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# **Perceived Consumer Value towards new farmed fish species: A psychographic segmentation in top-five EU markets**



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## Introduction

The marketing literature covers extensively the concept of customer value, and considers it as the foundation for effective marketing activity (Holbrook, 2006). Broadly defined, customer value is the overall assessment of the value of a product based on trade-offs about what perceived benefits a customer receives (i.e. benefits) for what he or she gives up (i.e. sacrifices) from the acquisition or use of a product (Zeithaml, 1988). Besides the utility-derived components that the economic theory had suggested in initial conceptualizations of customer value (i.e. functionality or price), scholars have recently refined its nature by adding more affective components, such as hedonic and altruistic values (Holbrook, 2006). Diverse fields of social sciences, such as finance, economics, management, information systems, ethics and justice, use the concept of customer value extensively (Normann, 2001). Further, many streams of marketing literature, including relationship marketing, pricing, consumer behaviour and strategic marketing discuss customer value (see for a review de Chernatony et al. 2000). The objective of this work is to explore consumer value perceptions in the form of trade-offs between perceived gains (i.e. benefits or ‘values’) and perceived losses (i.e. sacrifices or ‘costs’) from the consumption of new farmed fish species in the top-5 fish markets in Europe (i.e. UK, Germany, Spain, France and Italy).

The conceptual basis of this work is the Customer Value (CV) model, an inclusive conceptual framework whose individual parts are well-established and extensively covered in the marketing literature. Papista and Krystallis (2012) initially proposed the CV model in the frame of customer adoption of ‘green’ products. The model integrates Zeithaml’s (1988) and Holbrook’s (2006) views that value and cost perceptions drive purchase decisions. The overall sequence of effects in the model is that perceived Values and Costs formulate an overall CV perception about products (i.e. in the current context: the new species under consideration), which in turn affects the quality of the relationship (Relationship Quality, RQ) expected to develop between the product and the consumer. At the same time, perceived Values and Costs might impact directly on RQ, thus direct effects of Values and Costs to RQ should also be considered.

The work further aims to explore the possibility that a number of psychographic constructs at start unrelated to the concept of Customer Value (i.e. category involvement, subjective knowledge, innovative proneness etc.) moderate CV perceptions and resulting RQ. For this purpose, selected psychographic constructs are tested as segmentation bases

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with the objective to define a number of cross-border consumer segments with a distinctive and clear-cut profile in terms of perceived CV towards the new fish species and a number of additional belief, behavioural and demographic characteristics. Drawing on the exploratory nature of the work, the hypothesis here is that the selected psychographic constructs have large discriminating power and can indeed constitute solid segmentation bases that lead to consumer segments with different configuration of their CV perceptions towards new products (i.e. new fish species). Verification of this hypothesis will be a strong indication of the moderating power of those constructs, which should be tested in future research with more robust statistical techniques. Ultimately, a set of managerial implication for successful positioning of the new fish species against the cross-border cluster profiles identified, together with a detailed marketing strategy will be suggested accordingly.

## **2. The CV Model: Definition and Conceptualization**

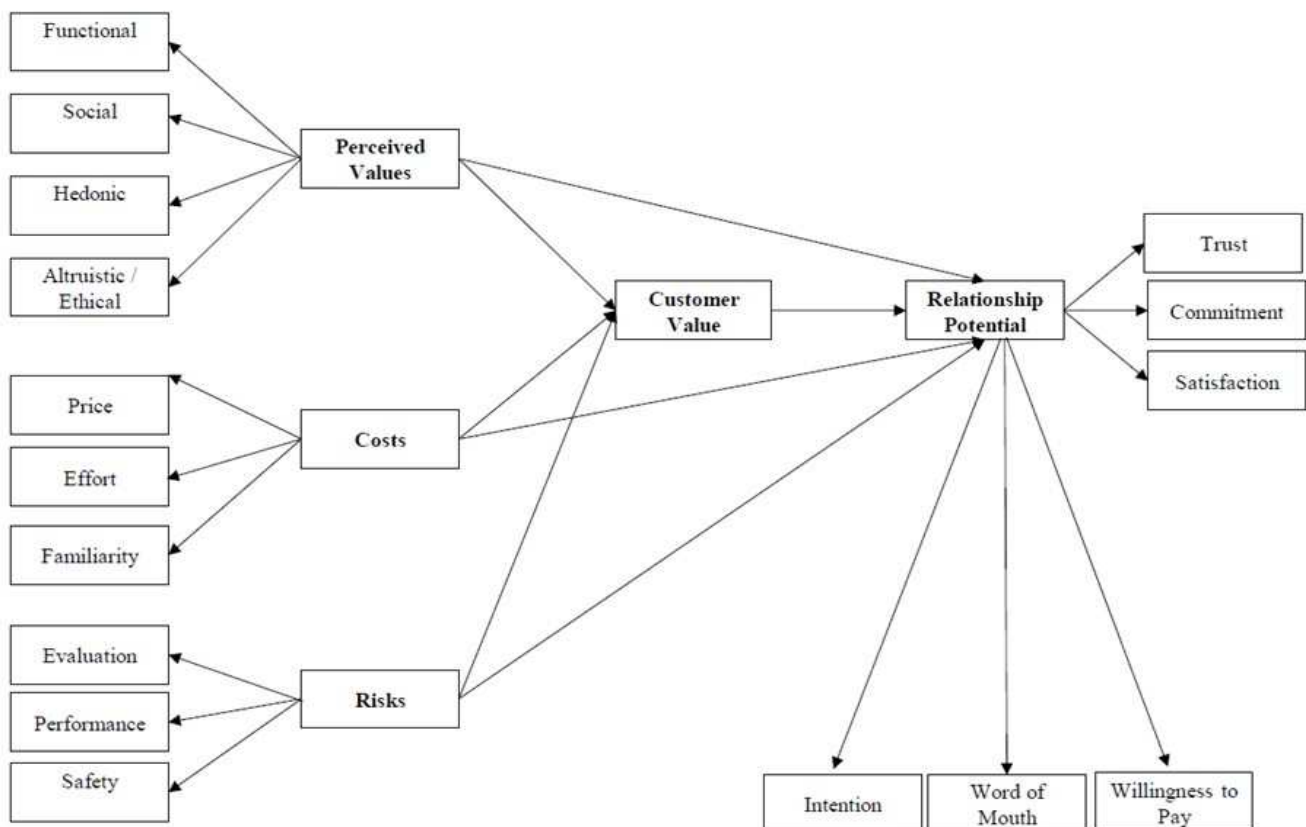
Broadly defined, CV is customers' overall assessment of the value of a product based on perceptual trade-offs about what benefits are expected to be received (i.e. individual types of values) against what it should be given up (i.e. individual types of risks and costs) for the acquisition, purchase or mere use of a product (Zeithaml, 1988). Various scholars have further elaborated on the initially cognitive nature of the values part of CV by adding value components of more affective nature, besides the utility-derived ones suggested by economic theory (i.e. quality-price considerations), such as hedonic and altruistic (or ethical) values (Holbrook, 2006).

