

Deliverable Report

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Deliverable Title	the selected specie	s in the five countries	s investigated (value-b	ased segmentation		
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Objective: The general objective of Deliverable 29.2 was to report on the segmentation analysis based on consumer value perceptions about the selected species in the five focal European countries (*i.e.*, Germany, France, United Kingdom, Italy and Spain) (value-based segmentation task). Thus, this report provides the results of the segmentation study that was conducted on the data generated in D29.1. The report gives insights into consumer sub-markets (*i.e.*, segments) across and within the five countries examined (*i.e.*, national and international segments) with the highest potential for maximized consumer value perceptions, thus relevant for exploitation in subsequent activities of WP 29.

Description: The Deliverable D29.2 contains the following information: (i) the theoretical background describing the conceptual model, (ii) the method used for the consumer segmentation used for the data collection, (iii) a description of the results and consumer segments across five focal European countries (*i.e.*, Germany, France, United Kingdom, Italy and Spain), and (iv) profiling of the consumer segments by using customer value model.



Table of Contents

1.	(Objective	3
2.	-	Theoretical background	3
3.	ı	Method and research design	4
4.	ı	Description of the results and consumer segments	5
5.	ı	Profiling of the consumer segments using CV model	13
	5.1	Germany	15
	5.2	Prance	17
	5.3	United Kingdom	18
	5.4	Spain	19
	5.5	i Italy	21
6.	ı	Implications for the DIVERSIFY project in market segmentation and product development	23
7.	ı	Discussion and Conclusion	23
8.	ı	References	25
9.	,	Appendix: The Questionnaire	27

1. Objective

The general objective of this report was to explore consumer sub-markets (*i.e.*, segments) across and within the five focal European countries (*i.e.*, Germany, France, United Kingdom, Italy and Spain) on the basis of the dataset and information reported in the Deliverable D29.1 Dataset of consumers' perceptions, attitudes, buying intentions, consumption, willingness to buy and pay, and value perceptions towards the selected species in the five countries investigated. Thus, the main aim of this report was to conduct the segmentation analysis based on consumer value perceptions about the selected aquacultured fish species in the five European countries and give insights into consumer sub-markets with the highest potential for maximized consumer value perception.

2. Theoretical background

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 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 and reported previously in Deliverable 29.1 (**Figure 1**). 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 these are 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.

Thus, based on the CV model (**Figure 1**), we explored the possibility that a number of psychographic constructs (*i.e.*, moderators) at start unrelated to the concept of Customer Value moderate CV perceptions and resulting RQ. Thus, we used five psychographic variables (*i.e.*, moderators), namely *category involvement*, *subjective knowledge*, *domain specific innovativeness*, *social representations of food*, and *optimistic bias* as a basis for the segmentation analysis (for more information on the moderators' variables see Deliverable 29.1). 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, behavioral and demographic characteristics.

The CV model served only as the starting point for this segmentation study where the main intention was to find similar segments across European fish market (*i.e.*, France, Germany, Italy, Spain and UK) based on five moderators from CV model as well as to compare possible segments across Europe based on their consumer value perceptions, as well as other behavioral characteristics, towards new fish products.



Therefore, the CV model has not been tested at this point but has only served as the guideline for the exploratory research and segmentation analysis of the European fish market with the main idea to identify and profile distinct consumer groups (segments) who differ in their needs and preferences towards fish products. This step is of outmost importance for the DIVERSIFY project in order to be able to further select one or more potential market segments to enter with new fish products from new fish species, and establish and communicate for each market segment the key distinctive benefit(s) of the new fish products' market offering that will come as the subsequent steps of the DIVERSIFY project.

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 consumer perceptions towards new fish products (*i.e.* new fish species). 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 are suggested accordingly.

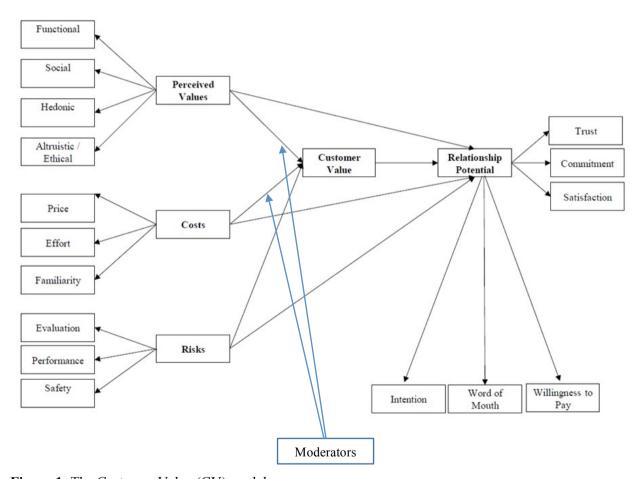


Figure 1: The Customer Value (CV) model

3. Method and research design

A segmentation analysis was conducted on the basis of the dataset obtained from the on-line consumer survey with N=500 consumers in each of the five focal European countries (*i.e.*, Germany, UK, France, Spain and Italy, nationally representative samples with 2.500 households in all) and data obtained from the

Deliverable 29.1. The segmentation analysis was based on the five moderators included in the survey (**Table 1**) namely: (i) category involvement; (ii) domain-specific innovativeness; (iii) subjective knowledge; (iv) optimistic bias, and (v) social representation of food. The classification and descriptions of these dimensions and their combined scales are presented in the Appendix. Finally, measures of objective knowledge about, beliefs and behavior towards wild and farmed fish were also included.

The clusters are identified based on the scores of the five moderators (*i.e.*, involvement in the category, consumers' domain-specific innovativeness, subjective knowledge, optimistic bias, and social representation of food), while socio demographic characteristics as well as beliefs and behaviour towards wild and farmed fish are used to characterize the clusters. Thus, according to the reliability (Cronbach's Alpha) of the each of the five constructs and their uni-dimensionality, the mean value for each construct was calculated and retained. A two-step 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 standardized 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 centers the centroids obtained in the previous AHCA.

After the clusters have been identified and characterized the CV model was used to profile the clusters. Thus, we distinguish between perceived values, costs and risks, and the outcome variables (*i.e.*, customer value and relationship potential). For the overall sample (in which all countries are pooled), MANOVAs were conducted with the variables of the model as dependent variables and cluster membership and country as factors. Country was added as a control variable. In addition, for each of the five countries (*i.e.*, Germany, France, United Kingdom, Spain, and Italy), one-way ANOVAs are used to test whether the members of the clusters differed in their scores on the variables of the model separately. In both cases, Tukey HSD post hoc tests are used to test whether the means are significantly different from one another.

4. Description of the results and consumer segments

In general, similar cluster solution has been obtained across five European countries. Clusters retained differed significantly for all the constructs analyzed and for the whole dataset. 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 (95% of the respondents correctly classified). 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 (**Table 2**), which may be explained by the aim of the study: the introduction of new products from new fish species (diversification).

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.

Overall, similar patterns we observed in the five countries studied (**Table 4**) thus indicating a relatively homogeneous European food-related culture.

Table 1. Centroids for each cluster, country and construct.

