

Attribute importance segmentation of Norwegian seafood consumers:

The inclusion of salient packaging attributes

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4 1 **Attribute importance segmentation of Norwegian seafood consumers:**

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6 2 **The inclusion of salient packaging attributes**

7
8 3 **Abstract**

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10 4 The main purpose of this study is to identify consumer segments based on the importance
11 5 of product attributes when buying seafood for homemade meals on weekdays. There is a
12 6 particular focus on the relative importance of the packaging attributes of fresh seafood. The
13 7 results are based on a representative survey of 840 Norwegian consumers between 18 and 80
14 8 years of age. This study found that taste, freshness, nutritional value and naturalness are the
15 9 most important attributes for the home consumption of seafood. Except for the high
16 10 importance of information about expiration date, most other packaging attributes have only
17 11 medium importance. Three consumer segments are identified based on the importance of 33
18 12 attributes associated with seafood: Perfectionists, Quality Conscious and Careless
19 13 Consumers. The Quality Conscious consumers feel more self-confident in their evaluation of
20 14 quality, and are less concerned with packaging, branding, convenience and emotional benefits
21 15 compared to the Perfectionists. Careless Consumers are important as regular consumers of
22 16 convenient and pre-packed seafood products and value recipe information on the packaging.
23 17 The seafood industry may use the results provided in this study to strengthen their positioning
24 18 of seafood across three different consumer segments.

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41 19 **Keywords:** Consumer segmentation; Attribute Importance; Packaging; Home meals;
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43 20 Seafood; Norway.
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21 **1. Introduction**

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

28 Consumers' food evaluations and choice depend on the type of product (Verain et al.,
29 2016) and the type of context (Edwards, Meiselman, Edwards, & Leshner, 2003; Jaeger, Bava,
30 Worch, Dawson, & Marshall, 2011). Because the importance of attributes may differ between
31 different food contexts, this study examines attribute importance when consumers want to
32 buy seafood for home preparation and consumption for their everyday main meals (Monday-
33 Friday). About 80% of the seafood consumed in Norway is consumed at home (Norwegian
34 Seafood Council).

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

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120
121 46 importance across different consumer segments, allowing for a more efficient differentiating
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123 47 and marketing strategy for the seafood industry.”

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126 48 This study contributes to the existing food segmentation literature by analyzing the
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128 49 relative importance of 33 attributes derived from previous studies on food choice in general
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130 50 (Steptoe, Pollard, & Wardle, 1995), and seafood in particular (Carlucci et al., 2015). For
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132 51 example, Onwezen et al. (2012; 285) focused on intrinsic attributes of food (e.g., taste,
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134 52 nutritional value and convenience) and not on extrinsic attributes (e.g., packaging, labels,
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136 53 brand). Also, Verain et al. (2016:105) ask for a broader set of attributes to be used in
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138 54 consumer segmentation of food. Thus, this study’s inclusion of a wide range of packaging
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140 55 attributes for segmentation purposes is an extension of the extant literature (Ares, Besio,
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142 56 Gimnenez, & Deliza, 2010; Onwezen et al., 2012; Mueller & Szolnoki, 2010; Verbeke,
143
144 57 Vermeir, & Brunsø, 2007; Verain et al., 2016). Another contribution is the introduction of
145
146 58 some new profiling variables such as price-quality inference (Campbell, DiPietro, & Remar,
147
148 59 2014; Völckner & Hofmann, 2007) and attitudes towards luxury foods (Dubois, Czellar &
149
150 60 Laurent, 2005; Vigneron & Johnson, 2004), not to our knowledge previously used for
151
152 61 profiling food consumer segments. A discussion of the selection and categorization of
153
154 62 attributes and profiling variables used in this study is presented in the following sections.

155 63 **2. Theoretical framework**

156 64 *2.1. Categorization of attributes for everyday main meals of seafood*

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159 65 Attributes are here defined as those characteristics of products or services that consumers
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161 66 find relevant as predictors of the desired consumption experience (Smith & Deppa, 2009).

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164 67 Attribute importance segmentation is an attitudinal approach to identify consumers’
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166 68 motivation to buy or consume (Verain et al., 2016). Prior to consumption, such as going into
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168 69 a store to buy ingredients for home meal consumption, consumers base their attribute
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170 70 evaluation on the expected benefits from the products they consider and buy. The links
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180 71 between expected attribute performance, benefits and values link the perception of products
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182 72 to the basic motivation emanating from a consumer's value system (Grunert, 2010; Gutman,
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184 73 1982).

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187 74 Technical, functional and informative *packaging attributes* are given a specific focus in
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189 75 this study. Packaging has an important role in influencing in-store purchasing decisions,
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191 76 especially for food products where purchase decisions are characterized by low involvement,
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193 77 habits or impulsive processes (Liao, Corsi, Chrysochu, & Lockshin, 2015). Nowadays, more
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195 78 and more fresh seafood is sold as chilled pre-packed fillets in various packing materials and
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197 79 formats in supermarkets compared to the traditional fresh fish counters and fish shops. In
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199 80 Norway, the salmon industry has been the innovator in the seafood segment. This has
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201 81 increased consumption of prepacked salmon fillets from 106 tonnes in 2005 to 4,146 tonnes
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203 82 in 2015 (Norwegian Seafood Council¹). During the last 2-3 years, suppliers and distributors of
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205 83 chilled cod fillets and other fish (e.g., pollock, halibut) have started to copy the success of the
206
207 84 salmon industry. In a recent review of what motivates consumers to buy fish and seafood,
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209 85 Carlucci et al. (2015) concluded that packaging attributes do not have received enough
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211 86 attention by researchers. Only two studies are included in their review. For example, Birch
212
213 87 and Lawley (2012) found that a majority (50-60%) of regular fish consumers in Australia
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215 88 preferred to buy unpacked seafood because of price, freshness and local origin. The
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217 89 remaining consumers wanted packaged fish because of availability/convenience and
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219 90 availability of information on assurance of freshness (use-by date), assurance of quality
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221 91 (branding), price per portion, etc. Packaging attributes used in this study include the size,
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223 92 visual characteristics (design, colour, visibility of the core product), labelling (recipe, shelf
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225 93 life, product information) and whether the package signals a well-known brand (Jinkarn &
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227 94 Suwannaporn, 2015; Koutsimanis, Getter, Behe, Harte, & Almenar, 2012; Liao et al., 2015;
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229 95 Verbeke et al., 2007).