In general, the CV approach underlies a 'bottom-up' attitude formation mechanism, where perceptions of (expected or actual) values and costs about a product formulate a general attitude (the Customer Value) towards the product or the methods used in its production. This general attitude gives in its turn birth to a number of (expected or actual) relational (i.e. trust in, satisfaction with, and commitment to the product) and behavioural outcomes (i.e. purchase intention). In the context of the specific project, CV is concerned with the question of whether or not any benefits will be perceived by consumers in relation to a new farmed fish species. Moreover, if any potential costs or risks perceived with the new products would have a negative impact on the overall consumer value perceptions towards the new fish (Figure 1).

## 2.1. Perceived Value

In what concerns types of values, Holbrook's (2006) conceptualization is considered the most extensive (e.g. Sheth et al., 1991; Sweeney and Soutar, 2001). The types of value proposed by Holbrook (2006) fall into the broad categories of: a) Functional (or Economic) value: the perceived utility acquired from an alternative product's capacity for functional or physical performance (Sheth et al., 1991), which is also equivalent to product quality perceptions (Dodds et al., 1991; Baker et al., 2002). b) Social value: the perceived utility acquired from an alternative product's image congruence with relevant requirements from a specific social group (Sheth et al., 1991; Sweeney and Soutar, 2001). c) Hedonic value: it arises from consumers' own pleasure derived from consumption experiences appreciated for their own sake as ends in themselves (Mathwick et al., 2001; Sweeney and Soutar, 2001). d) Altruistic value: when associating product purchasing or use with ethically desirable practices in which 'virtue is its own reward' (Holbrook, 2006). And e) Emotional value: in the area of food consumer behaviour, past exploratory research employing the CV model (i.e., Perrea et al, 2015) had also identified an

Figure 1. The CV Model



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emotional type of value in the context of innovative food products (i.e. food produced through emerging processing technologies). This type of value was found to relate to emotions of excitement, enthusiasm and indeed happiness from the purchase of the study products. All the above presented types of value are considered to formulate a composite Perceived Values component.

## *2.2. Perceived Cost*

Papista and Krystallis (2012) considered the following cost categories as having an expected effect on perceived CV: a) Price: previous studies consistently suggest an inverse linkage between price and CV (Dodds et al., 1991; Grewal et al., 1998), and b) Effort: it is required to physically purchase the product (Cronin et al., 1997; Petrick, 2002), typically in terms of limited availability of the product in usual outlets (Yoo et al., 2000), and time required to travel and make the purchase (Huber et al., 2001). These two types of cost are the most commonly identified transaction costs perceived by consumers in their encounter with the product. c) Evaluation: it is associated with the effort to collect the right information in terms of quality and quantity, and understand it in order to evaluate properly the products in question (Burnham et al., 2003). And d) Performance (or uncertainty cost): perceptions of risk surrounding the product's functional or physical performance (Sweeney et al., 1999; Jones et al., 2002). Moreover, to grasp the peculiarities of the current context, an additional type of cost is considered, namely: 5) Safety risk: the fear of physical health risk or harm that might be inherent in the consumption of new farmed fish in absence of any factual or experiential knowledge (Cardello, 2003; Mireaux et al., 2007; Ronteltap et al., 2007; Rollin et al., 2011). Evaluation, performance and safety represent types of risks that occur when consumers are in doubt with their selection of a regular product and consider switching to an alternative, innovative choice.

## *2.3. Relational and behavioural outcomes*

Relationship quality (RQ) is regarded in extant literature as a higher-order construct composed of several key components reflecting the overall strength of relationships between products and consumers (Dorsch et al, 1998). RQ has been studied in the field of relationship marketing, which proposes satisfaction, trust and commitment as its key interrelated components (Fournier, 1998; Hennig-Thurau et al., 2002; Palmatier et al., 2006). Moreover, numerous studies specify the effect of RQ on behavioural loyalty (e.g.

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Oh, 1999). After all, the effect of RQ on attitudinal loyalty is well supported (e.g. Palmatier et al., 2006). In the present study, loyalty is operationalised through purchase intention, word-of-mouth and willingness-to-pay.

#### *2.4 Moderators*

Moreover, it is plausible to expect that certain consumer psychographic characteristics moderate the strength of perceptions about the above-described determinants of value and cost in formulating overall CV of the new fish products.