Cluster	Category Involvement	Domain Specific Innovativeness	Subjective Knowledge	Optimistic Bias	Social Representations of Food	N
OVERAL	L (N=2511)					
O1	1.95 ^b	2.81°	2.84 ^b	3.89^a	$3.00^{\rm c}$	728
O2	1.77 ^c	5.37^{a}	2.92^{b}	2.62°	4.43 ^a	911
O3	3.77^{a}	3.94^{b}	4.78^{a}	3.57^{b}	3.87^{b}	872
GERMA	<i>NY (N=506)</i>					
D1	1.94 ^c	2.56 ^c	2.61°	3.62^{a}	2.54 ^c	106
D2	1.74 ^c	5.82^{a}	2.81°	2.39^{c}	4.40^{a}	171
D3	3.79^{a}	3.66^{b}	5.15 ^a	3.15 ^b	3.66 ^b	89
D4	2.50^{b}	3.78^{b}	3.34^{b}	3.42^{ab}	4.12^{a}	140
SPAIN (I	V=500)					
E1	4.38^{a}	4.25 ^b	4.85^{a}	3.76^{a}	4.06^{a}	107
E2	2.17^{b}	3.02^{c}	2.93°	3.83^{a}	3.02^{b}	147
E3	2.09^{b}	4.85^{a}	3.35^{b}	2.54 ^b	4.30^{a}	246
FRANCE	E(N=500)					
F1	3.23^{a}	3.87^{b}	4.92^{a}	3.75 ^b	3.71 ^b	250
F2	1.50 ^b	5.18 ^a	3.19 ^b	4.77^{a}	3.15°	68
F3	1.75 ^b	5.22 ^a	2.90^{bc}	$2.30^{\rm c}$	4.78^{a}	107
F4	1.79 ^b	2.18 ^c	$2.70^{\rm c}$	4.44^{a}	2.69°	75
ITALY (N	V=500)					
I1	1.60 ^{bc}	2.13^{d}	2.38^{c}	3.65 ^a	4.71 ^a	38
I2	3.91^a	3.92^{b}	4.71 ^a	3.58^{a}	4.11 ^b	145
I3	1.95 ^b	2.85°	3.18^{b}	3.80^{a}	2.76°	147
I 4	1.50°	5.39 ^a	2.68°	2.60^{b}	4.45 ^a	170
UK (N=5	05)					
GB1	2.33 ^b	2.67°	2.88^{b}	4.22 ^a	2.95°	121
GB2	2.12^{b}	5.10^{a}	2.95 ^b	2.74 ^c	4.24^{a}	226
GB3	4.24 ^a	4.09^{b}	4.93 ^a	3.58 ^b	3.93 ^b	158

a-d: centroids within country and construct with different letters differ significantly (P≤0.05).



Table 2. Discriminant analysis results for pooled sample and 3-cluster solution

Construct	Lambda	F	GDL1	GDL2	<i>p</i> -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	Involved innovators C1 (N=728)	Involved traditional C2 (N=911)	Ambiguous indifferent C3 (N=872)	Sig.*
Involvement	1.95 ^b	1.77 ^a	3.77 °	.000**
Domain-specific innovativenessd	2.81 a	5.37 °	3.94 ^b	.000
Subjective knowledge	4.19 a	1.63 ^a	3.06 b	.000
Optimistic bias	3.89 ^c	2.62 a	3.57 b	.000
Social representation of food	3.00 a	4.43 ^c	3.87 ^b	.000

^{1 =} Strongly agree, 7 = Strongly disagree*Results from the ANOVAs test

Table 4. Country membership, %

Country	Involved innovators C1 (N=728)	Involved traditional C2 (N=911)	Ambiguous indifferent C3 (N=872)	Total per country
Germany (n=506)	30.6	47.4 26.3	21.9	100.0
Spain (n=500)	26.4 18.1	35.2 26.3	38.4	100.0
France (n=500)	28.4	29.2 16.0	42.4	100.0
Italy (n=500)	33.8	35.6 19.5	30.6 17.5	100.0
UK (n=505)	25.7 17.9	33.9 18.8	40.4	100.0
Total per cluster	100.0	100.0	100.0	

Numbers shifted to the left represent percentage of membership of single country in three clusters, while numbers shifted to the right represent the membership of all countries per single cluster.

^{**} All values in italic significant at p > .001

^{a,b,c}Tukey HSD post hoc test, superscripts indicate post-hoc paired comparisons

^dDS Innovativeness has negative polarity, meaning that agreement scores close to unit actually indicate lack of innovativeness and vice versa



Thus, minimal differences have 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, socio-demographic and behavioral profile of the different cluster was assessed through cross-tabulation and chi-square test (**Tables 5 and 6**). One-way ANOVAs are used to test whether the members of the clusters differed in their scores on the variables of the model separately on their perceptions of values, costs, risks and possible outcomes of consuming fish, as well as on 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 7, 8 and 9**).

In terms of the socio-demographic profile of the segments (**Table 5**) the differences observed between the segments were in relation to age, marital status, employment, and social class (see Appendix for more information on the questionnaire). 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.

Table 5. Socio-demographic profile, %

Characteristics	Involved innovators C1 (N=728)	Involved traditional C2 (N=911)	Ambiguous indifferent C3 (N=872)	Sig.*
Age				
(mean in years)	40.7^{a}	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

^aMembership percentage in each cluster based on the cross-tabulation

When considering behavior profile of the consumer segments (**Table 6**) three segments differ significantly across array of behavioral 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

^{*}Results from the chi-square test

^{**} All values in italic significant at p > .05



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 6. Behavioural profile, %

Characteristics	Involved innovators C1 (N=728)	Involved traditional C2 (N=911)	Ambiguous indifferent C3 (N=872)	Sig.*
Main decision maker:				
Yes	74.6 ^a	74.1	71.2	.242
Consumption of farmed fish:				
Once a week or more	23.1	22.9	16.5	
Two-three times a week	29.7	32.4	27.2	.000**
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	
Two-three times a week	27.9	26.8	22.6	.000
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

^aMembership percentage in each cluster based on the cross-tabulation.

Interestingly, three segments differed significantly when taking into account different values as *functional*, *hedonic* and *ethical* value (**Table 7**). 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.

^{*}Results from the chi-square test

^{**} All values in italic significant at p > .05



Table 7. Consumer perceptions of values, costs, risks and possible outcomes, mean scores

Variables	Involved innovators C1 (N=728)	Involved traditional C2 (N=911)	Ambiguous indifferent C3 (N=872)	Sig.*
VALUES				
Functional	3.03 ^b	2.54 ^a	3.65 °	.000**
Social	3.60 a	3.60 ^a	4.34 b	.000
Hedonic	3.21 ^b	2.85 ^a	3.98 °	.000
Ethical	3.20 ^b	2.87 ^a	3.81 °	.000
Emotional	3.52 a	3.46 ^a	4.36 b	.000
COSTS				
Price	3.07 ^a	3.49 b	3.49 b	.000
Effort	3.26 a	3.71 °	3.57 ^b	.000
Unfamiliarity	3.37 ^a	4.17 °	3.85 ^b	.000
RISKS				
Evaluation	3.41 ^a	4.13 °	3.77 ^b	.000
Performance	3.43 ^a	4.39 °	3.97 ^b	.000
Safety	3.29 ^a	4.28 °	3.96 ^b	.000
OUTCOMES				
Customer Value	3.15 ^a	3.05 ^a	3.93 ^b	.000
Satisfaction	3.20 ^b	2.86 ^a	3.99 °	.000
Trust	3.31 ^b	2.96 ^a	4.06 °	.000
Word of Mouth	3.25 ^b	2.99 ^a	4.16 °	.000
Willingness to Pay	3.59 ^a	3.64 ^a	4.53 b	.000
Intention to purchase	3.53 ^a	3.46 ^a	4.48 °	.000

^{1 =} Strongly agree, 7 = Strongly disagree

Table 8. Objective knowledge, mean scores

Statement	Involved innovators C1 (N=728)	Involved traditional C2 (N=911)	Ambiguous indifferent C3 (N=872)	Sig.*
More than half the fish we eat is farmed fish	1.59 ^a	1.55 ^a	1.77 °	.000**
Fish is a source of fibre	1.71 ^a	1.76 ^a	1.82 ^b	.008
Cod is a fatty fish	1.87 ^a	1.89 ^a	2.05 °	.000
Fish is a source of Omega-3 fatty acids	1.16 ^b	1.09 ^a	1.18 ^b	.000
Salmon is a fatty fish	1.45 ^b	1.37 ^a	1.53 °	.000

^{1 =} Strongly agree, 7 = Strongly disagree

^{*}Results from the ANOVAs test

^{**} All values in italic significant at p > .001

^{a,b,c}Tukey HSD post hoc test, superscripts indicate post-hoc paired comparisons

^{*}Results from the ANOVAs test

^{**} All values in italic significant at p > .05

^{a,b,c}Tukey HSD post hoc test, superscripts indicate post-hoc paired comparisons



When observing the objective knowledge regarding the fish consumption (**Table 8**) 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 the healthiness underlying the fish consumption.

