (0.10)</td>
</tr>
<tr>
<td>Cod, fresh pre-packed</td>
<td>5.18 (0.09)</td>
<td>5.10 (0.10)</td>
<td>4.18 (0.10)</td>
</tr>
</tbody>
</table>

Notes: Numbers in (…) are standard deviations.

The Quality Conscious consumers express the highest preferences for seafood in general and cod in general, except for prepacked cod, even though the Perfectionists report higher consumption of cod compared to the Quality Conscious. However, the bases to form the segments in Table 4 can explain this contradiction that eating seafood in general and cod is not only explained by sensory quality preference but also by other variables, such as packaging information, convenience or price. Except for the lower scores on quality benefits, Perfectionists have the highest scores on the other benefits compared with Quality Conscious consumers.

It is also noticed that Careless Consumers show the lowest scores on preference for both seafood in general and cod. The finding is in line with that these consumers have the lowest importance scores on most attributes. Therefore, Careless Consumers are the least attractive segment for seafood and cod.

4.6. Profiling the clusters on attitudinal and motivational variables
The results of profiling the clusters on attitudinal and motivational variables are presented in Table 5. While Careless Consumers have the lowest scores on all profiling variables, both Perfectionists and Quality Conscious consumers are shown to be similar in willingness to pay (93.5 vs. 91.0), product involvement (5.39 vs. 5.48), health involvement (5.93 vs. 5.97) and product knowledge (4.50 vs. 4.39). However, the Perfectionists (4.00) use price as an indicator to infer seafood quality more often than the Quality Conscious (4.00 vs. 2.81). This means that consumers with high quality consciousness seem to be more confident than Perfectionists in evaluating seafood quality. The Perfectionists also show a more positive attitude towards luxury food than the Quality Conscious consumers.

### Table 5. Profiling on attitudinal and motivational constructs

<table>
<thead>
<tr>
<th>Profile variables</th>
<th>Segments</th>
<th>ANOVA</th>
<th>Post hoc test multiple comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perfectionists</td>
<td>Quality Conscious</td>
<td>Careless Consumers</td>
</tr>
<tr>
<td>Willing to pay</td>
<td>93.5 (3.23)</td>
<td>91.0 (2.81)</td>
<td>79.0 (3.41)</td>
</tr>
<tr>
<td>Product involvement</td>
<td>5.39 (0.07)</td>
<td>5.48 (0.08)</td>
<td>4.39 (0.08)</td>
</tr>
<tr>
<td>Health involvement</td>
<td>5.93 (0.06)</td>
<td>5.97 (0.06)</td>
<td>5.02 (0.07)</td>
</tr>
<tr>
<td>Product knowledge</td>
<td>4.50 (0.08)</td>
<td>4.39 (0.08)</td>
<td>3.66 (0.08)</td>
</tr>
<tr>
<td>Price-quality inference</td>
<td>4.00 (0.08)</td>
<td>2.81 (0.07)</td>
<td>3.45 (0.08)</td>
</tr>
<tr>
<td>Attitudes towards luxury</td>
<td>3.27 (0.10)</td>
<td>2.17 (0.08)</td>
<td>2.80 (0.09)</td>
</tr>
</tbody>
</table>

Notes. Profiling the segments were based on the means and standard deviations (...).

4.7. Profiling the clusters on socio-demographic characteristics

The results in Table 6 reveal that there is no difference regarding family status and family income between the three clusters ($p > 0.10$). However, the relationships between the clusters on gender and age are significant ($p < 0.01$). Male consumers predominate in the segment of Careless Consumers for seafood in general and cod fish (54.7%), while a higher ratio of female consumers belongs to the Quality Conscious (58.1%). The Perfectionists show a balanced ratio between both male and female. The Careless Consumer segment includes a higher ratio (51.6%) of young consumers (< 40) than the other two clusters. In contrast, a
higher ratio (about 70%) of elderly consumers (> 40) belongs to the Perfectionists and Quality Conscious consumers rather than to the Careless Consumer segment.