*Involvement.* Highly involved consumers are generally more likely to engage in product relationships (Christy et al., 1996; Gordon et al., 1998; Odekerken-Schroder et al., 2003). For instance, in the case of sustainable ('green') products, Sriram and Forman (1993) show that consumers place less value on the environmental and more on the functional performance of a product in the case of purchasing high involvement products than in the case of frequently purchased products. On the other hand, according to Vermeer and Verbeke (2006), the attitudes-intention gap occurs more frequently when people are not really involved in the purchase process of products. Likewise, one can assume that the level of personal involvement with the product category under consideration (i.e. new farmed fish) will influence the overall perceived value offering. Therefore, consumer tendency to develop and retain a relationship with the new fish products that result from the study species will be also influenced.

*Domain specific innovativeness.* Domain-specific innovativeness captures an individual's predisposition toward a product class and reflects the tendency to learn about and adopt new products within a specific domain of interest (Goldsmith and Hofacker, 1991; Roehrich, 2004). Previous studies in different contexts have shown that domain-specific innovativeness is positively related to consumers' evaluation and adoption of new products (e.g., Bartels and Reinders, 2011; Citrin et al., 2000; Huotilainen et al., 2006; Lu et al., 2008). In a food context, Bartels and Reinders (2010) showed that domain-specific innovativeness was an important predictor of organic food consumption. Similarly, we expect domain-specific innovativeness with respect to products coming from the new fish species to enhance value perceptions and behavioural outcomes (e.g., buying intentions) in relation to the new fish products. In addition, it is worthwhile to investigate whether consumers with different levels of innovativeness make different trade-offs between values and costs in the CV framework. For example, Luthje (2004) suggest that consumers with high levels of innovativeness are less affected by the

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perceived costs of new products relative to their perceived benefits. Finally, although theoretically less well substantiated, it is interesting to test whether differences in relational outcomes (e.g., trust, commitment and satisfaction) can be related to individual differences in innovativeness.

*Subjective knowledge.* Consumers rely on their knowledge when learning about new products. A distinction can be made between objective and subjective knowledge: objective knowledge represents what consumers factually know about a product, whereas subjective knowledge is how much consumers think they know about the product (Park et al., 1994). Moorman et al. (2004) found that subjective knowledge influences the choice a consumer makes. As a result, several studies have found that subjective knowledge affects perceptions and purchase behaviour with regard to different types of food products (Klerck and Sweeney, 2007; Smith and Paladino, 2010). Furthermore, subjective knowledge plays a role in evaluating information about fish products (Altintzoglou et al., 2014; Pieniak et al., 2007). In addition, previous research has considered subjective knowledge as a moderator of the relationship between attitudes and purchase intentions (Berger et al., 1994; Fu & Elliott, 2013). We therefore expect that subjective knowledge could play a moderating role in determining consumers' value perceptions and relationship quality with respect to the fish products under consideration in this study.

*Social representations of food.* The social representation concept, originally developed by Moscovici (2001), can be defined as a system of values, ideas and practices. Social representations are relevant in understanding how consumers deal with novel foods. In order to predict the willingness of consumers to try novel foods, Bäckström et al. (2004) developed five different social representation dimensions: suspicion, adherence to technology, adherence to natural food, eating as an enjoyment, and eating as a necessity. Onwezen and Bartels (2013) recently developed and validated a shortened version of this social representations scale. Previous studies have shown that different types of new foods are predicted by different underlying constructs of social representations (Bäckström et al., 2004, Bartels and Reinders, 2010; Huotilainen et al., 2006). As such, it is worthwhile to explore which aspects of social representations play a role in predicting the value perceptions and uptake of the specific fish species.

*Optimistic bias.* Optimistic bias is defined as the tendency for overestimation of the probability of having positive events and/or underestimation of the possibility of suffering negative events (Weinstein, 1989). Many food and nutrition issues are associated with risk perception and optimistic bias (Miles & Scaife, 2003). In fact,



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optimistic bias has proved to be effective in order to explain different food related behaviours (Guerrero et al., 2009). Perceptions of risks associated with fish consumption may have a negative influence on fish consumption (Pieniak et al., 2008) that in turn might be controlled by optimistic bias. People who are optimistic about personal benefits associated with fish consumption may be more motivated to increase their consumption of fish compared to people who are not optimistic about the benefits, because they perceive their personal benefits as being relatively high (van Dijk et al., 2011). In addition, optimistic bias is expected to be related to the safety risk of the CV model and to the respondents' perceived control about fish selection, preparation and consumption. In general the greater the perceived control over the outcome of an event the greater the optimistic bias for that event (Klein & Helweg-Larsen, 2002).

### **3. Methodology**

Within the above-described framework, an on-line consumer survey with N=500 consumers in each of the five focal countries, i.e., Germany, UK, France, Spain and Italy (nationally representative samples) was conducted in July 2014 (2.500 households in all).

The CV model shown in Figure 1 was operationalized via a number of items that define various CV components (i.e. types of perceived values and costs as postulated in previous section and adapted to the context of the current study). The survey questionnaire included five dimensions related to the above-defined psychographic moderators, i.e., (i) *involvement in the category*; (ii) *consumers' domain-specific innovativeness*; (iii) *subjective knowledge*; (iv) *optimistic bias*, and (v) *social representation of food*, which were used as criteria in the segmentation analysis. The classification and descriptions of these dimensions and their combined scales are presented in the Appendix. Finally, measures of objective knowledge about, beliefs and behaviour towards wild and farmed fish were also included.