Table 9. Beliefs towards farmed fish (ff) and wild fish (wf), mean scores

Statement	Involved innovators C1 (N=728)	Involved traditional C2 (N=911)	Ambiguous indifferent C3 (N=872)	Sig.*
1. ff is safer to consume	3.48 a	3.78 ^b	4.05 °	.000**
2. ff has a healthier diet	3.75 ^a	4.22 b	4.29 ^b	.000
3. ff is healthier	3.70 a	4.17 ^b	4.21 ^b	.000
4. ff is of higher quality	3.88 a	4.41 ^b	4.48 ^b	.000
5. ff is more fresh	3.80 a	4.31 b	4.30 ^b	.000
6. ff is more nutritious	3.81 ^a	4.41 ^b	4.37 ^b	.000
7. ff is tastier	3.95 ^a	4.70 ^b	4.48 ^c	.000
8. ff if more firm	3.68 a	4.25 ^b	4.25 ^b	.000
9. ff is more controlled	3.04 ^a	2.94 ^a	3.44 ^b	.000
10. ff is handled	3.11 ^a	3.27 ^b	3.62 °	.000
11. ff provides more guarantees	3.40 a	3.62 b	3.95 °	.000
12. ff is easier to find	2.80 ^b	2.65 ^a	3.32 °	.000
13. ff is cheaper	2.97 ^a	2.91 ^a	3.56 ^b	.000
14. wf is affected by pollution more	3.11 ^a	3.18 ^a	3.64 ^b	.000
15. wf contains more heavy metals	3.31 ^a	3.54 ^b	3.88 °	.000
16. wf contains more antibiotics	3.88 ^a	4.49 ^b	4.87 ^b	.000
17. wf is affected by parasites more	3.41 ^a	3.59 ^b	3.84 °	.000
18. wf is more fatty	3.68 ^a	4.16 ^b	4.21 ^b	.000
19. wf is more artificial	4.22 a	5.31 °	4.76 ^b	.000

^{1 =} Strongly agree, 7 = Strongly disagree

^{*}Results from the ANOVAs test

^{**} All values in italic significant at p > .001

^{a,b,c}Tukey HSD post hoc test, superscripts indicate post-hoc paired comparisons



Table 10. Logo recognition and consumers' attitudes, mean scores

Statement	innovators C1 (N=728)	traditional C2 (N=911)	Ambiguous indifferent C3 (N=872)	Sig.*
1. I am aware of this logo	2.74 ^b	2.78 ^b	2.36 a	.000**
2. The quality of products carrying this logo is very high3. Products carrying this logo	2.96 a	3.20 b	2.91 ^a	.000
would be my first choice	2.91 ^b	3.05 °	2.72 ^a	.000
4. I find this logo trustworthy	2.99 ^b	3.19 °	2.89 ^a	.000
5. I value this logo	2.95 ^b	3.12 °	2.78 ^a	.000
REPORTED TO THE CONTRACT OF TH				
1. I am aware of this logo	2.66 ^b	2.66 ^b	2.29 a	.000
2. The quality of products carrying this logo is very high	3.13 ^b	3.28 °	3.00 ^a	.000
3. Products carrying this logo would be my first choice	2.98 ^b	3.13 °	2.82 ^a	.000
4. I find this logo trustworthy	3.12 ^a	3.31 ^b	3.04 ^a	.000
5. I value this logo	3.05 ^b	3.20 °	2.87 ^a	.000

1. I am aware of this logo	2.73 ^b	2.60 ^b	2.41 ^a	.000
2. The quality of products carrying this logo is very high	3.04 ^b	3.14 °	2.89 ^a	.000
3. Products carrying this logo would be my first choice	2.90 ^b	2.99 ^b	2.77 ^a	.000
4. I find this logo trustworthy	3.00 a	3.15 ^b	2.92 ^a	.000
5. I value this logo	2.93 ^b	3.05 °	2.79 ^a	.000

^{1 =} Strongly agree, 7 = Strongly disagree

Involved innovators differed significantly from the other two segments regarding various beliefs towards farmed and wild fish (**Table 9**). *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

^{*}Results from the ANOVAs test

^{**} All values in italic significant at p > .001

^{a,b,c}Tukey HSD post hoc test, superscripts indicate post-hoc paired comparisons



even more than that they believe that controlled environment of 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.

Both *involved traditional* and *involved innovators* were aware of the logos used in connection with the fish products (**Table 10**). However, *involved innovators* value logos 'Friend of the sea', 'ASC' etc. much more than *involved traditional*. Furthermore, *involved innovators* find products carrying these logos quite trustworthy. Finally, product carrying these logos would be *involved innovators* first choice when buying fish products as they see these logos in connection to higher product quality.

5. Profiling of the consumer segments using CV model

In order to profile consumer segments for the overall sample (all countries are pooled) variables of the CV model where used as dependent variables and cluster membership and country as factors in conducting MANOVA's. Further, for each of the five countries (*i.e.*, Germany, France, United Kingdom, Spain, and Italy), one-way ANOVAs were used for testing cluster differences on the variables of the CV model separately. Tukey HSD post hoc tests are used to test means differences.

Values

To validate the clusters with the *value* variables of the CV model (Figure 1), MANOVA was conducted with *functional, social, hedonic, ethical,* and *emotional value* as dependent variables and cluster membership and country as factors, (Table 11). Country was added as a control variable. The main effects for country and cluster membership reveal that all *value* variables differ across clusters, whereas *social value* and *emotional value* also differ across countries. Significant interactions between cluster membership and country were reported for *social value, hedonic value* and *ethical value*. An inspection of the means demonstrates that the cluster with the highest scores on the different values is segment *ambiguous indifferent*, whereas *involved innovators* is generally low on *functional, hedonic* and *ethical value*.

Table 11. Cluster-level estimated marginal means for *value* variables for all countries

Cluster		Functional value	Social value	Hedonic value	Ethical value	Emotional value
Involved trad	itional					
C1 (n = 728)		3.03^{a}	3.60^{a}	3.21 ^a	3.20^{a}	3.52^{a}
Involved inno	vators					
C2 (n = 911)		2.54 ^b	3.60^{a}	2.85^{b}	2.87^{b}	3.46^{a}
Ambiguous in	different					
C3 (n = 872)		3.65°	4.34 ^b	3.98^{c}	3.91°	4.36 ^b
Main effect	F	157.15***	78.22***	148.00***	146.16***	98.06***
Cluster (C)	(df1,df2)	(2, 2496)	(2, 2496)	(2, 2496)	(2, 2496)	(2, 2496)
	Partial η^2	0.112	0.059	0.106	0.105	0.073
Main effect	F	1.73	6.62***	0.66	1.54	2.47*
Country	(df1,df2)	(4, 2496)	(4, 2496)	(4, 2496)	(4, 2496)	(4, 2496)
	Partial η^2	0.003	0.010	0.001	0.002	0.004
Main effects	F	1.39	2.94**	2.39*	3.17**	1.23
C*Country	(df1,df2)	(8, 2496)	(8, 2496)	(8, 2496)	(8, 2496)	(8, 2496)
	Partial η^2	0.004	0.009	0.008	0.010	0.004

Notes: Answer scales ranged from 1 to 7; Means with a different superscript (a, b, c) indicate a significant difference (p < .05) (means are compared two at a time); *** p < .001; **p < .01; *p < .05.