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239 96 Freshness, taste and nutritional value are considered to be three of the most important
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241 97 attributes associated with a general perception of the *quality* of fish or seafood (Carlucci et
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243 98 al., 2015; Olsen, 2004). Some studies have investigated the associations consumers have with
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245 99 freshness in food consumption (Østli, Esaiassen, Garitta, Nøstvold, & Hough, 2013).
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248 100 Common associations to freshness are “minimally processed”, “close to original form”,
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250 101 “natural” and “healthy” (Zhang, Lusk, Miroso, & Oey, 2016). Its meaning differs across
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252 102 products and situations (Heenan, Hamid, Dufour, Harvey, & Delahunty, 2009). Thus,
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254 103 freshness is complex because it involves interactions with other aspects of product quality.
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256 104 This study measures the importance of quality attributes by asking respondents for their
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258 105 evaluation of “mild taste”, “natural taste”, and “fresh smell” in addition to the traditional
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260 106 quality benefits such as “good taste”, “good quality” and “pleasant experience” (Carlucci et
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262 107 al., 2015). For example, “mild taste” is used to promote codfish in Norway. To assess
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264 108 nutritional benefits, this study uses “healthy”, “nutritious” and “natural – without additives”
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266 109 (Aikman, Crites, & Fabrigar, 2006; Carlucci et al., 2015).

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268
269 110 Consumers’ desire to save time and effort, seems to be more and more important, and
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271 111 especially during busy weekdays (Buckley, Cowan, & McCarthy, 2007), and leads to the
272
273 112 importance of convenience-related attributes. Fish and seafood are among foods that many
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275 113 consumers perceived to be inconvenient compared to other protein sources (Olsen,
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277 114 Scholderer, Brunso, & Verbeke, 2007). In addition to traditional convenience attributes (fast,
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279 115 easy and in-store availability), this study also includes attributes specific for some seafood
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281 116 products. Consumers often feel that fish is problematic to prepare because of smell/odour and
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283 117 spill/dripping. In addition, bones make it inconvenient to prepare and problematic to consume
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285 118 (Olsen et al., 2007). Thus, this study also included those attributes.

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288 119 *Affective, emotional and exclusivity* attributes are becoming increasingly important for
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290 120 competitive advantage in food markets, because most products are similar with respect to
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298 121 standard quality, convenience and price (Schifferstein, Fenko, Desmet, Labbe, & Martin,
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300 122 2013). Desmet and Schifferstein (2008) have measured emotions with positive and negative
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302 123 words in two main dimensions; pleasant and unpleasant. This study includes two positive
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304 124 affective/emotional attributes (“exciting/enjoyable” and “popular/desirable”) and one
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306 125 negative affective/emotional attribute (“feeling guilt/shame”). In addition, we include
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308 126 “exclusivity” to assess an association with premium or luxury (Vigneron & Johnson, 2004).
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310 127 Finally, this study includes three attributes associated with price and value; “low priced, fair
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312 128 priced and value for money” (Xia, Monroe, & Cox, 2004). Figure 1 categorizes and
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314 129 summarizes the 33 different attributes used in this study.

Quality (10 items): Good quality; Pleasant feeling/ experience; Fresh (not frozen); Fresh
smell; Good taste; Mild taste; Natural taste; Healthy; Nutritious; Natural/without
additives.

Packaging (10 items): Prepacked; Correct size; Design; Colour; Visibility of the
commodity; Product information; Recipe; Expiration date; Catch area; Well-known brand.

Convenience (6 items): In store availability; Easy to prepare; Fast to prepare; No
spill/odour when preparing; Without bones; No planning.

Affective/exclusive (4 items): Popular/desirable; No guilt/shame; Exciting/enjoyment;
Exclusive.

Price/Value (3 items): Low priced; Fair priced; Value for money.

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

131 2.2. Associations with general attitudinal and motivational variables

132 Individual differences in consumer attribute importance are suggested to be related to
133 more general attitudinal and motivational variables. In accordance with previous research,
134 this study includes *product involvement* (Ares et al., 2010; Verbeke et al., 2007), *product*
135 *knowledge* (Rortvedt & Olsen, 2007), *health involvement* (Onwezen et al., 2012), *willingness*

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357 136 *to pay* (Breidert, Hahsler, & Reutterer, 2006), and *product preferences / evaluation* (Mueller
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359 137 & Szolnoki, 2010) as profiling variables. In addition, we also measure *frequency of*
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361 138 *consumption* (Koutsimanis et al., 2012; Verbeke et al., 2007). A combination of these
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363 139 variables has previously been used to analyze drivers of seafood consumption or as profiling
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365 140 variables in consumer segments of seafood products (Carlucci et al., 2015).

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368 141 Research in the past five to six decades suggests that consumers believe that price is an
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370 142 indicator of quality, especially in the absence of other clear quality indicators or when there is
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372 143 less knowledge about the product (Völckner & Hofmann, 2007). *Price/quality inference* is
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374 144 defined as consumers' tendency to expect or infer that products with a higher price are of
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376 145 better quality compared to low-priced products (Campbell et al., 2014). Prepacked seafood
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378 146 may be more difficult to evaluate compared to seafood bought fresh from a seafood counter
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380 147 because of less availability of sensory cues (e.g., touch and smell). The lack of trust in quality
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382 148 may be one of the main reasons why consumers prefer to buy unpacked seafood (Carlucci et
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384 149 al., 2015). Thus, this study is to our knowledge the first study to explore a possible
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386 150 relationship between consumer food benefits segments and their general expectations about
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388 151 the relationship between price and quality (inferences).

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391 152 The market for premium and luxury food is growing. Packaging is often used to signal
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393 153 quality or exclusivity of the product (Mueller & Szolnoki, 2010). The premium and luxury
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395 154 constructs imply expectations of excellent quality, hedonism, uniqueness and high price
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397 155 (Vigneron & Johnson, 2004). Attitude towards luxury is in this study defined and measured
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399 156 as consumers' affect-related associations towards luxury (food) products (Dubois et al., 2005.
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401 157 Fresh seafood priced more than, for example, frozen seafood in Norway (Østli et al., 2013. It
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403 158 is also considered to be more exclusive and has a higher prestige among consumers (Carlucci
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405 159 et al., 2015). This study is to our knowledge the first to explore the possible relationship
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416 160 between attitudes towards luxury and the attribute importance-based segments of seafood
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418 161 consumers.
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421 162 *2.3. Research objectives*
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423 163 The current study first aims to explore the relative importance of a wide range of
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425 164 attributes Norwegian consumers use when buying seafood products for preparing their
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427 165 everyday home-made meals on weekdays. Packaging attributes are given a special focus, but
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429 166 attributes associated with quality, convenience, emotions/exclusivity and price are included
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431 167 as well. Not all attributes are expected to be of equal importance for all consumers. Thus, our
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433 168 second objective is to identify possible consumer segments based on the importance of the 33
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435 169 attributes. The third aim is to present a grid with one dimension showing attribute
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437 170 importance, and the other the ability of the attributes to differentiate between segments.
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439 171 Finally, consumer segments are profiled against consumers' attitude/preferences for and
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441 172 consumption of fresh seafood (especially cod), involvement (in health and seafood),
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443 173 knowledge of seafood/quality, expected inferences about the price-quality relationship,
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445 174 willingness to pay for fresh seafood and attitudes towards food exclusivity/luxury. Such
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447 175 information gives a deeper understanding of similarities and differences between segments,
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449 176 and arguments for improving marketing strategies in the area of product- and packaging
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451 177 development, consumer communication/education, branding and pricing.
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454 178 **3. Methodology**

455 179 *3.1. Design and subjects*

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459 180 A cross-national web-based survey was conducted with a representative sample of 1,000
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461 181 Norwegian adults (18-80 years of age). Respondents were randomly selected from a pool of
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463 182 pre-recruited respondents by a professional research agency. An effective sample size of 840
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465 183 was used in this study after deleting the cases with the most missing values and answers of
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467 184 "don't know". A summary analysis of the main characteristics of the sample shows that 47.9
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 475 185 % of the participants were female, and 24.6% were living in single households. The average
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 478 186 age was 46 years and approximately 40% of the respondents had an income level of 400,000–
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 480 187 900,000 NOK (about 44,000–100,000 EURO). The descriptive statistics for demographics
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 482 188 are shown in Table 1.