### **4. Analysis and Results**

The segmentation study was based on the five moderators included in the survey, see Table 1, namely: (i) *involvement in the category*; (ii) *consumers' domain-specific innovativeness*; (iii) *subjective knowledge*; (iv) *optimistic bias*, and (v) *social representation of food*. According to their reliability (Cronbach's Alpha) and uni-dimensionality, the mean value for each construct was calculated and retained. A two-step

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clustering analysis was carried out for each country and for the complete dataset (N=2511). Firstly, an Agglomerative Hierarchical Cluster Analysis (AHCA) (Ward method and Euclidian distance) was applied over the standardised dataset per participant in order to block the idiosyncratic use of the scale. The final number of clusters to retain in each case was based on the percentage of within-cluster variance drop when adding a new cluster. Secondly, a k-means clustering was performed (Determinant (W) criterion) after selecting as initial cluster centres the centroids obtained in the previous AHCA.

In general, the clusters retained differed significantly for all the constructs in the five countries analysed and for the whole dataset. These results reinforce the right selection of the final number of clusters made according to the parsimony rule (the simplest possible structure or low number of clusters that still represents homogenous groups assessed by the number of constructs that differed significantly between clusters). *Consumer involvement* and *domain specific innovativeness* were those constructs with the higher discriminant ability between clusters, which may be explained by the aim of the study: the introduction of new products from new fish species (diversification). Overall, similar patterns we observed in the five countries studied.

Accordingly, a decision was made to pool the data and proceed with the analyses at the pooled sample level. Table 1 shows the centroids (i.e. mean scores) obtained for the 3-cluster solution, which showed the most statistically robust properties in terms of the psychographic moderators' ability to discriminate among pooled sample members (Table 2; 95% of the respondents correctly classified).

Table 3 further demonstrates final clusters and their differences in terms of their level of *involvement*, *domain-specific innovativeness*, *optimistic bias* and *social representations of food*. The first two clusters had the similar level of *subjective knowledge*, quite different *domain-specific innovativeness* and they both had higher *involvement* in fish products, thus they were named *involved traditional* and *involved innovators*. Subsequently, the third segment was called *ambiguous indifferent*, as this segment did not show any specific interest to the criteria at hand. Hence, first and second cluster were of particular interest as they are more likely to engage in and/or learn about new fish products. Moreover, segment of *involved innovators* has a higher predisposition toward fish products and is more able to adopt new fish products from farmed fish species, and thus of even higher importance to this research.

Figure 2 shows cluster membership per country, where minimal differences have

Table 2. Discriminant analysis results, 3-cluster solution

Construct	Lambda	F	GDL1	GDL2	p-value
Involvement	0.534	1094.667	2	2508	< 0.0001
Domain-specific innovativeness	0.532	1102.618	2	2508	< 0.0001
Subjective knowledge	0.606	813.625	2	2508	< 0.0001
Optimistic bias	0.826	263.681	2	2508	< 0.0001
Social representation of food	0.799	315.494	2	2508	< 0.0001

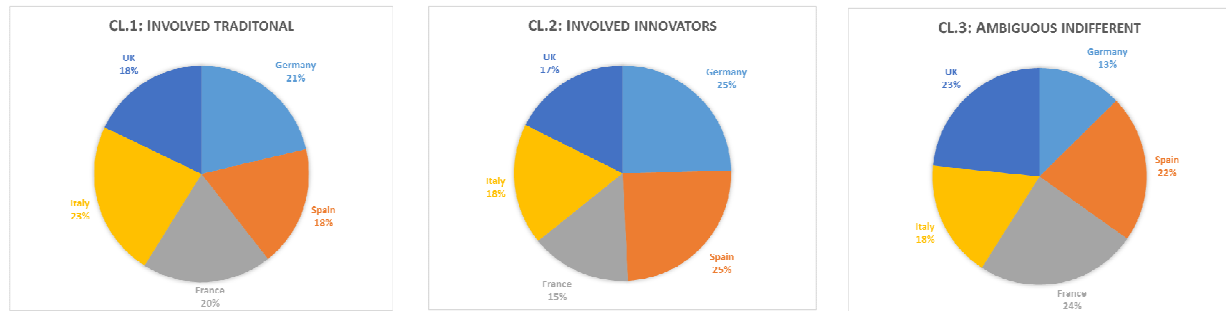
Table 3. Segmentation analysis - psychographic profiles of the segments, mean scores

Construct	Cl1 (N=728)	Cl2 (N=911)	Cl3 (N=872)	Sig.
Involvement	1.95 <sup>b</sup>	1.77 <sup>a</sup>	3.77 <sup>c</sup>	.000
Domain-specific innovativeness	2.81 <sup>a</sup>	5.37 <sup>c</sup>	3.94 <sup>b</sup>	.000
Subjective knowledge	4.19 <sup>a</sup>	1.63 <sup>a</sup>	3.06 <sup>b</sup>	.000
Optimistic bias	3.89 <sup>c</sup>	2.62 <sup>a</sup>	3.57 <sup>b</sup>	.000
Social representation of food	3.00 <sup>a</sup>	4.43 <sup>c</sup>	3.87 <sup>b</sup>	.000

1 = Strongly agree, 7 = Strongly disagree; superscripts indicate post-hoc paired comparisons

\*: DS Innovativeness has negative polarity, meaning that agreement scores close to unit actually indicate lack of innovativeness and vice versa

Figure 2. Country membership per cluster solution, %



Involved traditional, N=728, 30%; Involved innovators, N=911, 36%; Ambiguous indifferent, N=872, 34%

been observed between the countries with respect to five underlying psychographic moderators. These cross-cultural similarities indicate a relatively homogeneous European fish-related culture and open new possibilities for adoption of new fish products from farmed fish species. Finally, one-way ANOVAs are used to test whether the members of the clusters differed in their scores on the variables of the model separately, their socio

-demographic and behavioural profile, as well as their objective knowledge and beliefs regarding farmed and wild fish. Tukey HSD post hoc tests were used to test whether the means are significantly different from one another (Tables 4, 5, 6, 7 and 8).

