Deliverable Report

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Objective: Report on results of test markets per species: Empirical evidence of the effectiveness of the proposed marketing strategies. Suggestions for changes or optimization of these marketing strategies are included. Suggestions on prioritization of markets are made.

Deviations: The test was changed from real life to a virtual market test in amendment. It was based on the lack of availability of physical new products of the new species. Greater amberjack was selected as most representative species and used in the experiment/test. This report has been delayed by two months due to delay in the data collection.

Contents

1. Introduction

The objective of this Deliverable is to report results of experiments done regarding the marketing strategies devised for the newly developed products from the DIVERSIFY species, aiming to develop a market that is as large and profitable as possible.

It builds on prior results of consumer research regarding segmentation of the market (Deliverable 29.2) and price and communications research (including country of origin effects) (Deliverables 29.6 and 29.8). While the latter research studied consumer reactions in isolation, i.e. without offering consumers alternatives to choose from, the current study focuses on actual *market launch* in a retailer setting.

Consistent with the set up developed in Deliverable 30.5 the results of three studies are presented focusing on *greater amberjack as species and fillets as its products*. These three studies are:

1. A preliminary study regarding the role of category information to help consumers' information processing as part of their adoption process.
2. A study regarding consumer acceptance of the new species and product in a virtual market test using the setting of a national retailer's webstore and including the 5 target countries, i.e. UK, Germany, Italy, France and Spain.
3. A systems dynamic modelling effort to better understand effects of narrow versus full-fledged channel strategy and using different levels of advertising budget to gain market acceptance and stimulate diffusion of the species/product in the market place.

In the conclusions we discuss the results and link them to prior deliverables and literature. We also include suggestions as to an optimal market launch for greater amberjack fillets, i.e. the new species in the target market, and which country to focus on first, i.e. use as lead use market.

2. Preliminary categorization experiment

2.1 Overcoming unfamiliarity using adequate framing

New fish species may not be radically different in appearance than most fish sold in the market place, but the fact that a species is unfamiliar can make it difficult for consumers to evaluate and adopt. Lack of information, such as prototypical category to place the fish in, may prevent consumers from trying the new species and its related products (Rosa and Spanjol 2005, Tuorila et al. 1998). It may seriously hinder or even prevent adoption and diffusion.

By offering information about an unfamiliar food product's product category, e.g., its closest neighbor, a provider may offer consumers an anchor to process the new product's data, which can increase the willingness to try the new product (Tuorila et al. 1998). The information will offer the necessary cognitive update and allow consumers to processing relevant marketing information effectively.

2.2 Method

Study design

To study this communication issue regarding category an experiment was performed. It involved three manipulations regarding provision of product information and a control group. The manipulations concerned communicating: new, new with mention of referent product, new with mention of referent product and also noting a similarity in structure and taste with referent product.

The study focused on the most characteristic species for the project i.e. greater amberjack and fillets. Based on the similarity of greater amberjack with tuna, the latter species was chosen to be communicated as its closest neighbor. Respondents were informed that all three options fitted their budget. This helped exclude pricing from their decision making process. Next to prices also other marketing variables were held constant.

Scenarios

The scenarios we developed used the consumer's local fish mongers as informant. Fish mongers are experts and therefore a credible source of information. Respondents were given a task to buy fish fillets for a meal for their family at the monger. The monger suggested three fillets for their dish: cod, tuna, and greater amberjack. The monger continued to (i) (just) promote new greater amberjack, or (ii and iii) promote it as new but with different levels of extra information about its nearest neighbor (its category). The scenarios were supported with pictures of each species and their fillets on ice as to mimic their display in the monger's fish counter. In between the monger's comments and before respondents gave their evaluation of the fish fillets, we asked respondents about their thoughts regarding the monger's advice (open question), and to list their purchase criteria for this decision in this setting.

Sample

Data from a sample of 445 UK consumers was collected using the consumer panel of a professional international market research agency using an online questionnaire. Only consumers that consumed fish products at least once a month and were able to cook, i.e. to prepare a meal at home, were selected to participate. This was considered important to make the scenario credible to the respondent.

Table 2.1. Socio-demographic profile of the participants.

Characteristics		**Percentage***
Age		
	mean in years	39.1
Gender		
	male	38.4
Household size	1	15.1
	2	28.1
	3	18.9
	4	21.8
	>=5	16.1
Children at home		
	yes	48.5
Level of education		
	Primary school	.4
	Secondary school	23.6
	Higher education-not university	37.3
	University- first degree, BSc	32.6
	University Post graduate, PhD	6.1
Income		
	more than average	23.8
	average	63.6
	less than average	12.6

N=445

Table 2.1 reports some demographics of the sample. To ensure consumers engagement with the task we asked them about their buying criteria. On average consumers used 2 to 3 criteria (mean=2.47). The top 3 criteria people mentioned were: suitable for my dish (31.5%), appetizing appearance (18.0%), and freshness (17.5%). As expected the majority of respondents, i.e. 72.1%, was unfamiliarity with this new species.

The allocation of respondents across manipulations varied slightly, from 108 for the control group to 109 (new) and 114 for both new/similar tuna and new/similar tuna in structure/taste groups. The respondents had an average age of 39.1, were predominantly female (61.6%) and had between 2 and 3 children. Income was average.

Measures

As dependent variable we included (i) attitude towards the monger's advice, (ii) attitude towards the species, and (iii) willingness to buy greater amberjack. The measures of attitude used four and three items respectively, whereas willingness to buy was measured using two items. We used 5 point Likert scales with anchors, completely disagree, and completely agree.

As a control we added the respondent's innovativeness (4 items, 5 points likert scale).

Exploratory factor analysis with varimax rotation and eigen value of 1 showed clean factors except for one innovativeness item. It concerned a reversely coded item of "not buying new without having tasted a product". Thus, we treated it as a separate control in our analyses.

Table 2.2 reports descriptives of the study constructs. All constructs had reliability scores of >.7 (Cronbach Alpha) and Variance extracted of >.5.

Table 2.2. Correlations and descriptives

Characteristics	**Mean**	**stDev**	**Cronbach α***
$Attitude_{towards\ advice\ monger}$	5.01	1.29	.92
$Attitude_{greater\ amberjack}$	4.58	1.62	.94
Willingness to buy (greater amberjack)	4.69	1.64	.93
Innovativeness	4.16	1.45	.90
Won't buy if not tasted	3.97	1.60	NA
Familiar with greater amberjack	2.32	1.85	NA

N=445

2.3 Results

2.3.1 Main effects

Table 2.3 shows MANCOVA results using as dependent variables attitude towards monger's advice, attitude towards greater amberjack, willingness to buy greater amberjack, and including the manipulations as fix effect and several covariates too. Box's M test regarding observed covariance matrices of the dependent

variables are equal across groups was significant (Box's M=36.52; F=2.004, p<.007). A similar test is Levene's test, which tests the equality of the error variances across the groups for each dependent variable. Since Levene's Test of Equality of Error Variances revealed that none of the dependent was significant, the assumption of equality of the error variances of the dependent variables is not violated. However, because Box M was significant we focused on and report Pillai's Trace and not Wilks' Lambda coefficients.