Table 6. Profiling the segments on socio-demographic characteristics

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Clusters</th>
<th></th>
<th></th>
<th></th>
<th>Chi- squared test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perfectionists</td>
<td>Quality Conscious</td>
<td>Careless Consumers</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>129 (51.2)</td>
<td>194 (58.1)</td>
<td>115 (45.3)</td>
<td>438 (52.1)</td>
<td>χ² = 9.6; df = 2; p &lt; 0.01</td>
</tr>
<tr>
<td>Male</td>
<td>123 (48.8)</td>
<td>140 (41.9)</td>
<td>139 (54.7)</td>
<td>402 (47.9)</td>
<td></td>
</tr>
<tr>
<td>Family status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No children</td>
<td>157 (18.7)</td>
<td>208 (24.8)</td>
<td>148 (58.3)</td>
<td>513 (61.1)</td>
<td>χ² = 1.2; df = 2; p &gt; 0.10</td>
</tr>
<tr>
<td>With children</td>
<td>95 (37.7)</td>
<td>126 (37.7)</td>
<td>106 (41.7)</td>
<td>327 (38.9)</td>
<td></td>
</tr>
<tr>
<td>Age group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 30</td>
<td>43 (17.1)</td>
<td>38 (11.4)</td>
<td>68 (26.8)</td>
<td>149 (17.7)</td>
<td></td>
</tr>
<tr>
<td>30 – 40</td>
<td>40 (15.9)</td>
<td>57 (17.1)</td>
<td>63 (24.8)</td>
<td>160 (19.1)</td>
<td></td>
</tr>
<tr>
<td>40 – 50</td>
<td>53 (21.0)</td>
<td>66 (20.0)</td>
<td>49 (19.3)</td>
<td>168 (20.0)</td>
<td></td>
</tr>
<tr>
<td>50 – 60</td>
<td>56 (22.2)</td>
<td>76 (22.8)</td>
<td>37 (14.6)</td>
<td>169 (20.1)</td>
<td></td>
</tr>
<tr>
<td>From 60</td>
<td>60 (23.8)</td>
<td>97 (29.0)</td>
<td>37 (15.5)</td>
<td>194 (20.1)</td>
<td></td>
</tr>
<tr>
<td>Family income (1,000 NOK)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 300</td>
<td>33 (13.1)</td>
<td>46 (13.8)</td>
<td>48 (18.9)</td>
<td>127 (15.1)</td>
<td></td>
</tr>
<tr>
<td>300 – 600</td>
<td>124 (49.2)</td>
<td>167 (50.0)</td>
<td>115 (45.3)</td>
<td>406 (48.3)</td>
<td></td>
</tr>
<tr>
<td>From 600</td>
<td>95 (37.7)</td>
<td>121 (36.2)</td>
<td>91 (35.8)</td>
<td>307 (36.5)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>252 (100)</td>
<td>334 (100)</td>
<td>254 (100)</td>
<td>840 (100)</td>
<td></td>
</tr>
</tbody>
</table>

Notes. Numbers in (…) are percentages.

5. Discussions and implications

Relatively few studies have used attribute importance as a basis for segmentation of food consumers. Two of the most recent studies we are aware of (Onwezen et al., 2012; Verain et al., 2016), in their discussion of the study limitations, suggest using a wider range of food attributes, in particular, packaging, labelling and brand are mentioned. This study follows up on these suggestions by including and testing the relative importance of 33 attributes frequently used in separate studies of seafood consumption (Carlucci et al., 2015), with the inclusion of several packaging, labelling/informational (Koutsimanis et al., 2012; Mueller & Szolnoki, 2010) and affective/exclusive attributes (Desmet & Schifferstein, 2008; Vigneron & Johnson, 2004). This study also extends previous research by providing empirical evidence for the relationship between consumers’ food segments and their price-quality inference.
(Völckner & Hofmann, 2007) and attitudes towards premium and luxury products (Dubois et al., 2005).

5.1. Medium importance of packaging attributes

Our result confirms previous studies (Carlucci et al., 2015) suggesting that quality attributes such as taste, freshness, nutritional value and naturalness are the most important consumer attributes when buying seafood for home consumption. One packaging attribute, information about expiration date, is evaluated with the same importance as freshness and nutritional attributes. Value for money and price are ranked second after perceived quality.

Price is important for consumption of fish in several other countries in Europe (e.g., Verbeke & Vackier, 2005) and in other countries such as, for example, Australia (Birch, Lawley, & Hamilton, 2012).