483
 484 189 **Table 1.** Descriptive statistics for demographical characteristics

		Frequency	Percent
Gender	Male	438	52.1
	Female	402	47.9
Family income (1000 NOK; 1 € = 9 NOK)	Under 300	127	15.1
	300 – 600	229	27.3
	600 – 900	177	21.1
	From 900	307	36.5
Age group (year old)	Under 30	149	17.7
	30 – 60	497	59.2
	From 60	194	23.1
Family status	Family households	633	75.4
	Single households	207	24.6

507 190 Individuals completed a related experiment (not reported here) and an online survey about
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 509 191 their fish/cod consumption, preferences, seafood- and health involvement, price-quality
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 511 192 inferences, knowledge, willingness to pay, demographics, along with other constructs (some
 512
 513 193 are not part of this analysis).

514 194 3.2. *Questionnaire and variables*

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 516 195 Each respondent had to rate their perceived *importance of 33 attributes* for general
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 518 196 seafood consumption at main meals during the weekdays (Monday to Friday) on a 9-point
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 520 197 scale from not important (1) to extremely important (9). A similar scale was previously used
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 522
 523 198 by Onwezen et al. (2012).

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534 199 Cod is the most traditional and most consumed seafood (besides farmed salmon) in
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536 200 Norway (Norwegian Seafood Council). This study uses cod as a target reference for seafood.
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538 201 Pre-packed fresh cod is also the seafood item with the most rapidly growing consumption in
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540 202 Norway during the last 2-3 years (Norwegian Seafood Council). Thus, this study assessed
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542 203 consumption and preference variables for seafood in general and cod in particular to verify
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544 204 the consistency, variability and validity of the seafood construct.

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547 205 *Seafood consumption* was measured on a nine-point scale in the form: “How often do you
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549 206 consume the following categories of seafood for dinner?”: 1 = three times or more a week (or
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551 207 about 160 times a year), 2 = two times a week (or about 100 times a year), 3 = 1 time a week
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553 208 (about 50 times a year), 4 = 2-3 times a month (about 30 times a year), 5 = 1 time a month
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555 209 (12 times a year), 6 = 4 times a year, 7 = 2 times a year, 8 = 1 time a year, 9 =
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557 210 seldom/never. The types of meals measured were: Total (all) seafood, total cod, and fresh
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559 211 fillets of cod. A second behaviour question about the relative amount of fresh seafood and
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561 212 fresh cod they *bought pre-packed* was added on a ten-point scale: 1 = less than 10%, 2 = 10-
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563 213 20%, etc. up to 10 = 91-100%.

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566 214 *Preferences* for seafood was measured on a 7-point preference scale: “How much do you
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568 215 *like* the following categories of seafood for dinner?” 1 = Very little to 7 = Very much for
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570 216 seafood in general, cod in general, fresh fillets of cod and pre-packed fresh cod. Liking is
571
572 217 previously used to assess general preferences for seafood (Cardoso et al., 2013).

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575 218 *Willingness to pay* was assessed with three items. The consumers were shown a photo of
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577 219 pre-packed fresh cod and asked: “What is the highest price you are willing to pay in NOK for
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579 220 this product under three different freshness conditions: 12 hours, 48 hours and 4 days after
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581 221 catching. All respondents were given a reference price of 150 NOK (about 16.50 €) for
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583 222 products like this when sold in a supermarket. The assessment of this construct is adapted
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585 223 from Breidert et al. (2006).
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593 224 *Product involvement* and *health involvement* are developed based on items from Bell and
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595 225 Marshall (2003) and from Pieniak et al. (2010). “Seafood is an important part of my diet” and
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597 226 “Good health is important to me” are examples of items used to assess these two constructs.
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599 227 *Product (quality) knowledge* was assessed by 4 items on a 7-point Likert scale, such as
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601 228 “Compared with an average person, I know a lot about how to evaluate the quality of
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603 229 seafood” previously used by others (Heide & Olsen, 2011).

604
605 230 The question of *price/quality inference* was measured on a 7-point Likert scale using
606
607 231 previously tested items by Campbell et al. (2014). Measurement items included three
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609 232 statements such as for example: “Prices of seafood are good indicators of its quality”.
610
611 233 Consumers’ *attitudes towards luxury* were measured on a 7-point Likert scale based on 4
612
613 234 items from Dubois et al. (2005) such as: “I feel attracted towards luxury food” and “Luxury
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615 235 food means a lot to me”.

616 617 236 *3.3 Data analysis*

618
619 237 The analysis of the data was performed in five steps. First, descriptive statistics were used
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621 238 to report the importance of attributes when consumers are buying seafood for their main meal
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623 239 during the weekdays. Secondly, in order to determine the clusters, the Two-Step Cluster
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625 240 procedure in SPSS was used, using the log-likelihood option for distance measure and
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627 241 Schwarz’s Bayesian Criterion (BIC) as the determinant of the number of clusters. The log-
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629 242 likelihood is a probability-based distance. The distance between two clusters is related to the
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631 243 decrease in log-likelihood as they are combined into one cluster. In addition, because the
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633 244 importance of the 33 attributes were measured by the same 9-point scale, the cluster-analysis
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635 245 was based on the unstandardized data’ (Moisl, 2015).