Table 2.3.: MANCOVA results -

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	$Attitude_{advice}$	118.882[a]	6	19.814	13.959	.000
	$Attitude_{species}$	249.032[b]	6	41.505	19.968	.000
	Willingness to Buy	475.121[c]	6	79.187	48.275	.000
Intercept	$Attitude_{advice}$	386.132	1	386.132	272.035	.000
	$Attitude_{species}$	261.113	1	261.113	125.619	.000
	Willingness to Buy	225.777	1	225.777	137.642	.000
innovativeness	$Attitude_{advice}$	63.907	1	63.907	45.023	.000
	$Attitude_{species}$	136.808	1	136.808	65.817	.000
	Willingness to Buy	283.443	1	283.443	172.797	.000
Not buy without tasting first	$Attitude_{advice}$	7.702	1	7.702	5.426	.020
	$Attitude_{species}$	24.929	1	24.929	11.993	.001
	Willingness to Buy	66.317	1	66.317	40.429	.000
familiarity	$Attitude_{advice}$	4.202	1	4.202	2.960	.086
	$Attitude_{species}$	14.743	1	14.743	7.093	.008
	Willingness to Buy	4.745	1	4.745	2.893	.090
Experimental condition	$Attitude_{advice}$	12.836	3	4.279	3.014	.030
	$Attitude_{species}$	13.457	3	4.486	2.158	.092
	Willingness to Buy	13.520	3	4.507	2.747	.043

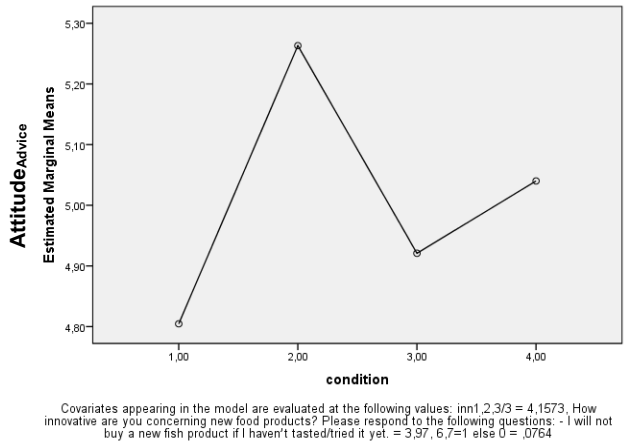
a. R Squared = .161 (Adjusted R Squared = .149)
b. R Squared = .215 (Adjusted R Squared = .204)
c. R Squared = .398 (Adjusted R Squared = .390)

Our model explains a reasonable level of variance (adj. R^2) in the dependent variables, varying from 14.9% of attitude towards monger's advice to 20.4% of variance in attitude towards greater amberjack and 39.0% of willingness to buy greater amberjack is explained. More importantly, we find a significant effect of our different experimental conditions on attitude towards advice of the fish monger and willingness to buy the new fish. The impact of the experimental condition i.e. manipulation on attitude towards our new species is only marginally significant (p=.092).

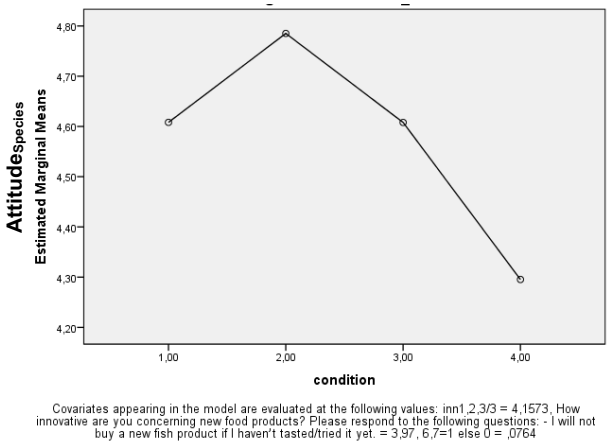
Several covariates are significant too, i.e. innovativeness, and reluctance to buy if not tasted on all dependent variables (p<.05), whereas familiarity with species is significant on attitude species and only marginally on the other two dependent variables (p<.1).

Figures 2.1a through 1c show the detailed results for the impact of the different manipulations on the dependent variables. The groups are: (1) having received communication of 'new species'; (2) 'new' and 'similar to tuna'; (3) 'new', 'similar to tuna in taste and structure'; and (4) control. Figure 1a shows that group 1 has a slight negative effect on attitude $_{advice}$ (q112 1-4/4) in comparison to the *control group conditions (group 4)*. Possibly communicating 'new' makes respondents alert and cautions for opportunistic behavior of the monger. The effect of saying 'new and mentioning similarity to tuna' (group 2) has the most positive impact on attitude towards monger' advice. When similarity is further stressed (group 3) the attitude decreases again to a level similar to that of the control group. The decrease may result from more prominent consideration /mental processing by respondents.

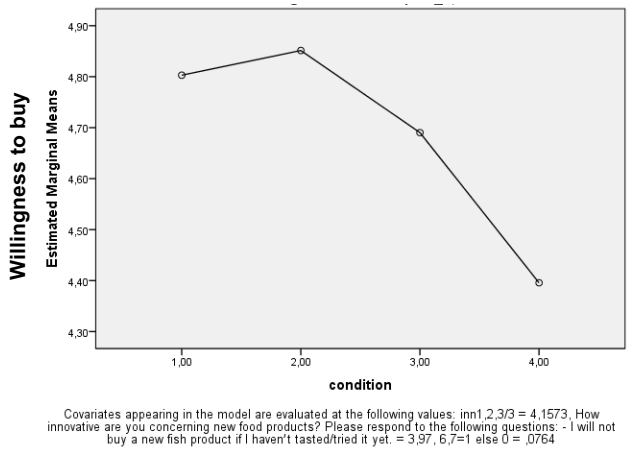
Figures 2.1a, b, c. Effect of the experimental conditions on dependent variables of attitude$_{advice}$, and attitude$_{species}$, and willingness to buy greater amberjack.



Post hoc test significant differences: 1—2,4; 2—3 (p<.05). 2—4 (p<.1).



Post hoc test significant differences: 2, 3—4 (p<.05); 1—4 (p<.1).



Post hoc test significant differences: 1,2,3—4 (p<.05).

The impact of the manipulation on the dependent variables of $Attitude_{species}$ and willingness to buy greater amberjack are rather similar to results reported above. Figure 1b shows a very small, non-significant increase in mean of attitude towards the new species, which stems from informing respondents of the new fish by mentioning its similarity to tuna. Only mentioning 'new' and offering extra information about the similarity (taste, structure) result in a slight decrease of the evaluation of the new species. Still, all manipulations compare favorably to the control group.

Figure 2.1c shows that the willingness to buy of the groups with the different manipulations also exceed those of the control group. Between the manipulations there are only non-significant differences. While the elaborate informing of customers seems to have the lowest score of the three groups all three manipulations (of information provision) compare favorably to the control group. It suggests that active communication aimed at growing awareness and categorization of the new product, i.e. developing (social) cognition of the consumers, works.

These results are in line with prior findings by Tuorila et al (1998). They found that positive information enhanced ratings of unfamiliar food products. Information about category had positive effects "[T]he information on product category may offer advantages if an unfamiliar food product is to be promoted without the possibility of tasting it." (p.427). Extra info beyond category e.g., on taste could lead to reduced evaluations. Offering some category information leaves some incongruence which stimulates information processing resulting in more positive responses.

2.3.2 Accounting for customer segments

Because different consumer segments respond differently to new products, we also account for segments (Onweezen and Bartels 2011). Anticipating that more and less innovative consumers exist in the marketplace, and in accordance with the segments found in an earlier Diversify consumer study (see Deliverable 29.2), we segment based on levels of consumer innovativeness. In accord with our previous analysis we use two facets of innovative attitude to create our segment, i.e. the level of innovativeness and reluctance to buy new fish species if not having tasted the product before purchase. We use cross over point 5 of the 7 points scale to create a 2 x 2 matrix. The upper part of the scales refer to the very innovative individuals, and those that do not buying a fish before having tasted the new product/species first.