Costs and risks

To validate the clusters with the *costs & risks* variables of the model, MANOVA was conducted with *price*, *effort*, *unfamiliarity*, *evaluation costs*, *performance risk*, and *safety risk* as dependent variables and cluster membership and country as factors (**Table 12**). Country was added as a control variable. The main effects for country and cluster membership reveal that all *costs & risks* variables differ across clusters, as well as across countries. In addition, a significant interaction between cluster membership and country was only reported for *unfamiliarity*. An inspection of the means demonstrates that the clusters with the highest scores on the different costs and risks variables is *involved innovators*, whereas *involved traditional* is generally low on these variables.

Table 12. Cluster-level estimated marginal means for costs & risks variables for all countries

Cluster		Price	Effort	Un- familiarity	Evaluation costs	Perfor- mance risk	Safety risk
Involved tra	ditional						
C1 (n = 728)		3.07^{a}	3.26^{a}	3.37^{a}	3.41 ^a	3.43 ^a	3.29 ^a
Involved inn	ovators						
C2 (n = 911)		3.49 ^b	3.71 ^b	4.17 ^b	4.13 ^b	4.39 ^b	4.28 ^b
Ambiguous	indifferent						
C3 (n = 872)		3.49 ^b	3.57^{b}	3.85 ^c	3.77 ^c	3.97^{c}	3.96 ^c
Main effect	F	29.04***	25.08***	81.72***	75.53***	140.26***	129.09***
Cluster (C)	(df1,df2)	(2, 2496)	(2, 2496)	(2, 2496)	(2, 2496)	(2, 2496)	(2, 2496)
	Partial η^2	0.023	0.020	0.061	0.057	0.101	0.094
Main effect	F	5.76***	5.29**	25.69***	13.52***	14.80***	13.35***
Country	(df1,df2)	(4, 2496)	(4, 2496)	(4, 2496)	(4, 2496)	(4, 2496)	(4, 2496)
	Partial η^2	0.009	0.008	0.040	0.021	0.023	0.021
Main effects	F	1.56	1.83	2.11*	1.24	2.48*	1.74
C*Country	(df1,df2)	(8, 2496)	(8, 2496)	(8, 2496)	(8, 2496)	(8, 2496)	(8, 2496)
	Partial η^2	0.005	0.006	0.007	0.004	0.008	0.006

Notes: Answer scales ranged from 1 to 7; Means with a different superscript (a, b, c) indicate a significant difference (p < .05) (means are compared two at a time); *** p < .001; **p < .01; *p < .05.

Outcome variables

To validate the clusters with the *outcome* variables of the model, MANOVA was conducted with *customer value*, *satisfaction*, *trust*, *word-of-mouth*, *willingness to pay*, and *intention to buy* as dependent variables and cluster membership and country as factors (**Table 13**). Country was added as a control variable. The main effects for country and cluster membership reveal that all outcome variables differ across clusters, whereas *trust*, *word-of-mouth*, *willingness-to-pay* and *intention to buy* also differ across countries. Significant interactions between cluster membership and country were reported for *satisfaction*, *trust* and *intention to buy*. An inspection of the means demonstrates that the cluster with the highest scores on the different outcome variables is segment *ambiguous indifferent* the same cluster which has generally the highest scores on the *value* variables of the model. In contrast, the cluster with the lowest scores on the outcome variables is *involved innovators*, which is the same cluster that has the highest scores on the *costs & risks* variables of the model. With regard to *WTP* and *intention to buy*, *involved traditional* and *involved innovators* do not differ.



Table 13. Cluster-level estimated marginal means for *outcome* variables for all countries

Cluster		Customer value	Satis- faction	Trust	WOM	WTP	Intention to Buy
Involved traditi	onal						
C1 (n = 728)		3.15 ^a	3.20^{a}	3.31 ^a	3.25 ^a	3.59^{a}	3.53^{a}
Involved innova	itors						
C2 (n = 911)		3.05^{a}	2.86^{b}	2.96^{b}	2.99 ^b	3.64 ^a	3.46 ^a
Ambiguous indi	ifferent						
C3 (n = 872)		3.93 ^b	3.99 ^c	4.06 ^c	4.16 ^c	4.53 ^b	4.48^{b}
Main effect	F	171.99***	181.39***	175.58***	179.86***	90.47***	137.81***
Cluster (C)	(df1,df2)	(2, 2496)	(2, 2496)	(2, 2496)	(2, 2496)	(2, 2496)	(2, 2496)
	Partial η^2	0.121	0.127	0.123	0.126	0.068	0.099
Main effect	F	0.98	0.96	3.75**	5.45***	3.45**	3.19*
Country	(df1,df2)	(4, 2496)	(4, 2496)	(4, 2496)	(4, 2496)	(4, 2496)	(4, 2496)
-	Partial η^2	0.002	0.002	0.006	0.009	0.005	0.005
Main effects	F	1.56	2.15**	2.34*	1.85	1.39	2.32*
Cluster*Country	(df1,df2)	(8, 2496)	(8, 2496)	(8, 2496)	(8, 2496)	(8, 2496)	(8, 2496)
•	Partial η^2	0.005	0.007	0.007	0.006	0.004	0.007

5.1 Germany

Values

To validate the clusters with the *value* variables of the model, one-way ANOVA was conducted with *functional, social, hedonic, ethical,* and *emotional value* as dependent variables and cluster membership as factor (**Table 13**). All VALUE variables differ across clusters. An inspection of the means demonstrates that the cluster with the highest scores on the different values is cluster 3, whereas the scores for the other clusters do not differ much.

Table 14. Cluster-level means for value variables for Germany

Cluster	Functional value	Social value	Hedonic value	Ethical value	Emotional value
Cluster 1 (n = 106)	2.78 ^a	3.53 ^a	3.00 ^{a,d}	3.08 ^a	3.35 ^a
Cluster 2 ($n = 171$)	2.39^{b}	3.96 ^a	2.83 ^a	3.11 ^a	3.55 ^{a,c}
Cluster $3 (n = 89)$	3.54 ^c	4.78 ^b	4.29°	4.07^{b}	4.80^{b}
Cluster 4 $(n = 140)$	2.90^{a}	3.89^{a}	3.25^{d}	3.30^{a}	3.85°
F	22.24***	13.24***	25.86***	15.19***	19.36***
(df1,df2)	(3, 502)	(3, 502)	(3, 502)	(3, 502)	(3, 502)

Notes: Answer scales ranged from 1 to 7; Means with a different superscript (a, b, c) indicate a significant difference (p < .05) (means are compared two at a time); *** p < .001; **p < .01; *p < .05.