The importance of packaging attributes is mostly in the medium range. Norwegian consumers prefer visible raw materials and value product information relatively highly. This is in accordance with previous studies confirming that consumers want visible cues of (fresh) seafood (Birch & Lawley, 2012), and product information can increase the trust and confidence in their evaluation and choice of seafood (Pieniak et al., 2007). Information about catch area, brand and recipe are regarded as less important among Norwegian consumers.

Design and packaging colour are evaluated with the lowest importance score of the attributes evaluated in this study. However, such attributes are important for the suppliers to increase consumers’ awareness, attention and emotions at point of purchase in the supermarkets (Liao et al., 2015; Silayoi & Speece, 2007).

5.2. Perfectionists differ from the Quality Conscious consumer segment

The present research identified three consumer segments based on the relative importance of 33 attributes when buying seafood products for home meal consumption on weekdays. The first segment is termed “Perfectionists” (30% of the sample) and share common meaning
with the “Adventurous Consumer” in Nie and Zepeda (2011) and “Connoisseur Fish Consumers” in Verbeke et al. (2007). The second segment is termed “Quality Conscious” (39.8% of the sample) and can be compared to the “Self-Confident fish consumers” in Verbeke et al. (2007) or “Perfectionists/Quality conscious” in several consumer studies of consumer decision making styles (Mitchell & Bates, 1998). Thus, this study identified a significant distinction between “Perfectionists” and “Quality Conscious”, not always confirmed in the consumer decision making or shopping orientation literature (Mitchell & Bates, 1998; Rezaei, 2015). Our third, segment is termed “Careless” (30.2% of the sample), and is similar to the “Careless” and “Uninvolved” in Nie and Zepeda (2011) or “Uncertain fish consumers” and “Uninvolved fish consumers” in Verbeke et al. (2007).

The Perfectionists score highest on almost all attributes associated with perceived quality, price/value, convenience, packaging, information and branding. This segment has a high consumption of seafood, and the highest consumption of more convenient varieties such as fillets and pre-packed products. The Perfectionists are willing to pay more for premium fresh cod and are more luxury focused than the other segments. Even though they express high product knowledge, they also agree that higher price of seafood is a good indicator of its quality. These consumers are younger than the Quality Conscious and seem to be the most innovative and most likely among the Norwegians in the adoption of pre-packed cod. However, building brand equity and profile premium freshness will increase the opportunities for success in this segment.

The Quality Conscious are characterized by the highest score on quality attributes such as freshness, taste, health and nutritional value. However, their evaluation of convenience, some packaging attributes (e.g., colour, design, recipe) and of luxury/exclusivity are very low compared to the other two segments – particularly the Perfectionists. The Quality Conscious have high consumption and preferences for fish, except for pre-packed products where the
Perfectionists are a more promising segment. In the same way as the Perfectionists, the Quality Conscious have higher product- and health involvement, and they are reasonably willing to pay for premium fresh qualities. They have high knowledge about seafood, but use it differently than the Perfectionists. The Quality Conscious do not infer quality by price or brand, but seem more confident in their capability and confidence to evaluate quality based on visual attributes of seafood. Their experience (higher age) of buying more fresh seafood, more whole fish and from seafood counters (less fillets and pre-packed) may be the reason for their confidence and knowledge.

The third segment, the Careless Consumers (30.2% of the sample) are by far the group that evaluates almost all the attributes with lowest to average importance when buying seafood for their everyday meals. Careless Consumers value branding and convenience at the same level as the Quality Conscious, but are more concerned about bones. This segment feel that some packaging attributes (colour, design, recipe) and pre-packing are more important than for the Quality Conscious. Careless Consumers have the lowest consumption and preferences for seafood of all segments, but their consumption of pre-packed seafood is relatively high and close to the same level as the Quality Conscious. This segment is less concerned about health, have lower knowledge and are less willing to pay for premium fresh compared to the other segments. Thus, the Careless Consumers are evaluated as the less attractive segment for seafood in general, but its relatively high consumption for pre-packed fresh cod indicates that the industry should consider this segment as a niche market for this new packaging technology for fresh seafood.