Ordering the four groups it is important understand that reluctance to buy without having tasted the new species refers to a more cautious innovator but a more change oriented conservative (low innovation score). The distribution of respondents across the four groups is as follows (see Table 2.4).

Table 2.4. Segmentation based on 2 facets of consumer innovativeness

	Segment	**Characteristics**	**Number (%)**
1	Innovators	high innovative, no need to sample first	87 (19.6%)
2	Early adopters	high innovative, need to sample first	55 (12.4%)
3	Early majority	low innovative, need to sample first	192 (43.1%)
4	Late majority	low innovative, no need to sample first	111 (24.9%)

N=445

Next, we performed a means comparison test using the four categories as groups and attitude towards monger's advice, attitude towards greater amberjack and willingness to buy as dependent variables. The results are reported in Table 2.5. It involves a kind of moderation analysis demonstrating different levels of dependent variable for different levels of the independent variable.

The results show that the innovator and early adopter segments have more positive evaluations of the new fish species, both attitude-wise but also concerning the willingness to buy the new species. Early majority has a moderate level of attitude toward the new species and willingness to buy it. It confirms our expectations that consumers' innovative attitude positively moderates the effect of information about categorization on respondents' evaluation of the advice and new product, including their willingness to try the new species.

Table 2.5. Means and group difference test

segments		**Attitude $_{advice}$***		**Evaluation***			**Willingness to Buy ***	
	N	I	II	I	II	III	I II	III
1. Innovators	87		5.56			5.29		5.84
2. Early adopters	55		5.55			5.26		5.47
3. Early majority	192	4.88			4.52		4.53	
4. Late majority	111	4.54		3.78			3.66	
Overall difference:		F=15.3. P<.000		F=20.4. p<.000			F=43.1. p<.000	

* Means for groups in homogeneous subsets are displayed (I.II. and III resp.). Tukey B. p< 0.05;

Scores refer to 7 points scale 1=completely disagree. 7=completely agree

Uses Harmonic Mean Sample Size = 91.130

3. Online experiment

3.1 Market strategy

In response to online grocery sales as a new emerging channel of the future the market test was performed in an online setting. Customers were provided with the scenario to shop online for a meal for their family, and that they had decided to use fish as its main ingredient. Manipulations included in the experiment were:

- A price discount.
- A traceability label.
- An environmental cue/claim.

The unique aspect of the experiment was the *competitive retail setting*. The experiment preferred validity over control. Finally, customers who did not choose the new species were offered extra information about the product after which they were asked whether they wanted to reconsider their choice and switch or at least try the new species.

The objective of the experiment was to uncover which innovation paths and cues are best used in the launch process in an attempt to optimize the final launch strategy for the new species and its product.

Building on results of Deliverable 29.6 (see p.25 Table 9) we used the Diversify brand sticker, and a health claim (Omega3) on the package of our new fish product. Further we used the EU as country of origin. The use of the Diversify brand helped with comparability of settings and thus findings across the experiments. The health claim had been found to have a positive effect on attitude in all target countries, and thus most likely also on adoption. Because currently aquaculture production volume of *greater amberjack* is nihil and the aim is to stimulate farming in the EU, we decided to add a EU country of origin cue instead of the local country name. Still, a positive effect of EU origin over no country of origin information should be anticipated (see D29.6).

In accordance with the findings from the pretest we will communicate the closest neighbor of the new fish species. That will help the consumers categorize the new fish and make acceptance/trial easier.

3.2 Method

Design

The study focused on the most characteristic species for the Diversity project i.e. *greater amberjack and fillets*. This product had the best customer evaluations (see D29.7). A 2 x 2 x 2 between subjects experimental design was used including: promotional claim (yes/no environmental claim), price discount (no/yes 15%). and traceability label (yes/no). As dependent variables we used: (i) awareness/consideration of greater amberjack fillets; (ii) actual buying of the greater amberjack fillets. Finally, for those that had not bought greater amberjack (iii) their willingness to reconsider/switch (after having received additional information about Diversity project) was recorded.

The context was the fish counter of an online national retail store. In the final choice setting four other fillets of species were shown, offering the consumer a serious set of alternatives to choose from. The extra species were selected to fit consumer taste in all countries. The alternative species included were: cod, tuna, salmon, and sea bream.

Sample

The study involved respondents of all 5 target markets mentioned in the DOW: UK. Germany, France, Italy, and Spain. In total 1,500 respondents were included, approximately 300 respondents per country divided in 8 groups/manipulations (group sizes in range 38-40). Samples were matched based on demographics in order to make meaningful comparison between countries possible.

Respondents of each country had to meet several prequalification/criteria: the respondent had to (i) consume fish products, (ii) engage in shopping for groceries for his/her families to some extent, and (iii) have some experience shopping online in the past 6 months. It would ensure that the experimental setting was natural to the respondent.

The data were collected by professional agency, i.e. HRH from Greece. Table 3.1 and 3.2 shows some sample characteristics. The samples are not completely similar: e.g., we note larger household size in Spain (3 members=45%) and to some extend also in Italy (4 members=34%). Further, the number of children at home is lower in Germany (33.2%). However, several other differences also stand out, including for instance the higher percentage (52.3%) high education/not university in Italy, and university bachelors segment in the UK (32.2%). In addition, the larger percentage of low income people in the UK sample stands out (29.7%).

Table 3.1. Socio-demographic profile of the participants in sample.

Characteristics	**UK**	**Germany**	**France**	**Italy**	**Spain**
	Percentage*				
Age					
(mean in years)	40.7	41.5	40.0	40.1	39.5
Gender					
(male)	47.3	50.2	45.3	51.1	49.4†
Household size					
(1)	18.0	28.2	15.9	7.8	2.5
(2)	30.6	35.7	23.4	20.6	15.3
(3)	17.7	20.6	23.8	29.3	45.0
(4)	23.0	14.8	25.0	34.0	24.7
(5)	7.6	1.8	9.1	7.2	7.5
(≥6)	3.2	.9	2.8	1.2	5.0
Children at home					
(yes)	55.2	33.2	59.1	53.6	58.4
Children at home-below 18					
(yes)	39.4	28.6	52.5	44.2	50.0
Children at home-above 18					
(yes)	12.3	5.5	12.8	14.3	17.2
Level of education					
(Primary school)	1.6	.9	1.3	0	2.2
(Secondary school)	24.3	35.1	21.3	5.3	10.0
(Higher education-not university)	27.1	32.0	23.4	52.3	29.7
(University- first degree. BSc)	32.2	15.1	23.1	16.8	42.2
(University Post graduate. PhD)	14.8	16.9	30.9	25.5	15.9

Income					
(more than average)	16.7	18.5	14.7	3.1	12.8
(average)	53.6	61.5	68.8	72.9	70.9
(less than average)	29.7	20.0	16.6	24.0	16.3

*Except for age

UK: n=317; G: n=325; F: n=320; I n=321; S n=320

†: guestimate as not all responses were registered.

Table 3.2. Shopping habits of the participants in sample.

Characteristics	**UK**	**Germany**	**France**	**Italy**	**Spain**
	Percentage*				
Main decision maker					
(yes)	76.3	71.4	80.6	59.8	70.9
Shopping for fish					
at super markets	86.8	65.5	69.1	53.6	49.7
at monger (specialty store)	10.1	27.1	23.4	39.6	43.1
at the (wet) market	2.5	5.5	7.5	6.2	6.6
Other	0.6	1.8	0	.6	.6
Familiarity Amberjack		2.81	2.15	5.05	2.28
(mean on 7-point scale**)	2.62				

*Except for familiarity Amberjack; **7-point scale from 1 (not at all) to 7 (very much)

UK: N=217;

Table 3.2 shows that we indeed managed to reach and thus involve in our experiment main decision makers. Although the level of Italian respondents as first decision maker was slightly lower than for the other countries it will help bolster our findings. Further, we note that Britons mainly buy their fish in the supermarket, whereas Italian and Spanish consumers shop much more at the monger. This seems to have face validity.