Costs and risks

To validate the clusters with the *costs & risks* variables of the model, one-way ANOVA was conducted with *price*, *effort*, *unfamiliarity*, *evaluation costs*, *performance risk* and *safety risk* as dependent variables and cluster membership as factor (**Table 15**). All *costs & risks* variables differ across clusters. An inspection of the means demonstrates that the cluster with the highest scores on the different *costs & risks* variables is cluster 2, whereas cluster 1 appears to be the cluster with the lowest scores.

Table 15. Cluster-level means for *costs & risks* variables for Germany

Cluster	Price	Effort	Un- familiarit y	Evaluation costs	Perfor- mance risk	Safety risk
Cluster 1 (n = 106)	2.94 ^a	3.12 ^a	3.00^{a}	3.18 ^a	3.37 ^a	3.30 ^a
Cluster 2 $(n = 171)$	3.34^{b}	3.84^{b}	4.06^{b}	4.17^{b}	4.65 ^b	4.35 ^b
Cluster $3 (n = 89)$	$3.28^{a,b}$	3.32^{a}	3.53 ^c	$3.52^{a,c}$	3.96^{c}	3.77 ^c
Cluster 4 ($n = 140$)	$3.25^{a,b}$	$3.50^{a,b}$	3.61 ^c	3.65°	4.07^{c}	3.75°
\overline{F}	3.01*	7.03***	17.33***	16.79***	28.78***	17.21***
(df1,df2)	(3, 502)	(3, 502)	(3, 502)	(3, 502)	(3, 502)	(3,502)

Notes: Answer scales ranged from 1 to 7; Means with a different superscript (a, b, c) indicate a significant difference (p < .05) (means are compared two at a time); *** p < .001; **p < .01; *p < .05.

Outcome variables

To validate the clusters with the *outcome* variables of the model, one-way ANOVA was conducted with *customer value, satisfaction, trust, word-of-mouth, willingness to pay,* and *intention to buy* as dependent variables and cluster membership as factor (**Table 16**). All *outcome* variables differ across clusters. Generally, the means of the variables follow the same pattern across the clusters. Cluster 3 is the cluster with the highest scores on the different *outcome* variables, whereas clusters 1 and 2 appear to be the clusters with the lowest scores and cluster 4 is somewhere in between.

Table 16. Cluster-level means for outcome variables for Germany

Cluster	Customer value	Satis- faction	Trust	WOM	WTP	Intention to Buy
Cluster 1 (n = 106)	3.10 ^{a,c}	3.10 ^{a,c}	3.20 ^{a,c}	3.11 ^{a,c}	3.39 ^a	3.40 ^a
Cluster 2 $(n = 171)$	2.91 ^a	2.74^{a}	2.94 ^a	2.87^{a}	3.21 ^a	3.40^{a}
Cluster $3 (n = 89)$	4.06^{b}	4.14 ^b	4.25 ^b	4.43 ^b	4.51 ^b	4.76 ^b
Cluster 4 $(n = 140)$	3.35 ^c	3.16 ^c	3.36 ^c	3.36 ^c	3.64 ^a	3.70^{a}
F	23.45***	24.90***	21.84***	28.48***	15.82***	19.41***
(df1,df2)	(3, 502)	(3, 502)	(3, 502)	(3, 502)	(3, 502)	(3, 502)

Notes: Answer scales ranged from 1 to 7; Means with a different superscript (a, b, c) indicate a significant difference (p < .05) (means are compared two at a time); *** p < .001; **p < .01; *p < .05.



5.2 France

Values

To validate the clusters with the *value* variables of the model, one-way ANOVA was conducted with *functional, social, hedonic, ethical,* and *emotional value* as dependent variables and cluster membership as factor (**Table 17**). All *value* variables differ across clusters. An inspection of the means demonstrates that the cluster with the lowest scores on the different values is cluster 3, whereas the scores for the other clusters do not differ much.

Table 17. Cluster-level means for value variables for France

Cluster	Functiona l value	Social value	Hedonic value	Ethical value	Emotional value
Cluster 1 (n = 250)	3.51 ^a	4.26 ^a	3.76 ^a	3.74 ^a	4.12 ^a
Cluster $2 (n = 68)$	3.32^{a}	$4.07^{a,c}$	3.72^{a}	3.35^{a}	$3.87^{a,c}$
Cluster 3 $(n = 107)$	2.46^{b}	3.23 ^b	2.62^{b}	2.67^{b}	3.00^{b}
Cluster 4 $(n = 75)$	3.37^{a}	3.75 ^{b,c}	3.49^{a}	3.43^{a}	3.43 ^{b,c}
\overline{F}	15.40***	14.00***	16.99***	15.66***	16.41***
(df1,df2)	(3, 496)	(3, 496)	(3, 496)	(3, 496)	(3, 496)

Notes: Answer scales ranged from 1 to 7; Means with a different superscript (a, b, c) indicate a significant difference (p < .05) (means are compared two at a time); *** p < .001; **p < .01; *p < .05.

Costs and risks

To validate the clusters with the *costs & risks* variables of the model, one-way ANOVA was conducted with *price*, *effort*, *unfamiliarity*, *evaluation costs*, *performance risk* and *safety risk* as dependent variables and cluster membership as factor (**Table 18**). All *costs & risks* variables differ across clusters. An inspection of the means demonstrates that the cluster with the highest scores on the different *costs & risks* variables is cluster 3, whereas cluster 4 appears to be the cluster with the lowest scores.

Table 18. Cluster-level means for costs & risks variables for France

Cluster	Price	Effort	Un- familiarit y	Evaluatio n costs	Perfor- mance risk	Safety risk
Cluster 1 (n = 250)	3.51 ^a	3.67 ^a	4.16 ^a	3.95 ^a	4.17 ^a	4.17 ^a
Cluster 2 $(n = 68)$	$3.23^{a,b}$	$3.47^{a,b}$	4.06^{a}	$4.05^{a,b}$	3.83^a	3.55^{b}
Cluster 3 ($n = 107$)	3.67^{a}	3.81 ^a	$4.70^{\rm b}$	4.48 ^b	5.00^{b}	4.77 ^c
Cluster $4 (n = 75)$	2.71 ^b	3.01^{b}	3.19 ^c	$3.20^{\rm c}$	3.16 ^c	2.91 ^d
\overline{F}	10.00***	6.85***	20.74***	19.44***	40.29***	43.56***
(df1,df2)	(3,496)	(3,496)	(3, 496)	(3,496)	(3, 496)	(3,496)

Notes: Answer scales ranged from 1 to 7; Means with a different superscript (a, b, c) indicate a significant difference (p < .05) (means are compared two at a time); *** p < .001; **p < .01; *p < .05.

Outcome variables

To validate the clusters with the *outcome* variables of the model, one-way ANOVA was conducted with *customer value, satisfaction, trust, word-of-mouth, willingness to pay,* and *intention to buy* as dependent variables and cluster membership as factor (**Table 19**). All *outcome* variables differ across clusters. Generally, the means of the variables follow the same pattern across the clusters. Clusters 1 and 2 are similar



and have the highest scores on the different *outcome* variables, whereas clusters 3 and 4 are similar and they show the lowest scores.

Table 19. Cluster-level means for *outcome* variables for France

Cluster	Customer value	Satis- faction	Trust	WOM	WTP	Intention to Buy
Cluster 1 (n = 250)	3.76 ^a	3.87 ^a	3.97 ^a	4.03 ^a	4.46 ^a	4.36 ^a
Cluster $2 (n = 68)$	3.60^{a}	3.96^{a}	4.17 ^a	4.04^{a}	4.34 ^a	4.29^{a}
Cluster 3 $(n = 107)$	2.87^{b}	2.60^{b}	2.77^{b}	2.75 ^b	3.37^{b}	3.13^{b}
Cluster 4 $(n = 75)$	2.92^{b}	3.06^{b}	3.22^{b}	3.33°	3.36^{b}	3.39^{b}
\overline{F}	28.24***	30.69***	29.87***	26.26***	16.93***	26.93***
(df1,df2)	(3, 496)	(3, 496)	(3, 496)	(3, 496)	(3, 496)	(3, 496)

Notes: Answer scales ranged from 1 to 7; Means with a different superscript (a, b, c) indicate a significant difference (p < .05) (means are compared two at a time); *** p < .001; **p < .01; *p < .05.