In terms of the socio-demographic profile of the segments (Table 4), the differences observed between the segments were in relation to age, marital status, employment, and social class. Generally, *involved innovators* were on average older, married and with higher income than other two segments. This is quite consistent also with their psychographic characteristics.

When considering behaviour profile of the segments (Table 5), three segments differ significantly across array of behavioural variables. More specifically, *involved innovators* consume much more wild and farmed fish in general, as well as seafood, followed by *involved traditional* when compared to the third segment – *ambiguous indifferent*. This opens new horizons in terms of positioning and differentiation of the fish products as these segments could be used to increase marketing efficiency of products from farmed fish species by directing effort specifically toward the segment of *involved innovators*, as well as *involved traditional* in a manner consistent with segment's characteristics.

Table 4. Socio-demographic profile, %

Characteristic		C11 Involved traditional	C12 Involved innovators	C13 Ambiguous indifferent	Sig.
Age	(mean in years)	40.7	43.7	39.6	.002
Gender	(male)	51.9	47.0	49.3	.138
Married	(yes)	51.6	53.9	43.1	.000
Existence of children	(yes)	48.1	44.5	44.7	.279
Education	(university or higher)	44.2	45.9	48.0	.369
Employment	(employee-various)	32.2	30.5	30.6	
	(non-working)	11.7	14.3	15.3	.026
Income	(more than average)	13.5	17.3	9.9	
	(average)	61.1	59.5	57.7	
	(less than average)	25.4	23.2	32.5	.000
Social class	(A/B)	17.3	14.9	13.1	.130

Table 5. Behavioural profile, %

Characteristic	CI1 Involved traditional	CI2 Involved innovators	CI3 Ambiguous indifferent	Sig.
Main decision maker:				
Yes	74.6	74.1	71.2	.242
Consumption of farmed fish:				
Once a week or more	23.1	22.9	16.5	.000
Two-three times a week	29.7	32.4	27.2	
Once a month or less	32.6	32.6	38.6	
Never	9.8	7.2	8.0	
Consumption of wild fish:				
Once a week or more	21.6	17.9	11.9	.000
Two-three times a week	27.9	26.8	22.6	
Once a month or less	33.1	35.7	33.9	
Never	11.1	12.5	22.1	
Consumption of seafood:				
Once a week or more	22.1	20.6	13.9	.000
Consumption of frozen fish:				
Once a week or more	31.7	31.8	25.1	.003
Consumption of whole fish:				
Once a week or more	28.7	24.4	17.1	.000
Consumption of processed fish:				
Once a week or more	29.3	21.7	21.3	.001

Interestingly, three segments differed significantly when taking into account different values as *functional*, *hedonic* and *ethical* value (Table 6). The segment of *involved innovators* agree more often than the other two segments on the matter that these values actually make a difference in a bigger picture of the perceived value of the fish products. On the other hand *involved traditional* and *involved innovators* have the same view regarding the *social* and *emotional* value of the fish products showing that these segments are the ones that enjoy eating fish products and see it as socially acceptable. However, when considering the *costs* and *risks* of eating fish products *involved traditional* are much more conservative than other two segments showing higher awareness of the relationship price-quality in fish products and possible risks involved with fish consumption. Finally, *involved innovators* place much more *trust* in fish consumption and *satisfaction* that comes out of it in the light of the higher social elements involved (i.e., *word of mouth*) than other two segments.

When observing the objective knowledge regarding the fish consumption (Table 7), both *involved traditional* and *involved innovators* show positive attitude towards farmed fish consumption and nutritional value of the fish consumption. On the other hand, *involved innovators* stand out from other two segments as being more knowledgeable of

Table 6. CV model, mean scores

	CI1 Involved traditional	CI2 Involved innovators	CI3 Ambiguous indifferent	Sig.
<b>VALUES</b>				
Functional	3.03 <sup>b</sup>	<b>2.54<sup>a</sup></b>	3.65 <sup>c</sup>	.000
Social	<b>3.60<sup>a</sup></b>	<b>3.60<sup>a</sup></b>	4.34 <sup>b</sup>	.000
Hedonic	3.21 <sup>b</sup>	<b>2.85<sup>a</sup></b>	3.98 <sup>c</sup>	.000
Ethical	3.20 <sup>b</sup>	<b>2.87<sup>a</sup></b>	3.81 <sup>c</sup>	.000
Emotional	<b>3.52<sup>a</sup></b>	<b>3.46<sup>a</sup></b>	4.36 <sup>b</sup>	.000
<b>COSTS</b>				
Price	<b>3.07<sup>a</sup></b>	3.49 <sup>b</sup>	3.49 <sup>b</sup>	.000
Effort	<b>3.26<sup>a</sup></b>	3.71 <sup>c</sup>	3.57 <sup>b</sup>	.000
Unfamiliarity	<b>3.37<sup>a</sup></b>	4.17 <sup>c</sup>	3.85 <sup>b</sup>	.000
<b>RISKS</b>				
Evaluation	<b>3.41<sup>a</sup></b>	4.13 <sup>c</sup>	3.77 <sup>b</sup>	.000
Performance	<b>3.43<sup>a</sup></b>	4.39 <sup>c</sup>	3.97 <sup>b</sup>	.000
Safety	<b>3.29<sup>a</sup></b>	4.28 <sup>c</sup>	3.96 <sup>b</sup>	.000
<b>OUTCOMES</b>				
Customer Value	<b>3.15<sup>a</sup></b>	<b>3.05<sup>a</sup></b>	3.93 <sup>b</sup>	.000
Satisfaction	3.20 <sup>b</sup>	<b>2.86<sup>a</sup></b>	3.99 <sup>c</sup>	.000
Trust	3.31 <sup>b</sup>	<b>2.96<sup>a</sup></b>	4.06 <sup>c</sup>	.000
Word of Mouth	3.25 <sup>b</sup>	<b>2.99<sup>a</sup></b>	4.16 <sup>c</sup>	.000
Willingness to Pay	<b>3.59<sup>a</sup></b>	<b>3.64<sup>a</sup></b>	4.53 <sup>b</sup>	.000
Intention to purchase	<b>3.53<sup>a</sup></b>	<b>3.46<sup>a</sup></b>	4.48 <sup>c</sup>	.000