Finally, the results show that greater amberjack is unfamiliar in most countries but Italy. *Italian consumers are familiar with this species!*

Table 3.3 suggests that respondents had a positive attitude towards the website presented to them. In all countries the respondents evaluate the website of the imaginary national retailer similar; in the 4.5 – 4.9 range (on a seven points scale). It suggests a generally positive and realistic setting (5=agree). Appendix A shows some visuals of the website.

Although one might argue that the score is only marginally above the midpoint (i.e. 4), one should note that respondents had a brief encounter with the new website. Attitude toward new design is generally moderately positive at first and stimulated through familiarity, i.e. the mere-exposure effect (Zajonc 1968). Key is that the initial attitude that is neutral or positive, and not negative to ensure further acceptance of the new website and product.

Table 3.3. Attitude towards the website

Feelings*	**UK**	**Germany**	**France**	**Italy**	**Spain**
	Mean	**Mean**	**Mean**	**Mean**	**Mean**
Positive	4.88	4.51	4.59	4.77	4.71
Appealing	4.80	4.41	4.53	4.79	4.73
Good idea	4.81	4.41	4.57	4.78	4.74
Overall attitude	**4.83**	**4.44**	**4.56**	**4.78**	**4.73**

*7-point scale from 1 (completely disagree) to 7 (completely agree)

UK: n=317.(Cronbach's) α = .966. G: n=325. α=.953; F: n=322. α=.963; I: n=321 α=.964; S: n=320. α=.972.

Measures

Appendix B shows an overview of our study measures. The dependent measure of awareness/consideration used 4 items and was based on the extent branding and adoption literature (Hassanein and Head 2007; Vitell, Rallapalli, and Sinhapakdi 1993). The actual choice for the species was the customer's shopping cart content (behaviour).

Several independent constructs were measured: environmental concern and innovativeness were measured using scales adopted from Kilbourne, Beckmann, and Thelen (2002), and Goldsmidt and Hofacker (1991) and consist of 5 items, respectively. The measures for promotion proneness was developed for this study and consisted of 4 items. It was specifically developed for this study.

Analyses

The data were analysed on four principal stages using SPSS23. First the constructs were created and measurement properties checked. We also checked the manipulations. Unfortunately, these tests showed that manipulations had not worked; *probably the real life setting caused too many influences affecting respondents simultaneously*. We report the manipulation check for the data set by country for the three manipulations applied (see Table 3.4). A check using Mancova confirmed these results.

While the manipulated effect i.e. groups/ treatment was not significant, several covariates such as consumer innovativeness and environmental concern were significantly correlated with attitude towards the new species. Second, we analysed the sales funnel using descriptives, i.e. looking at consumers' attitude towards the new species, the number of people immediately purchasing the new species, and those selecting it after having received extra information about the species and its production process. The analysis was extended by also accounting for customer segments based on different levels of consumer innovativeness (which we created taking into account innovativeness and need for sampling before buying fish products). Third, we analysed the relationship between attitudinal constructs and purchase behaviour in our experimental setting. The aim was to gain better insight in the value drivers of consumer's decisions. For these analyses we used Hayes PROCESS analysis model four (to be explained later). Finally, we performed a cross-country analysis. This aimed to detect and describe differences between the five countries. The ultimate goal was to collect insights, which could inform which countries to target first when launching the species and its product in the EU.

Table 3.4. Results manipulation check national samples. Groups (Environment. Price. Traceable)*Have you seen logos?

(in table mean score and F-value)	**UK**	**G**	**F**	**I**	**S**
	No/yes cue	No/yes cue	No/yes cue	No/yes cue	No/yes cue
Did you see traceability logo?	1.43/1.44	1.49/1.52	1.53/1.50	1.47/1.45	1.59/1.59
	F=.03	F=25	F=.33	F=.09	F=.00
Did you see discount logo?	1.52/1.47	1.44/1.48	1.61/1.51	1.56/1.65	1.66/1.57
	F=.71	F=.37	F=3.35*	F=2.71*	F=2.78*
Did you see environmental claim/logo?	1.50/1.52	1.73/1.69	1.78/1.74	1.53/1.51	1.36/1.32
	F=.15	F=.67	F=.51	F=.18	F=.68

1=not seen; 2= seen.

3.3 Results

As mentioned we report result per country before integrating results by performing a cross country comparison/analysis.

3.3.1 UK

Descriptives

UK consumers are not very familiar with aquaculture, i.e. mean=3.45 on a 7 points scale. However, they do have a favorable attitude towards the concept of farmed fish; their overall attitudinal score is 5.35 (see Table 3.5).

Table 3.5. Familiarity and Attitude towards Aquaculture UK*.

	Mean
Useful	5.48
Safe	5.38
Should be encouraged	5.22
Morally acceptable	5.25
Necessary alternative for catching wild fish	5.40
Overall attitude†	**5.35**
Familiarity	**3.45**

N=317; †Cronbach's alpha= .940; * What do you think of aquaculture. i.e. fish farming as a production method?

Figure 3.1 shows the UK respondents' attitude towards all species of the experiment. The highest scores are for salmon and cod (means= 5.7 and 5.6. respectively). These fish also have a strong, dominant market share

in the UK market. As we might expect the attitude towards the newcomer greater amberjack is lowest. However, it is evaluated still rather positively (mean=4.20).

Figure 3.1. Overall attitude toward fish species UK.