5.3. Implications

This study encourages the use of with a broad range of attributes, covering product, packaging and communication, in order to define and target different marketing segments. For example, recipe and design on the packaging have potential discriminating power, even
though they do not constitute the most important attributes for the average consumer. The present study confirms that perceived quality (taste, nutritional value) and freshness of seafood are the foremost perceived attributes across consumer segments (Carlucci et al., 2015), and that the confidence into freshness can be strengthened through new innovative pre-packed products by including product information, expiration dates and visibility of the products.

However, the Quality Conscious consumers are quality oriented without being convinced by branding, premium packaging design, and exclusivity. They are confident in their knowledge of how to evaluate the quality of fresh seafood, and are willing to buy fresh seafood in different forms (chilled, pre-packed, whole, steaks, etc.). The Quality Conscious segment represent more utilitarian consumers (Voss, Spangenberg, & Grohmann, 2003) compared to the more hedonistic Perfectionist food consumers. In order to satisfy the Perfectionists, the industry not only needs to deliver high quality fresh seafood, but it also needs to position it with a premium price (Vigneron & Johnson, 2004), high profiled packaging characteristics/design (Azzi et al., 2012; Koutsimanis et al., 2012), in convenient forms (Candel, 2001) and with emotional appeal (Desmet & Schifferstein, 2008). Fresh smelling is a perceived benefit which is both important and has a high profiling capacity, especially for the Quality Conscious consumers.

Norwegian consumers eat seafood for the sake of variety, health and moral obligations (Olsen, 2001). Preferences for other food products are relatively higher than for seafood, but many of the Careless Consumers are still important customers for the industry because they consume seafood on a regular basis. Their relatively low involvement in seafood and health indicate that in-store exposure and packaging (Liao et al., 2015; Mueller & Szolnoki, 2010; Silayoi & Speece, 2007) can influence their unplanned food decision in the direction of fresh seafood. Their product knowledge is relatively low and they value convenient benefits.
relatively highly. Thus, pre-packed fillets with recipe information on the packaging are important to satisfy the Careless Consumers.

5.4. Limitations

Even though this is a representative survey of Norwegian consumers and framed towards seafood products, generalization to other countries and other food items should be made with caution. This study tested 33 attributes, and the list of possible attributes is not exhaustive. For example, more emotional, safety, sustainability, waste, traditional and ecological attributes can be considered for future research. Food attitudes and choice depend on the context, situation or occasion (Jaeger et al., 2011). This study examines which attributes are most important when buying seafood for everyday home meal consumption. Other eating occasions such as lunch, eating out at restaurants, week-ends/holidays, special events or parties with friends are relevant as well. This study introduces some novel profiling constructs such as price-quality inference and attitudes towards luxury. Relevant motivational variables not included in this study are, for example, convenience orientation, social norms, moral obligation, variety seeking or personal values (Brunsø, Scholderer & Grunert, 2004; Carlucci et al., 2015; Olsen, 2001; Onwesen, Antonides, & Bartels, 2013). Finally, as with all studies using correlations methods of cross-sectional survey data, the nature and direction of causal relationships are problematic. Thus, experimental design or longitudinal studies should be used in order to address causality in future studies’.

5.5. Conclusion

This study confirmed previous studies that aspects of perceived quality (taste, freshness, nutritional value and naturalness) are the most important attributes for home consumption of seafood. Packaging attributes associated with quality such as information about expiration date are also important, while most other packaging attributes are in the medium range of importance. Price and value for money are ranked second after perceived quality. Three
consumer segments are identified based on the importance of 33 attributes: Perfectionists, Quality Conscious and Careless Consumers. The distinction between the Perfectionists and Quality Conscious is novel and interesting because the latter feel more flexible and confident in their evaluation of quality, are less concerned with packaging, branding, convenience and emotional attributes. Careless Consumers are important as regular consumers of convenient and pre-packed seafood products with demand for recipe information on the packing. Thus, the seafood industry may use the results provided in this study to strengthen their positioning of seafood for home meal consumption during weekdays. For example is it possible to built conficence in fresh pre-pakced product by including information about experation date and expose visability of the product.

References


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These data have been retrieved from the Norwegian Seafood Council at https://seafood.no/markedsinnsikt/
Figure 2. Importance – discriminating score grid for the attribute-based clusters

Notes. Attributes marked in blue have a mean value above 5.0 and a discriminating score above 10.
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