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637 246 Third, a grid of discriminating-importance scores of attributes was presented. Fourth, a
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639 247 factor analysis of those profiling variables that were latent constructs was performed. Finally,
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641 248 the differences between clusters were analyzed by ANOVA for the profiling factors and a
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652 249 crosstabs analysis with chi-squared test was performed to see if the clusters differ in their
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654 250 demographic characteristics.
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656 251 **4. Results**
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658 252 *4.1. Mean importance of attributes*
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660 253 The mean importance of the 33 attributes are shown in Table 2. The results reveal that the
661
662 254 most important attributes are related to perceived quality such as taste, freshness, healthiness,
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664 255 nutritional value and naturalness. One packaging attribute, the information about expiration
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666 256 date, is among the most import attributes. Most of the packaging attributes are of medium
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668 257 (visible commodities, product and information and size) and low (information about catch
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670 258 area, brand, recipe, design or colour) importance. Value for money and price are ranked
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672 259 second after perceived quality, while convenience attributes are of medium o importance.
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674 260 *4.2. Cluster analysis*
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676 261 The result from the two-step cluster analysis shows that the lowest BIC coefficient and
677
678 262 the largest ratio of the distances is for three segments of consumers (see Table 2). The first
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680 263 segment (N = 252; 30.0%) is termed “Perfectionists”. Consumers in this segment have the
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682 264 highest scores on almost all the attributes associated with price/value, convenience and
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684 265 packing information, including labelling and brand. Also, other attributes are evaluated as
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686 266 relatively high compared with other clusters. The second segment (N = 334; 39.8%) is named
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688 267 “Quality Conscious”. Consumers in this segment are characterized by the highest scores on
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690 268 the quality attributes (e.g., good general quality, taste, healthy, smells fresh, nutritional
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692 269 value), while the importance of the affective and convenience attributes and some aspects of
693
694 270 packaging information are the lowest. The difference between the Perfectionists and Quality
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696 271 Conscious are largest regarding the packaging (colour, design, recipe, prepacked, brand) and
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698 272 affective / exclusive attributes (popular/desirable, exclusive, and guilt free /shame free).
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711 273 Finally, the last segment called “Careless” (N = 254; 30.2%) includes consumers who
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714 274 evaluate almost all attributes by low to average importance when buying seafood for their
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716 275 daily meals. The Careless Consumers are less concerned about quality, but expect and desire
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718 276 low price products. They have a similar profile as the Quality Conscious when it comes to
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720 277 convenience attributes (no spill, planning, fast and easy to prepare) and brand, but care more
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722 278 about bones. The Careless Consumers perceive some packaging attributes (colour, design,
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724 279 recipe and pre-packaging) to be more important than the quality conscious. The Careless
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726 280 Consumers and Perfectionist differ on all attributes, and the differences are most prominent
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728 281 on packaging attributes (brand, catch area, visibility of the commodity, product information,
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730 282 correct size, design, colour, and pre-packaging), quality attributes (natural – without
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732 283 additives, natural taste, pleasant experience, nutritious, smells fresh, no spill/odour when
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734 284 preparing and healthy), and some affective attributes (exclusive and exciting).

737 **Table 2.** The characteristics of the clusters

Attributes	Segments (95% confidence interval for means)			ANOVA		Post hoc test multiple comparisons		
	Perfectionists (n = 252; 30%)	Quality Conscious (n = 334; 39.8%)	Careless Consumers (n = 254; 30.2%)	F- values	p	1-2	1-3	2-3
Good taste	8.07-8.28	8.48-8.64	6.45-6.86	205.00	0.00	<	>	>
Good quality	8.08-8.31	8.51-8.66	6.18-6.58	289.50	0.00	<	>	>
Smells fresh	7.76-8.04	8.20-8.45	5.62-6.09	232.00	0.00	<	>	>
Healthy	7.89-8.12	7.92-8.18	5.76-6.21	204.70	0.00	=	>	>
Expiration date	7.89-8.13	7.58-7.99	5.94-6.42	87.90	0.00	=	>	>
Nutritious	7.74-7.99	7.83-8.12	5.58-6.02	201.40	0.00	=	>	>
Natural – without additives	7.76-8.03	7.80-8.13	5.29-5.75	217.30	0.00	<	>	>
Natural taste	7.62-7.89	7.36-7.73	5.20-5.61	183.90	0.00	=	>	>
Gives value for money	7.22-7.55	7.06-7.46	5.87-6.26	49.90	0.00	=	>	>
Pleasant feeling	7.40-7.71	7.02-7.43	5.13-5.58	124.10	0.00	=	>	>
Visibility of the commodity	7.31-7.60	6.95-7.39	5.00-5.46	119.70	0.00	=	>	>
Has a fair price	7.05-7.37	6.74-7.16	5.56-5.96	53.60	0.00	=	>	>
In store availability	7.27-7.56	6.63-7.06	5.48-5.87	71.60	0.00	>	>	>
Product information	7.20-7.51	6.28-6.78	4.94-5.37	86.60	0.00	>	>	>
Easy to prepare	7.22-7.49	5.70-6.18	5.54-5.94	60.30	0.00	>	>	=
Correct size	7.38-7.63	5.70-6.25	5.19-5.60	79.30	0.00	>	>	>

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771	Without bones	7.19-7.60	5.18-5.79	5.82-6.32	49.30	0.00	>	>	<
772	Fast to prepare	7.07-7.38	5.36-5.86	5.41-5.82	64.40	0.00	>	>	=
773	No planning	7.00-7.31	5.25-5.75	5.33-5.72	68.50	0.00	>	>	=
774	Fresh (not frozen)	6.43-6.89	5.41-5.94	4.49-4.96	50.90	0.00	>	>	>
775	Is exciting / enjoyable	6.78-7.11	4.82-5.26	4.65-5.09	81.90	0.00	>	>	=
776	Is cheap (low priced)	5.89-6.36	4.99-5.49	5.27-5.70	13.20	0.00	>	>	=
777	Mild taste	6.73-7.09	4.67-5.20	4.83-5.26	81.80	0.00	>	>	=
778							>	>	=
779	No spill / odour when preparing	6.52-6.94	4.30-4.84	4.49-4.91	89.10	0.00	>	>	=
780	Catch area	6.24-6.68	4.86-5.44	3.94-4.43	63.40	0.00	>	>	>
781	Well-known brand	6.61-6.96	3.79-4.32	3.97-4.42	152.30	0.00	>	>	=
782	Prepacked (in store)	6.30-6.69	3.64-4.14	4.18-4.62	153.60	0.00	>	>	<
783							>	>	<
784	Not gives me guilt / shame	5.90-6.45	3.51-4.14	3.94-4.46	70.90	0.00	>	>	=
785							>	>	=
786	Is exclusive	5.90-6.34	2.86-3.37	3.69-4.18	152.20	0.00	>	>	<
787	Recipe	5.72-6.20	2.53-2.94	3.78-4.28	194.10	0.00	>	>	<
788	Is popular / desirable	5.62-6.13	2.49-2.97	3.66-4.18	153.80	0.00	>	>	<
789	Design	5.46-5.94	1.97-2.31	3.36-3.82	282.10	0.00	>	>	<
790	Colour	5.21-5.74	1.71-2.03	3.14-3.61	280.90	0.00	>	>	<

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793 287 *4.3. A grid of important and discriminating attributes*

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795 288 As discussed in the section on theoretical background, the most important attributes as

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797 289 measured by their mean values may not be those that discriminate best between clusters,

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799 290 because all consumers may perceive these as very important (Onwezen et al., 2012).