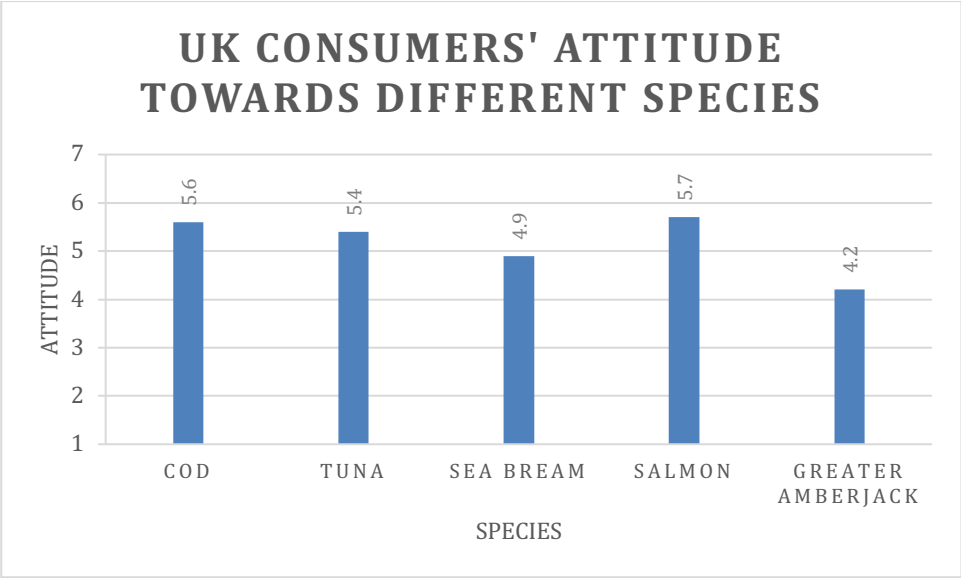


Table 3.6. What is the name of the fish you bought? (recode) x Chosen Fillet; UK

	Chosen fillet - Task 2					
Recall name of fish bought	Cod	Tuna	Salmon	Greater amberjack	Sea bream	Total
Cod	**98**	2	2	2	1	105
	86.7%	4.5%	2.4%	5.3%	2.6%	33.1%
Tuna	0	**34**	2	4	2	42
	0.0%	**77.3%**	2.4%	10.5%	5.1%	13.2%
Salmon	2	1	**72**	3	4	82
	1.8%	2.3%	**86.7%**	7.9%	10.3%	25.9%
Greater amberjack	0	0	0	**17**	0	17
	0.0%	0.0%	0.0%	**44.7%**	0.0%	5.4%
Sea bream	1	1	1	1	**23**	27
	0.9%	2.3%	1.2%	2.6%	**59.0%**	8.5%
Other	5	2	1	3	0	11
	4.4%	4.5%	1.2%	7.9%	0.0%	3.5%
Don't know	7	4	5	8	9	33
	6.2%	9.1%	6.0%	21.1%	23.1%	10.4%
Total	**113**	**44**	**83**	**38**	**39**	**317**
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 3.6 shows the fillet UK consumers bought (vertical), and whether they recall the name of the fish (horizontal). Most people chose cod. i.e. 113 of 317 respondents. Some 38 people i.e. 12% bought greater amberjack. This compares very favourably to the 44 that bought tuna, i.e. the fish that was mentioned as greater amberjack's closest neighbour, and to sea bream which was selected by 39 consumers. 17 people (45%) recalled the name of the new species correctly afterwards. It is slightly lower than that of a less familiar but still common fish such as sea bream (59% name correct) but significantly lower than for a familiar species such as Cod (87% name correct).

Segments and switching behaviour

Table 3.7 shows the distribution of UK consumers over different consumer segments of innovativeness (innovativeness*need to sample first). Most consumers (12+9) fall in the segments innovators and early adopters, which represents 21.1% and 13.4% of consumers of these segments.

Table 3.7. Segments and switching to greater amberjack (after receiving extra information); UK.

	Segment				
	Innovators	**Early adopters**	**Early majority**	**Late majority**	
willingness to purchase greater amberjack	high innov./ low need to sample	high innov./high need to sample	low innov./high need to sample	low innov./low need to sample	**Total**
Great amberjack. chosen	12	9	4	13	**38**
	21.1%	13.4%	6.7%	9.8%	**12.0%**
Not selected but willing to switch	4	9	5	9	**27**
	7.0%	13.4%	8.3%	6.8%	**8.5%**
Not selected but willing to consider/try	31	37	17	45	**130**
	54.4%	*55.2%*	28.3%	33.8%	**41.0%**
Not selected and indifferent to extra info	10	12	34	66	**122**
	17.5%	17.9%	*56.7%*	*49.6%*	**38.5%**
	57	**67**	**60**	**133**	**317**
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Segment size in total	**18.0%**	**21.1%**	**18.9%**	**42.0%**	**100.0%**

$\chi^2(9)= 41.631$. $p < 0.001$. Note in italics dominant switching pattern of segment.

Because people who did not choose greater amberjack were offered extra information and the opportunity to switch, we could also analyse those results (see Table 3.7, rows 2 and further). We note a significant inclination of consumers to switch after receiving the extra info. While 38 people bought, greater amberjack fillet immediately, 27 or 8% of all consumers in the sample decided to shift when asked to reconsider. Another 130 said they would consider, i.e. try the new species. As Table 3.7 shows (see most right column) this refers to 12.0%. 8.5% and 41.0% of the UK sample respectively.

The data suggests that extra information about traceability (the extra information offered) is highly effective to stimulate trial in the two innovative segments. Willingness to consider is high in the innovative groups (innovators and early adopters 54.4 and 55.2 % respectively) whereas indifference to the information is highest in the low innovative groups (early and late majority 56.7 and 49.6%). Need to sample does not differentiate well; the main difference is based on consumers' low/high innovativeness.

Accounting for consumers that are not interested in the new species the maximum penetration in the UK market would is 100% minus 38.5%= 61.5%.

Predicting attitude and purchasing of greater amberjack

Table 3.8 shows the results of the (Hayes) PROCESS analysis.[1] Based on the fact that in the experiment 'new' was used as main cue we consider consumer innovativeness as main driver and investigate the mediated impact on willingness to buy, using as mediators attitude towards greater amberjack. Several controls/covariates were included: the respondents' personal characteristics (age, sex, education and family size), and his/her promotion proneness, environmentalism, attitude towards aquaculture, category knowledge, and attitude towards tuna. The latter variable was added to account for the fact that in the experiment tuna was mentioned as closest neighbor. Finally, we added also the different experimental conditions. Although they proved not significant in the MANCOVA we added them as covariates.

The results (Table 3.8) include three parts: the path from the independent variable innovativeness to attitude towards greater amberjack (part 1), then the effect of attitude of greater amberjack on acceptance of greater amberjack (part 2) and then the direct/indirect effects test (part 3).

Table 3.8 Results of Hayes PROCESS analysis UK

DV=attitude greater amberjack	coeff	se	T	p
constant	.7204	.6855	1.0509	.2941
Innovativeness	**.3285**	**.0722**	**4.5484**	**.0000**
ENVIRONMENTAL-condition	-.0661	.1558	-.4241	.6718
PRICE-condition	-.1063	.1537	-.6913	.4899
TRACEABLE-condition	.1280	.1533	.8347	.4046
Attitude tuna	**.2698**	**.0708**	**3.8134**	**.0002**
Promotion proneness	-.0088	.0706	-.1245	.9010
Attitude aquaculture	.0739	.0734	1.0067	.3149
Category knowledge	**.1715**	**.0630**	**2.7197**	**.0069**

[1] Hayes PROCESS analyses is a method for mediation-moderation analysis. Model 4 of its templates was used to model the mediation of innovativeness on acceptance of greater amberjack by attitude towards greater amberjack, i.e. a model with one mediator. The other variables mentioned were used as covariates. The model setting tested p<.05.

Environmentalism	.1115	.0767	1.4541	.1469
Gender male/ female=0/1	-.2612	.1610	-1.6223	.1058
Age	-.0099	.0073	-1.3523	.1773
Education	-.0706	.0748	-.9440	.3459
Family size	.0213	.0579	.3681	.7130
n= 317. R^2= .4178; F=16.7178; p<.000				

DV=acceptance greater amberjack	coeff	se	T	p
constant	.5433	.4503	1.2067	.2285
Attitude greater amberjack	**.2212**	**.0377**	**5.8726**	**.0000**
Innovativeness	.0407	.0489	.8313	.4065
ENVIRONMENTAL-condition	.0168	.1022	.1647	.8693
PRICE-condition	-.0038	.1009	-.0376	.9700
TRACEABLE-condition	-.0143	.1006	-.1422	.8870
Attitude tuna	-.0330	.0475	-.6953	.4874
Promotion proneness	.0088	.0463	.1893	.8500
Attitude aquaculture	-.0369	.0482	-.7660	.4443
Category knowledge	-.0246	.0418	-.5879	.5570
Environmentalism	.0652	.0505	1.2920	.1973
Gender male/ female=0/1	.0727	.1060	.6856	.4935
Age	-.0017	.0048	-.3587	.7201
Education	**.1300**	**.0491**	**2.6470**	**.0085**
Family size	-.0296	.0380	-.7806	.4356
R^2=.2076; F=5.6525; p<.000				

Test of direct and indirect effects				
X=innovativeness	Effect	SE	T	p
X on acceptance greater amberjack	.0407	.0489	.8313	.4065
		Boot SE		Boot (LLCI-ULCI)
X on attitude greater amberjack	**.0727**	**.0212**		**(.0357; .1190)**

UK: n=317. Number of bootstrap samples for bias corrected bootstrap confidence intervals: 1000; Level of confidence for all confidence intervals in output: 95.00; LLCI = lower level of 95% confidence interval; ULCI = upper level of 95% confidence interval. Significant effects are printed bold.