1 = Strongly agree, 7 = Strongly disagree; superscripts indicate post-hoc paired comparisons

Table 7. Objective knowledge, mean scores

Statement	CI1 Involved traditional	CI2 Involved innovators	CI3 Ambiguous indifferent	Sig.
More than half the fish we eat is farmed fish	1.59 <sup>a</sup>	1.55 <sup>a</sup>	1.77 <sup>c</sup>	.000
Fish is a source of fibre	1.71 <sup>a</sup>	1.76 <sup>a</sup>	1.82 <sup>b</sup>	.008
Cod is a fatty fish	1.87 <sup>a</sup>	1.89 <sup>a</sup>	2.05 <sup>c</sup>	.000
Fish is a source of Omega-3 fatty acids	1.16 <sup>b</sup>	1.09 <sup>a</sup>	1.18 <sup>b</sup>	.000
Salmon is a fatty fish	1.45 <sup>b</sup>	1.37 <sup>a</sup>	1.53 <sup>c</sup>	.000

1 = Strongly agree, 7 = Strongly disagree; superscripts indicate post-hoc paired comparisons

the healthiness underlying the fish consumption. Finally, *involved innovators* differed significantly from the other two segments regarding various beliefs towards farmed and wild fish (Table 8). *Involved innovators* saw farmed fish as a good substitute for a wild fish mainly due to the higher environmental consciousness they have when compared to other two segments. But even more than that they believe that controlled environment of

Table 8. Beliefs towards farmed fish (ff) and wild fish (wf), mean scores

Statement	C11 Involved traditional	C12 Involved innovators	C13 Ambiguous indifferent	Sig.
1. ff is safer to consume	3.48 <sup>a</sup>	3.78 <sup>b</sup>	4.05 <sup>c</sup>	.000
2. ff has a healthier diet	3.75 <sup>a</sup>	4.22 <sup>b</sup>	4.29 <sup>b</sup>	.000
3. ff is healthier	3.70 <sup>a</sup>	4.17 <sup>b</sup>	4.21 <sup>b</sup>	.000
4. ff is of higher quality	3.88 <sup>a</sup>	4.41 <sup>b</sup>	4.48 <sup>b</sup>	.000
5. ff is more fresh	3.80 <sup>a</sup>	4.31 <sup>b</sup>	4.30 <sup>b</sup>	.000
6. ff is more nutritious	3.81 <sup>a</sup>	4.41 <sup>b</sup>	4.37 <sup>b</sup>	.000
7. ff is tastier	3.95 <sup>a</sup>	4.70 <sup>b</sup>	4.48 <sup>c</sup>	.000
8. ff if more firm	3.68 <sup>a</sup>	4.25 <sup>b</sup>	4.25 <sup>b</sup>	.000
9. ff is more controlled	3.04 <sup>a</sup>	2.94 <sup>a</sup>	3.44 <sup>b</sup>	.000
10. ff is handled	3.11 <sup>a</sup>	3.27 <sup>b</sup>	3.62 <sup>c</sup>	.000
11. ff provides more guarantees	3.40 <sup>a</sup>	3.62 <sup>b</sup>	3.95 <sup>c</sup>	.000
12. ff is easier to find	2.80 <sup>b</sup>	2.65 <sup>a</sup>	3.32 <sup>c</sup>	.000
13. ff is cheaper	2.97 <sup>a</sup>	2.91 <sup>a</sup>	3.56 <sup>b</sup>	.000
14. wf is affected by pollution more	3.11 <sup>a</sup>	3.18 <sup>a</sup>	3.64 <sup>b</sup>	.000
15. wf contains more heavy metals	3.31 <sup>a</sup>	3.54 <sup>b</sup>	3.88 <sup>c</sup>	.000
16. wf contains more antibiotics	3.88 <sup>a</sup>	4.49 <sup>b</sup>	4.87 <sup>b</sup>	.000
17. wf is affected by parasites more	3.41 <sup>a</sup>	3.59 <sup>b</sup>	3.84 <sup>c</sup>	.000
18. wf is more fatty	3.68 <sup>a</sup>	4.16 <sup>b</sup>	4.21 <sup>b</sup>	.000
19. wf is more artificial	4.22 <sup>a</sup>	5.31 <sup>c</sup>	4.76 <sup>b</sup>	.000

1 = Strongly agree, 7 = Strongly disagree; superscripts indicate post-hoc paired comparisons

farmed fish production, as well as guarantees of safety and cheaper price that comes of this environment, actually can provide higher quality fish products that are tastier, healthier and more nutritious.

## 5. Discussion and Conclusion

The objective of this work is to explore consumer value perceptions in the form of trade-offs between perceived gains (i.e. benefits or ‘values’) and perceived losses (i.e. sacrifices or ‘costs’) from the consumption of new farmed fish species in the top-5 fish markets in Europe (i.e. UK, Germany, Spain, France and Italy). The work further aims to explore the

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possibility that a number of psychographic constructs (i.e. category involvement, subjective knowledge, innovative proneness etc.) moderate CV perceptions and resulting RQ. For this purpose, selected psychographic constructs are tested as segmentation bases with the objective to define a number of cross-border consumer segments with a distinctive and clear-cut profile in terms of perceived CV towards the new fish species and a number of additional belief, behavioural and demographic characteristics across five EU countries, namely, UK, Germany, Spain, France and Italy.