5.3 United Kingdom

Values

To validate the clusters with the *value* variables of the model, one-way ANOVA was conducted with *functional, social, hedonic, ethical,* and *emotional value* as dependent variables and cluster membership as factor (**Table 20**). All *value* variables differ across clusters. An inspection of the means demonstrates that the cluster with the highest scores on the different values is cluster 3, whereas the scores for clusters 1 and 2 are not significantly different for *social value, ethical value* and *emotional value*.

Table 20. Cluster-level means for value variables in the UK

Cluster	Functiona l value	Social value	Hedonic value	Ethical value	Emotional value
Cluster 1 (n = 121)	3.21 ^a	3.64 ^a	3.34 ^a	3.31 ^a	3.54 ^a
Cluster 2 ($n = 226$)	2.64 ^b	3.86^{a}	2.95^{b}	3.03^{a}	3.43^{a}
Cluster $3 (n = 158)$	3.73°	4.51 ^b	4.03°	$3.97^{\rm b}$	4.35 ^b
\overline{F}	28.55***	16.00***	26.97***	24.18***	19.36***
(df1,df2)	(2,502)	(2, 502)	(2, 502)	(2,502)	(2,502)

Notes: Answer scales ranged from 1 to 7; Means with a different superscript (a, b, c) indicate a significant difference (p < .05) (means are compared two at a time); *** p < .001; **p < .01; *p < .05.

Costs and risks

To validate the clusters with the *costs & risks* variables of the model, one-way ANOVA was conducted with *price, effort, unfamiliarity, evaluation costs, performance risk* and *safety risk* as dependent variables and cluster membership as factor (**Table 21**). Except for effort, the *costs & risks* variables differ significantly across clusters. An inspection of the means demonstrates that the cluster with the highest scores on the different *costs & risks* variables are clusters 2 and 3 as compared to cluster 1.



Table 21. Cluster-level means for costs & risks variables in the UK

Cluster	Price	Effort	Un- familiarity	Evaluation costs	Perfor- mance risk	Safety risk
Cluster 1 (n = 121)	3.30^{a}	3.43 ^a	3.56 ^a	3.46^{a}	3.56 ^a	3.50 ^a
Cluster 2 ($n = 226$)	$3.42^{a,b}$	3.71 ^a	4.03^{b}	4.02^{b}	4.07^{b}	4.31 ^b
Cluster $3 (n = 158)$	3.69^{b}	3.73 ^a	$3.92^{a,b}$	3.92^{b}	4.00^{b}	4.22 ^b
\overline{F}	3.57*	2.11	5.08**	8.52***	8.19***	16.23***
(df1,df2)	(2, 502)	(2,502)	(2,502)	(2,502)	(2, 502)	(2, 502)

Outcome variables

To validate the clusters with the *outcome* variables of the model, one-way ANOVA was conducted with *customer value, satisfaction, trust, word-of-mouth, willingness to pay,* and *intention to buy* as dependent variables and cluster membership as factor (**Table 22**). All *outcome* variables differ across clusters. Generally, the means of the variables follow the same pattern across the clusters. Cluster 3 is the cluster with the highest scores on the different *outcome* variables, whereas clusters 1 and 2 appear to be the clusters with a similar pattern and lower scores on the outcome variables.

Table 22. Cluster-level means for *outcome* variables in the UK

Cluster	Customer value	Satis- faction	Trust	WOM	WTP	Intention to Buy
Cluster 1 (n = 121)	3.13 ^a	3.15 ^a	3.25 ^a	3.26 ^a	3.37 ^a	3.45 ^a
Cluster 2 ($n = 226$)	3.17 ^a	3.03^{a}	3.17 ^a	3.30^{a}	3.79^{a}	3.81 ^a
Cluster $3 (n = 158)$	4.03 ^b	4.19 ^b	4.17^{b}	4.42 ^b	4.82 ^b	4.83 ^b
\overline{F}	34.46***	43.15***	34.98***	39.13***	32.91***	38.04***
(df1,df2)	(2, 502)	(2,502)	(2, 502)	(2, 502)	(2, 502)	(2, 502)

Notes: Answer scales ranged from 1 to 7; Means with a different superscript (a, b, c) indicate a significant difference (p < .05) (means are compared two at a time); *** p < .001; **p < .01; *p < .05.

5.4 Spain

Values

To validate the clusters with the *value* variables of the model, one-way ANOVA was conducted with *functional, social, hedonic, ethical,* and *emotional value* as dependent variables and cluster membership as factor (**Table 23**). All *value* variables differ across clusters. An inspection of the means demonstrates that the cluster with the highest scores on the different values is cluster 1, whereas the scores for the other clusters are similar (except for *functional value*).



Table 23. Cluster-level means for value variables for Spain

Cluster	Functiona l value	Social value	Hedonic value	Ethical value	Emotional value
Cluster 1 (n = 107)	3.86 ^a	4.17 ^a	4.03 ^a	3.99 ^a	4.25 ^a
Cluster 2 ($n = 147$)	3.16^{b}	3.48^{b}	3.22^{b}	3.18^{b}	3.60^{b}
Cluster 3 ($n = 246$)	2.77^{c}	3.62^{b}	3.02^{b}	2.98^{b}	3.76^{b}
\overline{F}	24.26***	9.36***	21.19***	23.82***	6.48**
(df1,df2)	(2,497)	(2,497)	(2,497)	(2,497)	(2,497)

Costs and risks

To validate the clusters with the *costs & risks* variables of the model, one-way ANOVA was conducted with *price, effort, unfamiliarity, evaluation costs, performance risk* and *safety risk* as dependent variables and cluster membership as factor (**Table 24**). All *costs & risks* variables differ across clusters. An inspection of the means demonstrates that the cluster with the lowest scores on the different *costs & risks* variables is cluster 2, whereas clusters 1 and 3 show similar scores (except for *unfamiliarity*).

Table 24. Cluster-level means for costs & risks variables for Spain

Cluster	Price	Effort	Un- familiarit y	Evaluatio n costs	Perfor- mance risk	Safety risk
Cluster 1 (n = 107)	3.71 ^a	3.73 ^a	4.02 ^a	4.02 ^a	4.19 ^a	4.10 ^a
Cluster 2 ($n = 147$)	3.24^{b}	3.30^{b}	3.52^{b}	3.41 ^b	3.44 ^b	3.30^{b}
Cluster 3 ($n = 246$)	3.64^{a}	3.84^{a}	4.38°	4.25 ^a	4.30^{a}	4.19 ^a
\overline{F}	6.00**	8.64***	24.28***	26.10***	33.04***	29.08***
(df1,df2)	(2,497)	(2,497)	(2,497)	(2,497)	(2,497)	(2,497)

Notes: Answer scales ranged from 1 to 7; Means with a different superscript (a, b, c) indicate a significant difference (p < .05) (means are compared two at a time); *** p < .001; **p < .01; *p < .05.