The model explains approximately 42 % of variance in attitude and 21 % of acceptance of greater amberjack. The direct/indirect effects test (see bottom part of table 3.8) shows that innovativeness has no direct effect on acceptance of greater amberjack; only the indirect effect through attitude towards greater amberjack is significant. The analysis of relative indirect effects showed that the indirect effect of innovativeness on the acceptance of greater amberjack through attitude was positive and significant (the relative indirect effect was 0.07), with a 95% bias-corrected bootstrap confidence interval excluding zero (ranging from 0.04 to 0.12)[2]. In other words, there is *full mediation* (see bottom part of table 3.8) in this model predicting UK consumers' acceptance of greater amberjack.

Innovativeness (β=.33, p<.01), category knowledge (β=.17, p<.01) and attitude towards tuna (β=.27, p<.01) positively impact attitude towards greater amberjack of the UK consumer. It implies that promotion of greater amberjack as 'new' and 'like tune' both have a positive impact.

3.3.2 Germany

Descriptives

German consumers are familiar with aquaculture (mean=4.78). They also have a rather favorable overall attitude towards farmed fish (mean=5.16 on a 7 points scale) (see Table 3.9).

Table 3.9. Attitude towards Aquaculture Germany*.

	Mean
Useful	5.35
Safe	4.93
Should be encouraged	5.01
Morally acceptable	5.05
Necessary alternative for catching wild fish	5.45
Overall attitude†	**5.16**
Familiarity	**4.78**

N=325; †Cronbach's alpha= .941; * What do you think of aquaculture. i.e. fish farming as a production method?

Figure 3.2 shows the German respondents' attitude towards all species they saw in the experiment. The Germans like salmon best with a score of 5.7 (mean). Greater amber jack scores lower but similar to Sea bream i.e. mean=4.7 versus 4.6, respectively.

[2] Note that in Hayes PROCESS analysis a significant indirect effect is suggested when the indirect effect yields a 95% bias-corrected bootstrap confidence interval in which zero does not occur.

Figure 3.2. Overall attitude toward fish species Germany.

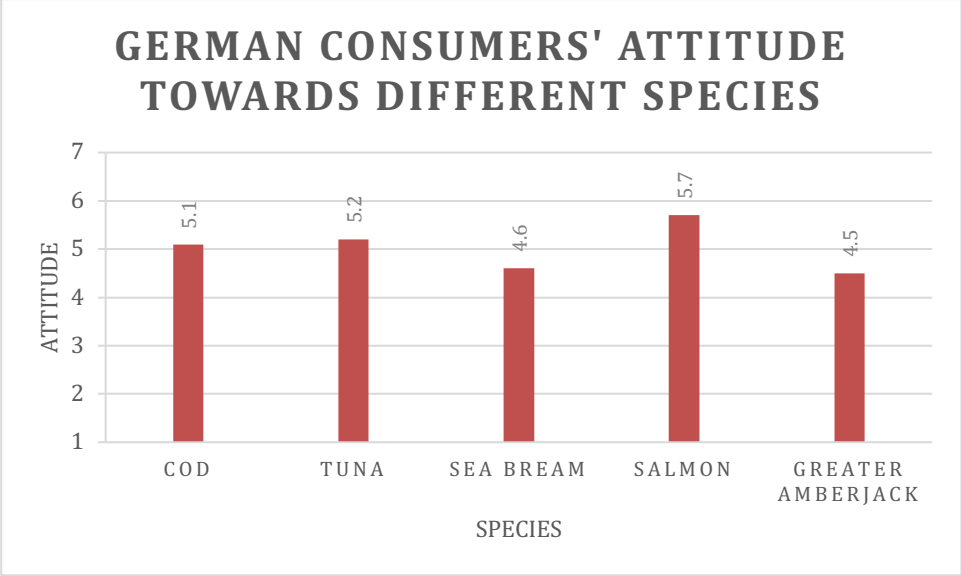


Table 3.10 shows the fillet the German respondents bought (vertical), and whether they recalled the name of the fish (horizontal). Most people purchased Salmon (n=111). Of all respondents 39 (12.1%) chose greater amberjack. It is similar to the number that chose sea bream. Surprisingly few people remembered the name of the fish correctly, only 11 of the original 39 or 28.2%.

Table 3.10. What is the name of the fish you bought? (recode) x Chosen Fillet; German

	Chosen fillet - Task 2					
Recall name of fish bought	Cod	Tuna	Salmon	Greater Amberjack	Sea bream	Total
Cod	**50**	2	2	0	5	59
	69.4%	3.3%	1.8%	0.0%	12.8%	18.3%
Tuna	1	**47**	4	1	0	53
	1.4%	**77.0%**	3.6%	2.6%	0.0%	16.5%
Salmon	3	3	**99**	6	2	113
	4.2%	4.9%	**89.2%**	15.4%	5.1%	35.1%
Greater amberjack	0	1	0	**11**	0	12
	0.0%	1.6%	0.0%	**28.2%**	0.0%	3.7%
Sea bream	4	0	0	0	**23**	27
	5.6%	0.0%	0.0%	0.0%	**59.0%**	8.4%
Other	1	1	0	3	3	**8**

	1.4%	1.6%	0.0%	7.7%	7.7%	**2.5%**
Don't know	13	7	6	18	6	50
	18.1%	11.5%	5.4%	46.2%	15.4%	15.5%
Total	**72**	**61**	**111**	**39**	**39**	**322**
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Segments and switching behaviour

Table 3.11 shows the allocation of greater amberjack buyers across consumer segments. The majority of German buyers of greater amberjack is in the segments of innovators/early adopters; 14 and 9 (or 22.6% and 17.6%) of consumers of these segments respectively chose the new fish species.

Table 3.11. Segments and switching to greater amberjack (after receiving extra information); Germany.

	Segment				
	Innovators	**Early adopters**	**Early majority**	**Late majority**	
willingness to purchase greater amberjack	high innov./ low need to sample	high innov./high need to sample	low innov./high need to sample	low innov./low need to sample	**Total**
Great amberjack. chosen	14	9	4	12	**39**
	22.6%	17.6%	5.6%	8.6%	**12.0%**
Not selected but willing to switch	3	4	5	18	**30**
	4.8%	7.8%	6.9%	12.9%	**9.2%**
Not selected but willing to consider/try	35	31	19	57	**142**
	56.5%	*60.8%*	26.4%	*40.7%*	**43.7%**
Not selected and indifferent to extra info	10	7	44	53	**114**
	16.1%	13.7%	*61.1%*	*37.9%*	**35.1%**
	62	**51**	**72**	**140**	**325**
Total	100.0%	100.0%	100.0%	100.0%	**100.0%**
Segment size in total	19.1%	15.7%	22.2%	43.1%	**100.0%**

$\chi^2(9)= 52.940$. $p < 0.001$. Note in italics dominant switching pattern of segment.

We again note a significant inclination to switch (Table 3.7, rows 2 and further). While 38 people bought greater amberjack fillet immediately, 30 or 9.2% of all consumers in the German sample switched to greater amberjack after having received extra information. Another 142 (43.7%) said they would consider/try the new species. We note that the high innovation oriented clusters are more willing to reconsider the new species than the les innovative ones. However, also in the late majority group more people are willing to reconsider than those indifferent to the extra information about the new species (40.7 versus 37.9%). Remarkable is the large number of people that say that they like to switch (after receiving extra information) that are in the late majority group (n=18, or 12.0% of this segment, whereas of e.g. the innovator group only 4.8% switched based on the extra information).