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801 291 Therefore, a presentation of an importance – discriminating grid based on both the

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803 292 importance by mean values and the discriminating score (“predictor importance”) for each

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805 293 attribute to the cluster solutions will provide more information about unique positioning

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807 294 opportunities. Normally, *F*-values in an ANOVA to test the mean differences between the

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809 295 clusters on each attribute are used to assess how distant the clusters are (Burns & Burns,

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811 296 2008). However, because most attributes are highly correlated with each other, and the *F*-

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813 297 values may therefore contain overlapping discriminant information, a multinomial logistic

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815 298 regression was used to determine the predictor importance of 33 attributes for the three-

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817 299 cluster solution (Hair, Black, Babin & Anderson, 2010). As discussed by Cohen, Cohen,

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819 300 West, and Aiken (2003), for a logistic model a Chi-squared test indicates the statistical

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829 301 strength of the fit of the estimated model. Two models may have an equal predicting power
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831 302 or an equal R^2 , but the model with a bigger chi-squared value would have a better fit.
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833 303 Therefore, the discriminating score or the predicting power of a predictor is reflected by the
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835 304 difference in Chi-squared statistics if the predictor was eliminated from the model.
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840 306 Insert figure 2 here
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844 308 The results in Figure 2 provide additional information by placing the attributes in a
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846 309 diagram according to their mean importance values and their discriminating scores. Fresh
847
848 310 smell and good general quality are both important and have good discriminatory power.
849
850 311 Visible commodity and natural taste are attributes that are relatively high for both importance
851
852 312 value and discriminatory power. Recipe on the package has good discriminatory power, but is
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854 313 not so important – especially for the Quality Conscious. Design, colour and expiration date
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856 314 on the package, as well as exclusive, have some possibilities as unique selling positioning for
857
858 315 some customers. Only a few quality attributes (smells fresh, good quality, natural taste and
859
860 316 pleasant feeling) make an important contribution to the difference between the three clusters.
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862 317 The packaging attributes, such as recipe on package, design of the package, visible
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864 318 commodities, colour of the package or marked with expiration date have significant
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866 319 discriminatory power in differentiating between the clusters. However, other packaging
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868 320 benefits, such as correct size of the package, information about the product, catch area or
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870 321 well-known brand are less effective in differentiating between the clusters. The attributes
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872 322 price/value, convenience and exciting are the least effective in discriminating between the
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874 323 clusters. In Figure 2, 9 attributes, marked in blue, have mean values above 5.0 and a
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876 324 discriminatory score above 10. These include 7 quality attributes (smells fresh, good quality,
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888 325 natural taste, good taste, nutritious, natural without additives and pleasant feeling) and 2
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890 326 packaging attributes (visible commodities and marked with expiration).
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893 327 *4.4. Confirmatory factor analysis for attitudinal and motivational constructs*

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895 328 Multiple items are recommended for latent or unobservable constructs (Hair et al., 2010).
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897 329 Therefore, before the profiling analysis was carried out, a confirmatory factor analysis was
898
899 330 conducted for the latent constructs (e.g., preferences, involvement, knowledge, willingness to
900
901 331 pay) in order to ensure the internal consistency and the convergent and discriminant validity
902
903 332 of the constructs (Anderson & Gerbing, 1988). The result is shown in Table 3.
904

905 333 **Table 3.** Factor analysis for profiling attitudinal and motivational constructs

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

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I feel attached towards luxury food	0.81
I could talk about luxury food for hours	0.80

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

336 The results of the confirmatory factor analysis indicate a good fit with the data ($\chi^2 =$
337 708.1, $df = 195$, $p = 0.000$; $GFI = 0.93$; $CFI = 0.97$; $RMSEA = 0.056$) (Browne & Cudeck,
338 1992). All factor loadings on the constructs are highly significant ($p < 0.001$: t -value > 21.0)
339 with values ranging from 0.68 to 0.98, which shows the convergent validity of the constructs.
340 The composite reliabilities exceed the minimum value of 0.80 and the variances extracted
341 surpass the recommended threshold of 0.50 (Anderson & Gerbing, 1988). Therefore, all of
342 the measures show highly reliability. The correlations among the latent constructs are less
343 than 0.50, and the squared correlation between each of the constructs (highest value 0.24) is
344 less than the average variance extracted (AVE) from each pair of constructs (lowest value
345 0.68), demonstrating discriminant validity (Fornell & Larcker, 1981). The scores of the latent
346 constructs were generated by averaging the items of the measurements.

347 *4.5. Profiling the clusters on seafood and cod consumption and preference*

348 Consumer segments are profiled by the consumption of fresh seafood (especially cod) and
349 consumers' attitude/preferences (Table 4). Both Perfectionist consumers and Quality
350 Conscious consumers have a similar consumption frequency of seafood in general (5.74 vs.
351 5.98) and cod fish in general (4.75 vs. 4.51). However, our results confirm that the
352 Perfectionists have slightly higher consumption of cod fillets (4.87 vs. 4.43) and for pre-
353 packed consumption of seafood in general (6.49 vs 5.59) and prepacked cod (5.31 vs. 4.45)
354 compared to the other two segments. In the area of pre-packed seafood, cod included, the
355 Perfectionists are the most attractive segment. On the other hand, Careless Consumers eat
356 somewhat less seafood in general and cod fish in both types of unpackaged and pre-packaged
357 formats.

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358 **Table 4.** Profiling the different segments based on seafood consumption and preferences

Profile variables	Segments			ANOVA		Post hoc test multiple comparisons		
	Perfectionists	Quality Consciousness	Careless Consumers	F-values	p	1-2	1-3	2-3
<i>Seafood consumption</i>								
Seafood in general	5.74 (0.09)	5.98 (0.08)	5.25 (0.10)	18.3	0.000	=	>	>
Cod	4.41 (0.11)	4.51 (0.10)	4.03 (0.12)	5.1	0.006	=	>	>
Cod fillets	4.87 (0.12)	4.43 (0.12)	4.18 (0.13)	7.2	0.001	>	>	=
<i>Pre-packaged consumption</i>								
Seafood in general	6.49 (0.20)	5.59 (0.20)	5.42 (0.21)	7.2	0.001	>	>	=
Cod	5.31 (0.22)	4.45 (0.21)	4.35 (0.22)	5.3	0.005	>	>	=
<i>Preference</i>								
Seafood in general	5.68 (0.08)	6.26 (0.07)	4.82 (0.09)	87.2	0.000	<	>	>
Cod in general	5.56 (0.09)	5.94 (0.09)	4.48 (0.10)	68.1	0.000	<	>	>
Cod, fresh fillets	5.70 (0.09)	6.00 (0.08)	4.56 (0.10)	69.7	0.000	<	>	>
Cod, fresh pre-packed	5.18 (0.09)	5.10 (0.10)	4.18 (0.10)	31.1	0.000	=	>	>

359 *Notes. Numbers in (...) are standard deviations.*

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

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

372 *4.6. Profiling the clusters on attitudinal and motivational variables*

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373 The results of profiling the clusters on attitudinal and motivational variables are presented
374 in Table 5. While Careless Consumers have the lowest scores on all profiling variables, both
375 Perfectionists and Quality Conscious consumers are shown to be similar in willingness to pay
376 (93.5 vs. 91.0), product involvement (5.39 vs. 5.48), health involvement (5.93 vs. 5.97) and
377 product knowledge (4.50 vs. 4.39). However, the Perfectionists (4.00) use price as an indicator
378 to infer seafood quality more often than the Quality Conscious (4.00 vs. 2.81). This means that
379 consumers with high quality consciousness seem to be more confident than Perfectionists in
380 evaluating seafood quality. The Perfectionists also show a more positive attitude towards
381 luxury food than the Quality Conscious consumers.