Based on the consumer psychographic profiles, three distinct segments have been emerged across the study countries: the *involved traditional*, *involved innovators* and *ambiguous indifferent*. The most interesting segment that could be a target of marketing positioning strategies for new fish products and farmed fish production is the *involved innovators*. The *Involved innovators* represent consumers who are very involved in and knowledgeable about fish products, but at the same time quite innovative, when it comes to new farmed fish species. They showed the highest perceived value and the lowest perceived costs in association with the new farmed fish species, as well as the highest expected outcomes in terms of satisfaction and trust. They were very open to new experiences with regard to fish products, but even more of new fish species, being highly aware of the environmental problem caused by overfishing and actually seeing the future in farmed fish production.

On the other hand, even though the *involved traditional* are involved in and knowledgeable about the fish consumption, they see it more as a ‘cost’ that this consumption might bring, being wary of safety issues and efforts to attain the proper fish products. Thus, this segment is much more conservative and reserved regarding the new experiences in fish products in general. However, they hold the strongest positive beliefs regarding the farmed fish production, being also aware of its possibilities both in connection to the environment but also regarding the hedonic aspects of fish consumption. But, more than that, the *involved traditional* would prefer farmed fish to wild fish, as the former is better handled, safer and tastier than wild fish. Furthermore, not only do they see wild fish as endangered species, but also as living organisms which might suffer pollution, containing heavy metals and parasites. Hence, even though they are conservative towards new fish product ideas, they could also be a segment worth looking into due to its positive visions of farmed fish production.

The above-described cross-cultural segmentation analysis provides a better understanding of the existing consumer segments in the top-5 fish markets in Europe and



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opens new possibilities for efficient marketing of products from farmed fish species. Given the exploratory nature of the paper, there is the need that the existence of the identified psychographic segments is further validated. Nevertheless, the current research brings important insights into fish-related segmentation across the main European countries. The fact that the segments are uniform across all countries shows a more homogeneous or converging fish-related culture and this actually provides opportunity to fashion new product concepts through the careful use, novel combination, and conscious innovation of existing fish products at a cross-border European level. The future of farmed fish consumption in Europe seems to be less dependent on geography and more dependent on consumer lifestyles and their psychographic profiles.

Overall, the hypothesis that the selected psychographic constructs have large discriminating power and can indeed constitute solid segmentation bases that lead to consumer segments with different configuration of their CV perceptions towards new products (i.e. new fish species) is verified. This indeed constitutes a strong indication of the moderating power of those constructs, which should be tested in future research with more robust statistical techniques due to the exploratory nature of the current work.

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## APPENDIX: THE QUESTIONNAIRE

Please read the story below carefully:



In this picture you see a new marine finfish species from the European aquaculture industry that has entered the market recently. The **size of this fish is similar to that of Atlantic Salmon**. This fish can be found in the Mediterranean and Black Sea, and along the eastern Atlantic coast.

This fish is a **high quality meal** choice, has a **lower fat content** than the average farmed fish, **excellent taste** and **firm, yet juice flesh**. Due to these characteristics, this fish is very suitable to be **served at special occasions**. Moreover, this species is very suitable for the **development of value-added products**. As such, compared to other possible choices, this fish has the potential to **gain a popular image**. Finally, the development of this fish will **be more environmentally friendly**, compared to other species, and takes place in a **controlled production system**. This new finfish, therefore, suits the needs of consumers who demand **sustainability** and **low environmental impact**.

As a result of its high quality, this fish might be **more expensive** than the average farmed fish. In addition, since both its **production and market are still small**, it is likely that it will **not be widely available** in the 'usual' retail outlets. Although this fish is praised for its taste, this **taste might seem different than usually expected** from farmed fish, a taste that not everyone would appreciate. Moreover, due to its different quality, this fish might **demand extra skills to cook** compared to other farmed or wild species. Overall, despite sufficient experience with its production system, the exact **rearing methods for this fish are still not perfected** as yet.

Considering the fish that is described above, please kindly reply to the questions below:  
[Likert-type agreement questions with end-points: 1= 'strongly agree' to 7= 'strongly disagree']

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## VALUES

<b>Functional value</b> Sweeney & Soutar (2001)	1. This fish would have consistent quality
	2. This fish would be well produced
	3. This fish would be a tasty dish
	4. This fish would be a nutritious food choice
	5. This fish would be a healthy food choice
<b>Social value</b> Sweeney & Soutar (2001); Sanchez-Fernandez & Holbrook (2009)	6. This fish would be purchased by many people I know
	7. This fish would improve the way other people perceive me
	8. Buying this fish would make a good impression on other people
	9. This fish would give those who buy it social approval
<b>Hedonic value</b> Sweeney & Soutar (2001)	10. I would like this fish
	11. I would feel relaxed consuming this fish
	12. This fish would make me feel good
<b>Ethical value</b> Sanchez-Fernandez et al. (2009)	13. Buying this fish is coherent with my ethical values
	14. Buying this fish would make good to the environment
	15. Buying this fish would contribute to the survival of the aquaculture industry
	16. Buying this fish would be beneficial to social groups in need (e.g. the children)
<b>Emotional value</b> Perrea et al. (2015)	17. Buying this fish makes me feel excited
	18. Buying this fish makes me enthusiastic
	19. Buying this fish makes me feel happy