Accounting for consumers that are not interested in the new species the maximum penetration in the German market would is 100% minus 35.1%= 64.9%.

The difference noted by the significant Chi^2 is based on consumers' low/high innovativeness.

Predicting attitude and purchasing of greater amberjack

The results of Hayes PROCESS analysis are shown in Table 3.12. The outcomes show that the model explains approximately 37 % of variance in attitude and 22 % of acceptance of greater amberjack.

The direct/indirect effects tests shows that German consumers' innovativeness affects their acceptance of the new species directly and through attitude towards greater amberjack. Both effects are significant (p<.01 and p<.05, respectively, see bottom part of table 3.12), which refers to *partial mediation.*

Table 3.12. Results Hayes PROCESS analysis Germany

DV=attitude greater amberjack	coeff	Se	t	p
constant	.0323	.6461	.0500	.9602
Innovativeness	**.1872**	**.0662**	**2.8274**	**.0050**
ENVIRONMENTAL-condition	-.0101	.1496	-.0675	.9462
PRICE-condition	**-.3824**	**.1486**	**-2.5729**	**.0105**
TRACEABLE-condition	.0430	.1485	.2895	.7724
Attitude tuna	**.3350**	**.0530**	**6.3198**	**.0000**
Promotion proneness	.0564	.0666	.8469	.3977
Attitude aquaculture	-.0267	.0629	-.4253	.6709
Category knowledge	**.2332**	**.0574**	**4.0664**	**.0001**
Environmentalism	**.1286**	**.0657**	**1.9579**	**.0511**
Gender male/ female=0/1	.0796	.1545	.5151	.6069
Age	.0103	.0070	1.4865	.1382
Education	-.0443	.0719	-.6164	.5381
Family size	-.0077	.0669	-.1149	.9086
R^2=.366; F=13.805; p<.000				

DV=acceptance greater amberjack	coeff	Se	t	p
constant	**.9057**	**.4227**	**2.1426**	**.0329**
Attitude greater amberjack	**.1801**	**.0371**	**4.8551**	**.0000**
Innovativeness	**.1457**	**.0439**	**3.3216**	**.0010**
ENVIRONMENTAL-condition	-.0111	.0979	-.1137	.9096
PRICE-condition	.0855	.0983	.8705	.3847
TRACEABLE-condition	.0823	.0972	.8470	.3977
Attitude tuna	**-.0768**	**.0368**	**-2.0855**	**.0378**
Promotion proneness	-.0610	.0436	-1.3996	.1626
Attitude aquaculture	.0180	.0412	.4382	.6615
Category knowledge	-.0007	.0385	-.0195	.9845
Environmentalism	.0275	.0433	.6361	.5252
Gender male/ female=0/1	-.0504	.1012	-.4986	.6184
Age	-.0006	.0046	-.1254	.9003
Education	-.0399	.0471	-.8467	.3978
Family size	**.1242**	**.0438**	**2.8367**	**.0049**
R^2= .224; F=6.406; p<.000				

Test of direct and indirect effects				
X=innovativeness	Effect	SE	t	p
X on acceptance greater amberjack	**.1457**	**.0439**	**3.3216**	**.0010**
		Boot SE		Boot (LLCI-ULCI)
X on attitude greater amberjack	**.0337**	**.0164**		**(.0056; .0695)**

Germany: n=325. Number of bootstrap samples for bias corrected bootstrap confidence intervals: 1000; Level of confidence for all confidence intervals in output: 95.00; Significant effects are printed bold.

Like in the case of the UK, German consumers' attitude towards greater amberjack is positively affected by consumer innovativeness, their positive evaluation of attitude towards tuna and their category knowledge. However, there is also a negative effect of the price promotion-condition and a borderline positive effect of environmentalism (p<.06).

Again, we interpret the positive influence of innovativeness and attitude towards tuna as suggesting that stressing 'new' and a relationship with tuna during launch have positive effects on acceptance of the new species in Germany.

Attitude towards greater amberjack, innovativeness and family size education all positively impact choice for greater amberjack of the German consumer. Noteworthy is the negative influence of attitude towards tuna. This reflects the fact that those with high positive evaluation of tuna will have generally purchased this alternative instead of greater amberjack.

3.3.3 France

Descriptives

The results of Table 3.13 show French consumers are moderately familiar with aquaculture fish production. However, their attitude towards aquaculture is rather positive with a mean of 4.96 on a 7 points scale.

Table 3.13. Attitude towards Aquaculture France*.

	Mean
Useful	5.14
Safe	4.83
Should be encouraged	4.91
Morally acceptable	4.94
Necessary alternative for catching wild fish	4.91
Overall attitude†	**4.96**
Familiarity	**3.89**

N=320; †Cronbach's alpha= .945; * What do you think of aquaculture. i.e., fish farming as a production method?

Figure 3.3 shows French respondents' attitude towards all species in our 'online' experiment. The highest scores are for salmon and cod. i.e., mean=5.5 and 5.2 respectively. The attitude towards the newcomer greater amberjack is again lowest. With a mean score of 3.7 it is evaluated exactly one point below the second lowest. i.e., sea bream that scores 4.7. Thus, greater amberjack's evaluation lags behind in France.

Figure 3.3. Overall attitude toward fish species France.

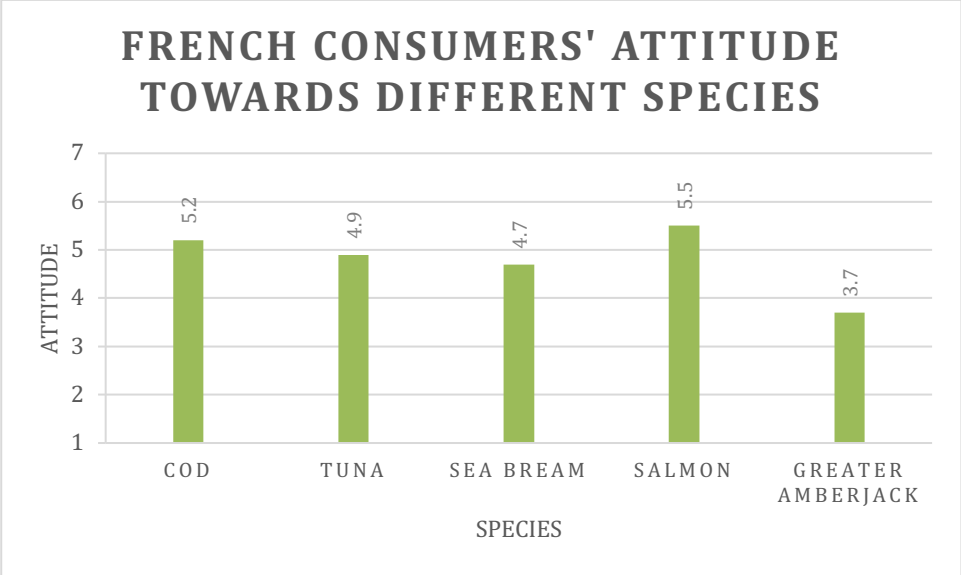


Table 3.14 shows the fish French consumers purchased in the experiment. Most (i.e. n=105) bought salmon and 32. i.e. 10% of all respondents bought greater amberjack. While for most familiar species consumers remembered the name well (i.e. >75%) for greater amberjack this was much lower; only 18.8% of those that chose greater amberjack remembered the name correctly.