Outcome variables

To validate the clusters with the *outcome* variables of the model, one-way ANOVA was conducted with *customer value, satisfaction, trust, word-of-mouth, willingness to pay,* and *intention to buy* as dependent variables and cluster membership as factor (**Table 25**). All *outcome* variables differ across clusters. Cluster 1 is the cluster with the highest scores on the different *outcome* variables, whereas clusters 2 and 3 show similar patterns (except for *trust*).



Table 25. Cluster-level means for outcome variables for Spain

Cluster	Customer value	Satis- faction	Trust	WOM	WTP	Intention to Buy
Cluster 1 (n = 107)	4.08 ^a	4.13 ^a	4.20 ^a	4.22 ^a	4.58 ^a	4.38 ^a
Cluster 2 ($n = 147$)	3.18^{b}	3.21 ^b	3.25^{b}	3.12^{b}	3.73 ^b	3.50^{b}
Cluster 3 ($n = 246$)	3.15^{b}	$3.00^{\rm b}$	2.92^{c}	2.96^{b}	3.84 ^b	3.52^{b}
\overline{F}	33.37***	34.66***	44.29***	39.35***	10.44***	17.75***
(df1,df2)	(2,497)	(2,497)	(2,497)	(2,497)	(2,497)	(2,497)

5.5 Italy

Values

To validate the clusters with the *value* variables of the model, one-way ANOVA was conducted with *functional, social, hedonic, ethical,* and *emotional value* as dependent variables and cluster membership as factor (**Table 26**). All *value* variables differ across clusters. An inspection of the means demonstrates that the cluster with the highest scores on the different *value* variables is cluster 2, whereas the scores for the other clusters do not differ significantly from each other.

Table 26. Cluster-level means for *value* variables for Italy

Cluster	Functiona l value	Social value	Hedonic value	Ethical value	Emotional value
Cluster 1 (n = 38)	2.72 ^a	3.10 ^a	2.75 ^a	2.73 ^a	3.11 ^a
Cluster 2 ($n = 145$)	3.71 ^b	4.29^{b}	4.06^{b}	4.00^{b}	4.44^{b}
Cluster 3 $(n = 147)$	2.94 ^a	3.44^{a}	3.16 ^a	3.05^{a}	3.69^{a}
Cluster 4 ($n = 170$)	2.60^{a}	3.49^{a}	2.96 ^a	2.88 ^a	3.61 ^a
\overline{F}	18.59***	13.72***	19.32**	21.90***	12.38***
(df1,df2)	(3,496)	(3, 496)	(3, 496)	(3, 496)	(3,496)

Notes: Answer scales ranged from 1 to 7; Means with a different superscript (a, b, c) indicate a significant difference (p < .05) (means are compared two at a time); *** p < .001; **p < .01; *p < .05.

Costs and risks

To validate the clusters with the *costs & risks* variables of the model, one-way ANOVA was conducted with *price, effort, unfamiliarity, evaluation costs, performance risk* and *safety risk* as dependent variables and cluster membership as factor (**Table 27**). All *costs & risks* variables differ across clusters. An inspection of the means demonstrates that the cluster with the lowest scores on the different *costs & risks* variables is cluster 3, whereas the scores of the other clusters on the different variables tend to be similar



Table 27. Cluster-level means for costs & risks variables for Italy

Cluster	Price	Effort	Un- familiarity	Evaluation costs	Perfor- mance risk	Safety risk
Cluster 1 (n = 38)	3.18 ^{a,b}	3.50 ^a	3.34 ^{a,b}	3.61 ^a	3.61 ^a	3.48 ^a
Cluster 2 ($n = 145$)	3.53^{a}	3.56^{a}	3.75 ^a	3.68 ^a	3.80^{a}	3.86 ^a
Cluster $3 (n = 147)$	2.71 ^b	2.90^{b}	2.87^{b}	2.98^{b}	2.95^{b}	2.88^{b}
Cluster 4 ($n = 170$)	3.40^{a}	3.43^{a}	3.67^{a}	3.79^{a}	4.03 ^a	3.83 ^a
\overline{F}	11.74***	7.65***	14.35***	15.08***	24.05***	18.95***
(df1,df2)	(3,496)	(3,496)	(3,496)	(3,496)	(3,496)	(3,496)

Outcome variables

To validate the clusters with the *outcome* variables of the model, one-way ANOVA was conducted with *customer value, satisfaction, trust, word-of-mouth, willingness to pay*, and *intention to buy* as dependent variables and cluster membership as factor (**Table 28**). All *outcome* variables differ across clusters. Generally, the means of the variables follow the same pattern across the clusters. Cluster 2 is the cluster with the highest scores on the different *outcome* variables, whereas clusters 1, 3 and 4 appear to be the clusters with similar scores (although cluster 3 has sometimes significantly higher scores than clusters 1 and 4)

Table 28. Cluster-level means for *outcome* variables for Italy

Cluster	Customer value	Satis- faction	Trust	WOM	WTP	Intention to Buy
Cluster 1 (n = 38)	2.94 ^a	2.86 ^{a,c}	2.88 ^{a,c}	2.86 ^a	3.18 ^a	3.05 ^a
Cluster 2 ($n = 145$)	4.08^{b}	4.10^{b}	4.18 ^b	4.17 ^b	4.66 ^b	4.44 ^b
Cluster $3 (n = 147)$	3.22^{a}	$3.27^{\rm c}$	3.38 ^c	3.29^{a}	3.90^{a}	3.73^{c}
Cluster 4 ($n = 170$)	3.16^{a}	2.87^{a}	2.98^{a}	3.04^{a}	3.86 ^a	3.41 ^{a,c}
\overline{F}	25.67***	25.52***	26.94***	22.27***	11.68***	18.13***
(df1,df2)	(3,496)	(3,496)	(3, 496)	(3,496)	(3,496)	(3,496)

Notes: Answer scales ranged from 1 to 7; Means with a different superscript (a, b, c) indicate a significant difference (p < .05) (means are compared two at a time); *** p < .001; **p < .01; *p < .05.

6. Implications for the DIVERSIFY project in market segmentation and product development

The results from this study have identified the main market segments across European fish market (*i.e.*, France, Germany, Italy, Spain and UK) allowing for identification of the main group of potential consumers of the new fish products, *i.e.*, the *involved traditional* and *involved innovators*. These two market segments have been profiled on the basis of the different geographic, demographic, psychographic and behavioral characteristics that allowed for better understanding of the needs and preferences of the each segment across and within the five countries examined (*i.e.*, national and international segments), with the highest potential for maximized consumer value perceptions, thus relevant for exploitation in subsequent activities of WP 29.

Therefore, this segmentation analysis of the European fish market allowed for selection of the most important potential market segments to enter with new fish products from new fish species. Furthermore, by characterization of each market segment this study allowed for further prioritization and development of the more personalized communication of the key distinctive benefit(s) of the new fish products' market offering that will come in the subsequent steps of this project. As to determine the proper competitive frame of reference for new fish species and their products in the European aquaculture market, it is necessary to understand consumers' characteristics, and considerations that consumers take into account when making fish product choices. The knowledge obtained in this segmentation study will allow DIVERSIFY to target specific market segments and to set the stage for the development of the new fish products to be specially tailored and relevant for the consumers from the established market segments.

7. Discussion and Conclusion

The objective of this report was to explore consumer sub-markets (*i.e.*, segments) and 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-five fish markets in Europe (*i.e.* UK, Germany, Spain, France and Italy). The report further explored the possibility that a number of psychographic constructs (*i.e.*, moderators), namely *category involvement*, *subjective knowledge*, *domain specific innovativeness*, *social representations of food*, and *optimistic bias*, moderate CV perceptions and resulting RQ. For this purpose, selected psychographic constructs were 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, behavioral and demographic characteristics across the five EU countries.