## COSTS

<b>Price</b> Sweeney & Soutar (2001)	20. This fish would not be reasonably priced
	21. This fish would not be as good a product as its price indicates
	22. This fish would have higher price than the average of farmed fish
	23. This fish would not be economical
<b>Effort</b> Yoo et al. (2000) Petrick (2002)	24. This fish would require too much time to find
	25. This fish would require too much effort to find
	26. This fish would be hard to find
<b>Unfamiliarity</b> Perrea et al. (2015)	27. I won't be able to understand everything about this fish
	28. I won't be able to know all I need about this fish
	29. I won't feel as familiar as I want with this fish
<b>Evaluation costs</b> Burnham et al. (2003)	30. It would be difficult to recognize this fish
	31. I could not afford the time to get the information to fully evaluate this fish
	32. Comparing the benefits of my previous preferred fish with this fish would take too much time and effort
	33. If I would change my previously preferred fish, I would have to search very much to find this fish
<b>Performance risk</b> Sweeney et al. (1999)	34. There might be a chance that this fish would not taste properly
	35. There might be a chance that I lose money, e.g. if the taste of this fish would be too different from the fish I usually buy
	36. This fish would come from a production method that I cannot trust
	37. This fish would not have any extras to offer
<b>Safety risk</b> Perrea et al. (2015)	38. This fish would not be safe to consume
	39. Not enough experience is gained in this fish so as to ensure safety
	40. There might be a risk if the safety of consuming this fish is not warranted

## CUSTOMER VALUE

<b>Customer value</b> Cronin et al. (1997) Dodds et al. (1991)	41. I would consider this fish to be good value for money
	42. I would consider this fish to be a good buy
	43. The value of this fish to me would be high
	44. Compared to what I would have to give up, the overall ability of this fish to satisfy my needs would be high
	45. This fish replace old fish products with new valuable products
	46. This fish is a promising fish product

## BEHAVIORAL OUTCOMES

<b>Satisfaction</b> Hennig-Thurau et al. (2002)	47. It would be a wise choice to buy this fish
	48. Overall, I would be satisfied with this fish
	49. It would be the right thing to choose this fish
<b>Trust</b> Chaudhuri & Holbrook (2001)	50. I would trust this fish
	51. I would rely on this fish
	52. I would consider this fish to be an honest product
<b>Word of Mouth</b>	53. This fish would be safe to buy
	54. I would recommend this fish to my friends and family
	55. I would talk favorably about this fish
<b>WTP</b> <b>Intention to Buy</b>	56. I am willing to pay a premium price to buy this fish
	57. I intend to purchase this fish next time I buy fish
	58. I intend to replace my current fish with this fish

## PSYCHOGRAPHIC MODERATORS

<b>Consumer Involvement</b> Beatty et al, 1988	59. I am very concerned about what fish products I purchase
	60. I care a lot about what fish products I consume
	61. Generally, choosing the right fish products is important to me
	62. In general, I am among the last in my circle of friends to purchase new fish products.
	63. Compared to my friends, I do little shopping for new fish products.
	64. I would consider buying new fish products, even if I hadn't heard of it yet.
<b>Domain specific innovativeness</b> Goldsmith and Hofacker, (1991)	65. In general, I am the last in my circle of friends to know the names of the latest new fish product trends.
	66. I know more about new fish products than other people do.
	67. I consider that I know more about fish than the average person
<b>Subjective knowledge</b> Pieniak et al. (2007)	68. I think that I know more about fish than my friends
	69. I have a lot of knowledge about how to prepare fish
	70. I have a lot of knowledge about how to evaluate the quality of fish
<b>Optimistic bias</b> Miles & Scaife (2003) Van Dijk et al. (2011)	71. Compared to the average person of my age and sex, the likelihood of me getting health problems when eating new product from a new farmed fish is [-3/+3: much less/more likely than the average person]
	72. The health risks associated with eating a new product from a new farmed fish to me personally are [1=very low to 7=very high]
	73. The health risks associated with eating a new product from a new farmed fish to the average [Spanish / ..... / ..... / ..... / .....] are [1=very low to 7=very high]
<b>Social representations of food</b> Bäckström et al. (2004); Onwezen and Bartels (2013)	74. I value things being in accordance with nature.
	75. I feel good when I eat clean and natural food.
	76. I would like to eat only food with no additives.
	77. Eating is very important to me
	78. For me, delicious food is an essential part of weekends.
	79. I treat myself to something really delicious.
	80. New foods are just a silly trend.
	81. Consequences of eating new foods are unknown.
	82. I have some doubts about food novelties.



<b>Beliefs about farmed fish</b> (Claret et al, 2014)	1. Farmed fish is safer than wild fish 2. Wild fish is more affected by marine pollution (spillages) than farmed fish 3. Wild fish contains more heavy metals than farmed fish 4. Wild fish contains more antibiotics than farmed fish 5. Wild fish is more affected by parasites (anisakis) than farmed fish 6. Farmed fish has a healthier diet than wild fish 7. Farmed fish is healthier than wild fish 8. Farmed fish is of better quality than wild fish 9. Farmed fish is fresher than wild fish 10. Farmed fish is more nutritious than wild fish 11. Wild fish is more fatty than farmed fish 12. Farmed fish tastes better than wild fish 13. Farmed fish is firmer than wild fish 14. Farmed fish is more controlled than wild fish 15. Farmed fish is more handled than wild fish 16. Wild fish is more artificial than farmed fish 17. Farmed fish provides more guarantees than wild fish 18. Farmed fish is easier to find than wild fish 19. Farmed fish is cheaper than wild fish
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Objective knowledge about fish:

Please indicate whether the below statements are in your opinion TRUE or FALSE			
	TRUE 1	FALSE 2	I don't know 3
20. More than half of the fish we buy in [country] is farmed fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Fish is a source of dietary fibre	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Cod is a fatty fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Fish is a source of omega-3 fatty acids	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Salmon is a fatty fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Current fish consumption:

How often did you eat the following fish products in the last month?	Never 1	once a month or less 2	2-3 times a month 3	once a week or more 4	I don't know 5
25. Farmed fish (aquaculture)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Wild fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Seafood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Frozen fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Whole fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Processed fish (e.g. fish-fingers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>