Table 5. Profiling on attitudinal and motivational constructs

Profile variables	Segments			ANOVA		Post hoc test multiple comparisons		
	Perfectionists	Quality Conscious	Careless Consumers	F-values	p	1-2	1-3	2-3
Willing to pay	93.5 (3.23)	91.0 (2.81)	79.0 (3.41)	5.7	0.003	=	>	>
Product involvement	5.39 (0.07)	5.48 (0.08)	4.39 (0.08)	58.2	0.000	=	>	>
Health involvement	5.93 (0.06)	5.97 (0.06)	5.02 (0.07)	81.1	0.000	=	>	>
Product knowledge	4.50 (0.08)	4.39 (0.08)	3.66 (0.08)	28.9	0.000	=	>	>
Price-quality inference	4.00 (0.08)	2.81 (0.07)	3.45 (0.08)	66.5	0.000	>	>	<
Attitudes towards luxury	3.27 (0.10)	2.17 (0.08)	2.80 (0.09)	42.3	0.000	>	>	<

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

4.7. Profiling the clusters on socio-demographic characteristics

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

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392 higher ratio (about 70%) of elderly consumers (> 40) belongs to the Perfectionists and
 393 Quality Conscious consumers rather than to the Careless Consumer segment.

394 **Table 6.** Profiling the segments on socio-demographic characteristics

Demographic characteristics	Clusters				Chi-squared test	
	Perfectionists	Quality Conscious	Careless Consumers	Total		
Gender	Female	129 (51.2)	194 (58.1)	115 (45.3)	438 (52.1)	$\chi^2 = 9.6;$ df = 2; p < 0.01
	Male	123 (48.8)	140 (41.9)	139 (54.7)	402 (47.9)	
Family status	No children	157 (18.7)	208 (24.8)	148 (58.3)	513 (61.1)	$\chi^2 = 1.2;$ df = 2; p > 0.10
	With children	95 (37.7)	126 (37.7)	106 (41.7)	327 (38.9)	
Age group	< 30	43 (17.1)	38 (11.4)	68 (26.8)	149 (17.7)	$\chi^2 = 44.8;$ df = 8; p < 0.001
	30 – 40	40 (15.9)	57 (17.1)	63 (24.8)	160 (19.1)	
	40 – 50	53 (21.0)	66 (20.0)	49 (19.3)	168 (20.0)	
	50 – 60	56 (22.2)	76 (22.8)	37 (14.6)	169 (20.1)	
Family income (1,000 NOK)	< 300	33 (13.1)	46 (13.8)	48 (18.9)	127 (15.1)	$\chi^2 = 4.3;$ df = 4; p > 0.10
	300 – 600	124 (49.2)	167 (50.0)	115 (45.3)	406 (48.3)	
	From 600	95 (37.7)	121 (36.2)	91 (35.8)	307 (36.5)	
	Total	252 (100)	334 (100)	254 (100)	840 (100)	

395 Notes. Numbers in (...) are percentages.

396 5. Discussions and implications

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

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1183 407 (Völckner & Hofmann, 2007) and attitudes towards premium and luxury products (Dubois et
1184 408 al., 2005).

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1188 409 *5.1. Medium importance of packaging attributes*

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1190 410 Our result confirms previous studies (Carlucci et al., 2015) suggesting that quality
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1192 411 attributes such as taste, freshness, nutritional value and naturalness are the most important
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1194 412 consumer attributes when buying seafood for home consumption. One packaging attribute,
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1196 413 information about expiration date, is evaluated with the same importance as freshness and
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1198 414 nutritional attributes. Value for money and price are ranked second after perceived quality.
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1200 415 Price is important for consumption of fish in several other countries in Europe (e.g., Verbeke
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1202 416 & Vackier, 2005) and in other countries such as, for example, Australia (Birch, Lawley, &
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1204 417 Hamilton, 2012).

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1207 418 The importance of packaging attributes is mostly in the medium range. Norwegian
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1209 419 consumers prefer visible raw materials and value product information relatively highly. This
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1211 420 is in accordance with previous studies confirming that consumers want visible cues of (fresh)
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1213 421 seafood (Birch & Lawley, 2012), and product information can increase the trust and
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1215 422 confidence in their evaluation and choice of seafood (Pieniak et al., 2007). Information about
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1217 423 catch area, brand and recipe are regarded as less important among Norwegian consumers.
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1219 424 Design and packaging colour are evaluated with the lowest importance score of the attributes
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1221 425 evaluated in this study. However, such attributes are important for the suppliers to increase
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1223 426 consumers' awareness, attention and emotions at point of purchase in the supermarkets (Liao
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1225 427 et al., 2015; Silayoi & Speece, 2007).

1228 428 *5.2. Perfectionists differ from the Quality Conscious consumer segment*

1230 429 The present research identified three consumer segments based on the relative importance
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1232 430 of 33 attributes when buying seafood products for home meal consumption on weekdays. The
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1234 431 first segment is termed "Perfectionists" (30% of the sample) and share common meaning

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1242 432 with the “Adventurous Consumer” in Nie and Zepeda (2011) and “Connoisseur Fish
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1244 433 Consumers” in Verbeke et al. (2007). The second segment is termed “Quality Conscious”
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1246 434 (39.8% of the sample) and can be compared to the “Self-Confident fish consumers” in
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1248 435 Verbeke et al. (2007) or “Perfectionists/Quality conscious” in several consumer studies of
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1250 436 consumer decision making styles (Mitchell & Bates, 1998). Thus, this study identified a
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1252 437 significant distinction between “Perfectionists” and “Quality Conscious”, not always
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1254 438 confirmed in the consumer decision making or shopping orientation literature (Mitchell &
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1256 439 Bates, 1998; Rezaei, 2015). Our third, segment is termed “Careless” (30.2% of the sample),
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1258 440 and is similar to the “Careless” and “Uninvolved” in Nie and Zepeda (2011) or “Uncertain
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1260 441 fish consumers” and “Uninvolved fish consumers” in Verbeke et al. (2007).