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 five fish markets in Europe and opens new possibilities for efficient marketing of products from farmed fish species. Given the exploratory nature of this report, 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.



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9. Appendix: The Questionnaire

The questionnaire as used in this study is depicted below:

The survey is a part of a European Project co-funded by the 7th Framework Program of the European Union. This survey is carried out in accordance with the guidelines of ESOMAR as well as this Country's local market research code of ethics. This means that your answers will be treated in the strictest confidence, and reported anonymously in aggregate form. Also, there are no right or wrong answers, as we are just interested in your own views on the subject.

The interview is expected to last approximately 20 minutes. Let me assure you we are not trying to sell you anything. We are looking for people that can take part in the study. May I ask you a few questions please?

Socio-demographic characteristics

- 1. What is your gender?
 - a. Male
 - b. Female
- 2. Who is responsible for doing the grocery shopping in your household?
 - a. I am the main decision maker of the household
 - b. I am the joint decision maker of the household
 - c. Someone else in my household is the main decision maker
- 3. Marital status:
 - a. Single
 - b. Co-habiting
 - c. Married
- 4. Are there children in your household? / Are you the main wage earner of household?
 - a. Yes
 - b. No
- 5. What is your level of education? / What is the level of education of the main wage earner of household?
 - a. No formal education
 - b. Primary school
 - c. Secondary school
 - d. Technical School
 - e. University Degree



- f. Post-graduate Degree
- 6. What is your current occupation?/ What is the current occupation of the main wage earner of household?
 - a. Small farmer (up to 50 stremmas)
 - b. Large farmer (more than 50 stremmas)
 - c. Self-employed/ business (without employees)
 - d. Self-employed/ business (with 1-2 employees)
 - e. Self-employed/ business (with 3-5 employees)
 - f. Self-employed/business (with 6-10 employees)
 - g. Self-employed/business (with 11-49 employees)
 - h. Self-employed/ business (with 50+ employees)
 - i. Professionals (Self-employed)
 - j. Professionals (employees)
 - k. General Managers (-5 employees)
 - 1. General Managers (6-10 employees)
 - m. General Managers (11+ employees)
 - n. Middle Managers (-5 employees)
 - o. Middle Managers (6+ employees)
 - p. Other Office Non Manual
 - q. Other Non-Office Non-Manual
 - r. Manual-Skilled
 - s. Manual-Unskilled
 - t. Housewives
 - u. Non-Working (Income holder/ renters)
 - v. Students
- 7. How would you evaluate your income level?
 - a. Lower than average
 - b. About average
 - c. Higher than average



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']

VALUES

Functional	1. This fish would have consistent quality
value	2. This fish would be well produced
	3. This fish would be a tasty dish
Sweeney	4. This fish would be a nutritious food choice
&Soutar (2001)	5. This fish would be a healthy food choice
Social value	6. This fish would be purchased by many people I know
Sweeney &	7. This fish would improve the way other people perceive me
Soutar (2001);	8. Buying this fish would make a good impression on other people
	9. This fish would give those who buy it social approval
Sanchez-	
Fernandez &	
Holbrook	
(2009)	
Hedonic value	10. I would like this fish
Sweeney	11. I would feel relaxed consuming this fish
&Soutar (2001)	12. This fish would make me feel good
Ethical value	13. Buying this fish is coherent with my ethical values
G 1	14. Buying this fish would make good to the environment
Sanchez-	15. Buying this fish would contribute to the survival of the aquaculture industry

Fernandez et	16. Buying this fish would be beneficial to social groups in need (<i>e.g.</i> , the children)
al. (2009)	
Emotional	17. Buying this fish makes me feel excited
value	18. Buying this fish makes me enthusiastic
	19. Buying this fish makes me feel happy
	COCTO
	COSTS
Price	20. This fish would not be reasonably priced
Sweeney	21. This fish would not be as good a product as its price indicates
&Soutar (2001)	22. This fish would have higher price than the average of farmed fish 23. This fish would not be economical
T 00	
Effort	24. This fish would require too much time to find25. This fish would require too much effort to find
Yoo et al.	26. This fish would be hard to find
(2000)	
Petrick (2002)	
Unfamiliarity	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
Evaluation	29. I won't feel as familiar as I want with this fish 30. It would be difficult to recognize this fish
costs	31. I could not afford the time to get the information to fully evaluate this fish
Costs	32. Comparing the benefits of my previous preferred fish with this fish would take too much
Burnham et al.	time and effort
(2003)	33. If I would change my previously preferred fish, I would have to search very much to find this fish
Performance	34. There might be a chance that this fish would not taste properly
risk	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
Sweeney et al.	36. This fish would come from a production method that I cannot trust
(1999)	37. This fish would not have any extras to offer
Safety risk	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
Customer	41. I would consider this fish to be good value for money
value	42. I would consider this fish to be a good buy
vaiut	43. The value of this fish to me would be high
Cronin et al.	44. Compared to what I would have to give up, the overall ability of this fish to satisfy my
(1997)	needs would be high
Dodds et al.	45. This fish replace old fish products with new valuable products 46. This fish is a promising fish product
(1991)	40. This fish is a profitising fish product
	BEHAVIORAL OUTCOMES

Satisfaction Hennig-Thurau et al. (2002) Trust Chaudhuri& Holbrook (2001) Word of	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 50. I would trust this fish 51. I would rely on this fish 52. I would consider this fish to be an honest product 53. This fish would be safe to buy
Mouth (WOM)	55. I would talk favorably about this fish 56. I am willing to pay a premium price to buy this fish
WTP Intention to Buy	57. I intend to purchase this fish next time I buy fish 58. I intent to replace my current fish with this fish
	MODERATORS
Consumer Involvement 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
Domain specific innovativeness Goldsmith and Hofacker, (1991)	 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. 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.
Subjective knowledge Pieniak et al. (2007)	67. I consider that I know more about fish than the average person 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
Optimistic bias 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]
Social representation	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.

s of food Bäckström et al. (2004); Onwezen and Bartels (2013)	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.
Beliefs about farmed fish	 Farmed fish is safer than wild fish Wild fish is more affected by marine pollution (spillages) than farmed fish
(Claret et al,	3. Wild fish contains more heavy metals than farmed fish
2014)	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

Objective knowledge about fish:

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

Current fish consumption:

How often did you eat the following fish products in the last month?	Never	once a month or less	2-3 times a month	once a week or more	I don't know
	1	2	3	4	5

25. Farmed fish (aquaculture)					
26. Wild fish					
27. Seafood					
28. Frozen fish					
29. Whole fish					
30. Processed fish (<i>e.g.</i> , fishfingers)	_	0	_	_	_

Please observe the below logos and indicate your agreement with the relevant statements:

	Totally disagre e				Totall y agree
	1	2	3	4	5
31. I am aware of this logo					
32. The likely quality of products carrying this logo is extremely high					
33. Products carrying this logo would be my first choice					
34. I find this logo trustworthy					
35. I value this logo					
FARMED RESPONSIBLY CERTIFIED ASC-AQUA.ORG	Totally disagre e				Totall y agree
	1	2	3	4	5
36. I am aware of this logo					
37. The likely quality of products carrying this logo is extremely high					
38. Products carrying this logo would be my first choice					
39. I find this logo trustworthy					
40. I value this logo					



****	Totally disagre e				Totall y agree
	1	2	3	4	5
41. I am aware of this logo					
42. The likely quality of products carrying this logo is extremely high					
43. Products carrying this logo would be my first choice					
44. I find this logo trustworthy					
45. I value this logo					