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1262 442 The Perfectionists score highest on almost all attributes associated with perceived quality,
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1264 443 price/value, convenience, packaging, information and branding. This segment has a high
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1266 444 consumption of seafood, and the highest consumption of more convenient varieties such as
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1268 445 fillets and pre-packed products. The Perfectionists are willing to pay more for premium fresh
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1270 446 cod and are more luxury focused than the other segments. Even though they express high
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1272 447 product knowledge, they also agree that higher price of seafood is a good indicator of its
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1274 448 quality. These consumers are younger than the Quality Conscious and seem to be the most
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1276 449 innovative and most likley among the Norwegians in the adoption of pre-packed cod.
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1278 450 However, building brand equity and profile premium freshness will increase the opportunities
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1280 451 for success in this segment.

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1282 452 The Quality Conscious are characterized by the highest score on quality attributes such
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1284 453 as freshness, taste, health and nutritional value. However, their evaluation of convenience,
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1286 454 some packaging attributes (e.g., colour, design, recipe) and of luxury/exclusivity are very low
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1288 455 compared to the other two segments – particularly the Perfectionists. The Quality Conscious
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1290 456 have high consumption and preferences for fish, except for pre-packed products where the
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1301 457 Perfectionists are a more promising segment. In the same way as the Perfectionists, the
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1303 458 Quality Conscious have higher product- and health involvement, and they are reasonably
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1305 willing to pay for premium fresh qualities. They have high knowledge about seafood, but use
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1307 it differently than the Perfectionists. The Quality Conscious do not infer quality by price or
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1309 brand, but seem more confident in their capability and confidence to evaluate quality based
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1311 on visual attributes of seafood. Their experience (higher age) of buying more fresh seafood,
1312 462
1313 more whole fish and from seafood counters (less fillets and pre-packed) may be the reason
1314 463
1315 for their confidence and knowledge.
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1318 465 The third segment, the Careless Consumers (30.2% of the sample) are by far the group
1319
1320 466 that evaluates almost all the attributes with lowest to average importance when buying
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1322 467 seafood for their everyday meals. Careless Consumers value branding and convenience at the
1323
1324 same level as the Quality Conscious, but are more concerned about bones. This segment feel
1325 468
1326 that some packaging attributes (colour, design, recipe) and pre-packing are more important
1327 469
1328 than for the Quality Conscious. Careless Consumers have the lowest consumption and
1329 470
1330 preferences for seafood of all segments, but their consumption of pre-packed seafood is
1331 471
1332 relatively high and close to the same level as the Quality Conscious. This segment is less
1333 472
1334 concerned about health, have lower knowledge and are less willing to pay for premium fresh
1335 473
1336 compared to the other segments. Thus, the Careless Consumers are evaluated as the less
1337 474
1338 attractive segment for seafood in general, but its relatively high consumption for pre-packed
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1340 fresh cod indicates that the industry should consider this segment as a niche market for this
1341 476
1342 new packaging technology for fresh seafood.
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1345 478 *5.3. Implications*

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1348 479 This study encourages the use of with a broad range of attributes, covering product,
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1350 480 packaging and communication, in order to define and target different marketing segments.
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1352 481 For example, recipe and design on the packaging have potential discriminating power, even
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1360 482 though they do not constitute the most important attributes for the average consumer. The
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1362 483 present study confirms that perceived quality (taste, nutritional value) and freshness of
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1364 484 seafood are the foremost perceived attributes across consumer segments (Carlucci et al.,
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1366 485 2015), and that the confidence into freshness can be strengthened through new innovative
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1368 486 pre-packed products by including product information, expiration dates and visibility of the
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1371 487 products.

1373 488 However, the Quality Conscious consumers are quality oriented without being convinced
1374
1375 489 by branding, premium packaging design, and exclusivity. They are confident in their
1376
1377 490 knowledge of how to evaluate the quality of fresh seafood, and are willing to buy fresh
1378
1379 491 seafood in different forms (chilled, pre-packed, whole, steaks, etc.). The Quality Conscious
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1381 492 segment represent more utilitarian consumers (Voss, Spangenberg, & Grohmann, 2003)
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1383 493 compared to the more hedonistic Perfectionist food consumers. In order to satisfy the
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1385 494 Perfectionists, the industry not only needs to deliver high quality fresh seafood, but it also
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1387 495 needs to position it with a premium price (Vigneron & Johnson, 2004), high profiled
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1389 496 packaging characteristics/design (Azzi et al., 2012; Koutsimanis et al., 2012), in convenient
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1391 497 forms (Candel, 2001) and with emotional appeal (Desmet & Schifferstein, 2008). Fresh
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1393 498 smelling is a perceived benefit which is both important and has a high profiling capacity,
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1395 499 especially for the Quality Conscious consumers.

1398 500 Norwegian consumers eat seafood for the sake of variety, health and moral obligations
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1400 501 (Olsen, 2001). Preferences for other food products are relatively higher than for seafood, but
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1402 502 many of the Careless Consumers are still important customers for the industry because they
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1404 503 consume seafood on a regular basis. Their relatively low involvement in seafood and health
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1406 504 indicate that in-store exposure and packaging (Liao et al., 2015; Mueller & Szolnoki, 2010;
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1408 505 Silayoi & Speece, 2007) can influence their unplanned food decision in the direction of fresh
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1410 506 seafood. Their product knowledge is relatively low and they value convenient benefits
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1419 507 relatively highly. Thus, pre-packed fillets with recipe information on the packaging are
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1421 508 important to satisfy the Careless Consumers.

1423 1424 509 *5.4. Limitations*

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1426 510 Even though this is a representative survey of Norwegian consumers and framed towards
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1428 511 seafood products, generalization to other countries and other food items should be made with
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1430 512 caution. This study tested 33 attributes, and the list of possible attributes is not exhaustive.
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1432 513 For example, more emotional, safety, sustainability, waste, traditional and ecological
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1434 514 attributes can be considered for future research. Food attitudes and choice depend on the
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1436 515 context, situation or occasion (Jaeger et al., 2011). This study examines which attributes are
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1438 516 most important when buying seafood for everyday home meal consumption. Other eating
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1440 517 occasions such as lunch, eating out at restaurants, week-ends/holidays, special events or
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1442 518 parties with friends are relevant as well. This study introduces some novel profiling
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1444 519 constructs such as price-quality inference and attitudes towards luxury. Relevant motivational
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1446 520 variables not included in this study are, for example, convenience orientation, social norms,
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1448 521 moral obligation, variety seeking or personal values (Brunso, Scholderer & Grunert, 2004;
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1450 522 Carlucci et al., 2015; Olsen, 2001; Onwesen, Antonides, & Bartels, 2013). Finally, as with all
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1452 523 studies using correlations methods of cross-sectional survey data, the nature and direction of
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1454 524 causal relationships are problematic. Thus, experimental design or longitudinal studies should
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1456 525 be used in order to address causality in future studies’.

1459 526 *5.5. Conclusion*

1461
1462 527 This study confirmed previous studies that aspects of perceived quality (taste, freshness,
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1464 528 nutritional value and naturalness) are the most important attributes for home consumption of
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1466 529 seafood. Packaging attributes associated with quality such as information about expiration
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1468 530 date are also important, while most other packaging attributes are in the medium range of
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1470 531 importance. Price and value for money are ranked second after perceived quality. Three
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1478 532 consumer segments are identified based on the importance of 33 attributes: Perfectionists,
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1480 533 Quality Conscious and Careless Consumers. The distinction between the Perfectionists and
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1482 Quality Conscious is novel and interesting because the latter feel more flexible and confident
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1485 535 in their evaluation of quality, are less concerned with packaging, branding, convenience and
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1487 536 emotional attributes. Careless Consumers are important as regular consumers of convenient
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1489 537 and pre-packed seafood products with demand for recipe information on the packing. Thus,
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1491 538 the seafood industry may use the results provided in this study to strengthen their positioning
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1493 539 of seafood for home meal consumption during weekdays. For example is it possible to built
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1495 540 confidence in fresh pre-pakced prduct by including information about experation date and
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1497 541 expose visability of the product.
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1502 543 **References**

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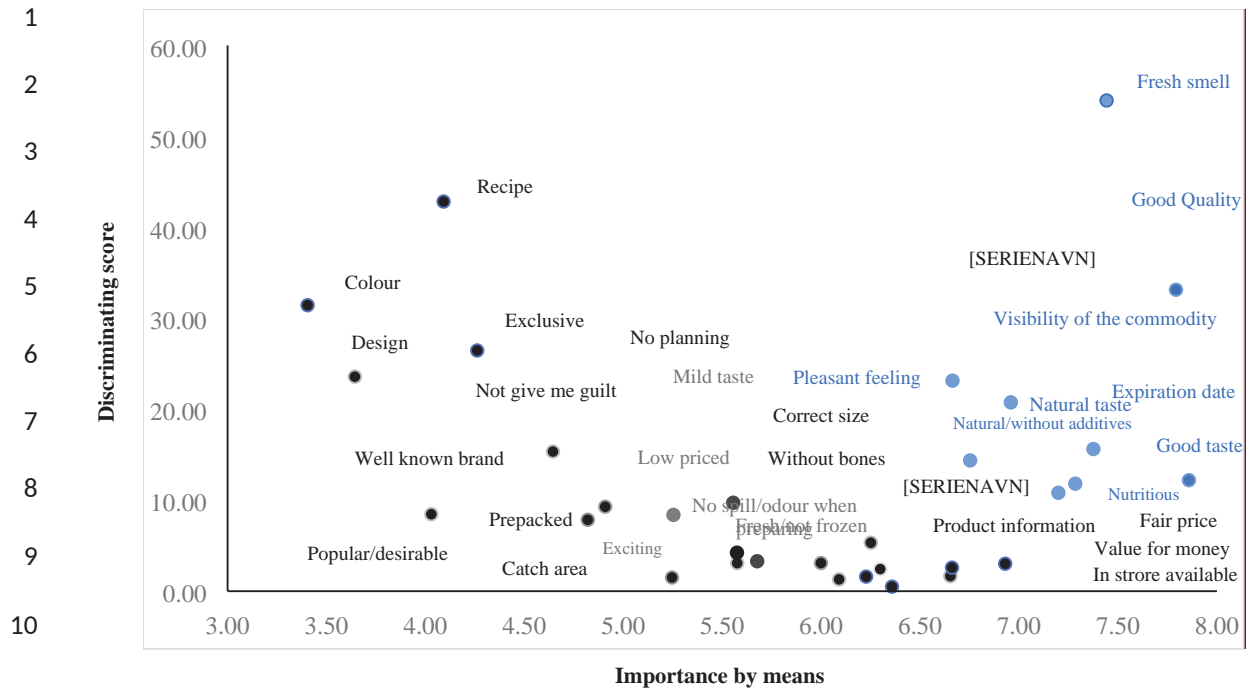
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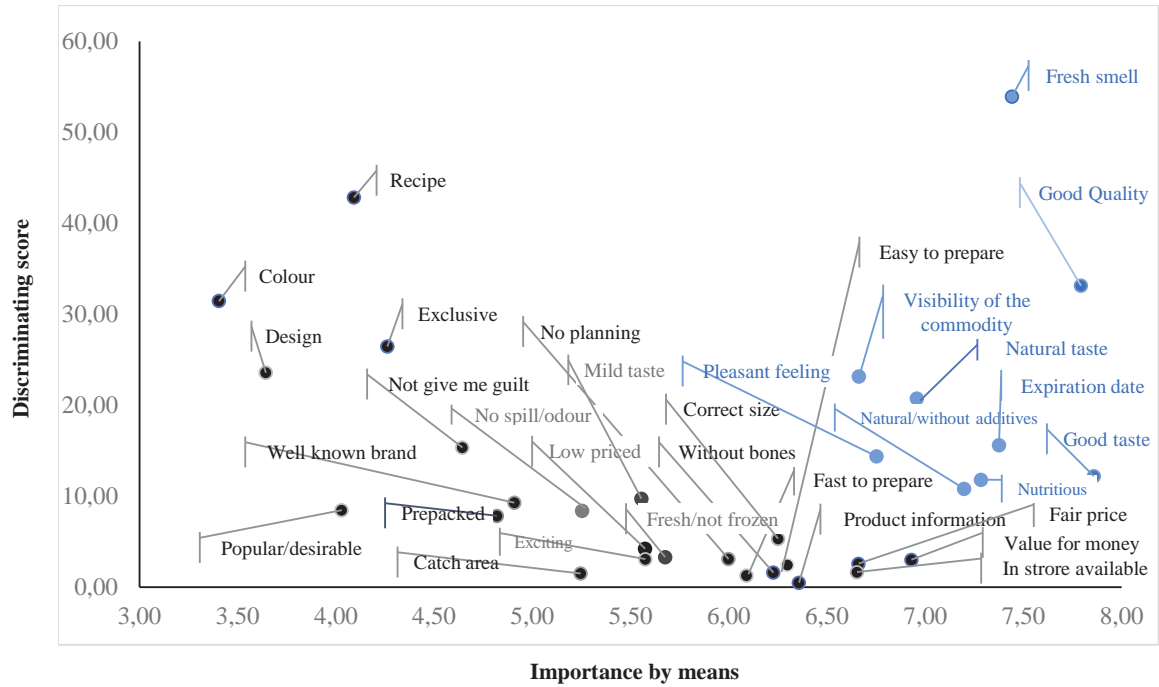
ⁱ These data have been retrieved from the Norwegian Seafood Council at <https://seafood.no/markedsinnsikt/>



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

11 **Figure 2.** Importance – discriminating score grid for the attribute-based clusters

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

11

Figure 2. Importance – discriminating score grid for the attribute-based clusters