Table 3.14. What is the name of the fish you bought? (recode) x Chosen Fillet; France

	Chosen fillet - Task 2					
Recall name of fish bought	Cod	Tuna	Salmon	Greater Amberjack	Sea bream	Total
Cod	**65**	4	1	2	3	75
	80.2%	7.3%	1.0%	6.3%	6.4%	23.4%
Tuna	1	**40**	0	5	1	47
	1.2%	**72.7%**	0.0%	15.6%	2.1%	14.7%
Salmon	5	3	**99**	4	1	112
	6.2%	5.5%	**94.3%**	12.5%	2.1%	35.0%
Greater amberjack	0	0	1	**6**	0	7
	0.0%	0.0%	1.0%	**18.8%**	0.0%	2.2%
Sea bream	0	0	0	1	**36**	37
	0.0%	0.0%	0.0%	3.1%	**76.6%**	11.6%
Other	3	1	1	1	0	6
	3.7%	1.8%	1.0%	3.1%	0.0%	1.9%
Don't know	7	7	3	13	6	36

	8.6%	12.7%	2.9%	40.6%	12.8%	11.3%
Total	**81**	**55**	**105**	**32**	**47**	**320**
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Segments and switching behaviour

Table 3.15 shows that of most of the French respondents who bought greater amberjack belong to the segments of innovators and early adopters: 10.3% and 17.3% of these segments bought this species.

Of those that did not choose greater amberjack 14.7% (of total number of respondents) switched after receiving extra information about the new species and its production method (Table 3.15, row 2). The switchers also belong to innovative segments, i.e. innovators and early adopters' categories. Another 98 people or 30.5% agreed to consider/try the new species. However, the percentage unaffected by the extra information is larger 143, i.e. 44.7%, and thus dominates the picture. As for the other subsamples, need-to-sample does not differentiate well; the main difference is based on consumers' low/high innovativeness.

Accounting for consumers that are not interested in the new species the maximum penetration in the French market would is 100% minus 44.7%= 55.3%.

Table 3.15. Segments and switching to greater amberjack (after receiving extra information); France.

	Segment				
	Innovators	**Early adopters**	**Early majority**	**Late majority**	
willingness to purchase greater amberjack	high innov./ low need to sample	high innov./high need to sample	low innov./high need to sample	low innov./low need to sample	**Total**
Great amberjack. chosen	4	14	2	12	**32**
	10.3%	17.3%	3.1%	8.9%	**10.0%**
Not selected but willing to switch	8	14	5	20	**47**
	20.5%	17.3%	7.7%	14.8%	**14.7%**
Not selected but willing to consider/try	23	38	13	24	**98**
	59.0%	*46.9%*	20.0%	17.8%	**30.6%**
Not selected and indifferent to extra info	4	15	45	79	**143**
	10.3%	18.5%	*69.2%*	*58.5%*	**44.7%**
	39	81	65	135	**320**

Total	100.0%	100.0%	100.0%	100.0%	**100.0%**
Segment size in total	12.2%	25.3%	20.3%	42.2%	**100.0%**

$\chi^2(9)= 75.246$. $p < 0.001$. Note in italics dominant switching pattern of segment.

Predicting attitude and purchasing of greater amberjack

The results of Hayes PROCESS analysis for the French sample are shown in Table 3.16. The outcomes show that the model explains approximately 46 % of variance in attitude and 19% variation in acceptance of greater amberjack by French consumers.

The direct/indirect effects tests shows that innovativeness affects acceptance of the new species directly and through attitude towards greater amberjack. Both effects are significant (p<.01 and p<.05, respectively, see bottom part of table 3.9). Hence, there is *partial mediation*.

Table 3.16. Results Hayes PROCESS analysis France

DV=attitude greater amberjack	Coeff	se	t	p
Constant	.2553	.6197	.4120	.6806
Innovativeness	**.3075**	**.0735**	**4.1855**	**.0000**
ENVIRONMENTAL-condition	**.2902**	**.1365**	**2.1262**	**.0343**
PRICE-condition	-.1796	.1376	-1.3047	.1930
TRACEABLE-condition	-.0517	.1359	-.3800	.7042
Attitude tuna	**.2737**	**.0567**	**4.8288**	**.0000**
Promotion proneness	-.0404	.0770	-.5247	.6002
Attitude aquaculure	.0993	.0594	1.6719	.0956
Category knowledge	**.2584**	**.0635**	**4.0671**	**.0001**
Environmentalism	.0216	.0688	.3142	.7536
Gender male/ female=0/1	-.0019	.1412	-.0131	.9896
Age	-.0115	.0069	-1.6762	.0947
Education	-.0976	.0592	-1.6488	.1002
Family size	.0418	.0514	.8129	.4169
R^2=.4623; F=20.2387; p< .0000				

DV=acceptance greater amberjack	Coeff	se	t	p
constant	.7219	.4710	1.5325	.1264
Attitude greater amberjack	**.0838**	**.0434**	**1.9291**	**.0546**

Innovativeness	**.2384**	**.0574**	**4.1529**	**.0000**
ENVIRONMENTAL-condition	**.1958**	**.1045**	**1.8743**	**.0618**
PRICE-condition	.0581	.1049	.5535	.5803
TRACEABLE-condition	.0188	.1033	.1823	.8554
Attitude tuna	.0124	.0447	.2784	.7809
Promotion proneness	-.0442	.0585	-.7556	.4504
Attitude aquaculture	.0235	.0453	.5193	.6039
Category knowledge	.0169	.0496	.3405	.7337
Environmentalism	-.0651	.0523	-1.2443	.2144
Gender male/ female=0/1	.1328	.1073	1.2374	.2169
Age	-.0018	.0052	-.3525	.7247
Education	-.0238	.0452	-.5267	.5988
Family size	-.0075	.0391	-.1911	.8486
R^2=.1901; F=5.1123; p<.0000				

Test of direct and indirect effects				
X=innovativeness	Effect	SE	t	p
X on acceptance greater amberjack	**.2383**	**.0574**	**4.1529**	**.0000**
		Boot SE		Boot (LLCI-ULCI)
X on attitude greater amberjack	**.0258**	**.0160**		**(.0004; .0640)**

France: n=320. Number of bootstrap samples for bias corrected bootstrap confidence intervals: 1000; Level of confidence for all confidence intervals in output: 95.00; Significant effects are printed bold.

Innovativeness and category knowledge (β=.31 and .26 respectively, p<.01) positively affect attitude towards greater amberjack. Also a positive effect of the environmental condition is present (β=.29, p<.05).

Regarding the drivers of the ultimate dependent variable of acceptance of greater amberjack we note a highly significant effect of innovativeness (β=.24, p<.05) and two none significant but boarder line positive effects: environmental condition and attitude towards greater amberjack (β=.08 and .20, p<.062) (see second part Table 3.16). The impact of the latter variable is confirmed by the significant value observed in the bootstrap of the mediation test. However, its contribution is limited compared to the direct effect of innovativeness (.24 versus .03, see bottom part of table 3.16).

3.3.4 Italy

Descriptives

The results of Table 3.17 show that Italian consumers are familiar (mean=4.67) with and have a positive attitude towards aquaculture (mean=5.56). They particularly think it useful and necessary. Probably they belief aquaculture as a production method helps guarantee quality.

Table 3.17. Attitude towards Aquaculture Italy*.

	Mean
Useful	5.72
Safe	5.54
Should be encouraged	5.42
Morally acceptable	5.41
Necessary alternative for catching wild fish	5.71
Overall attitude†	**5.56**
Familiarity	**4.67**

N=321; †Cronbach's alpha= .915; * What do you think of aquaculture. i.e. fish farming as a production method?

Figure 3.4. Overall attitude toward fish species Italy.

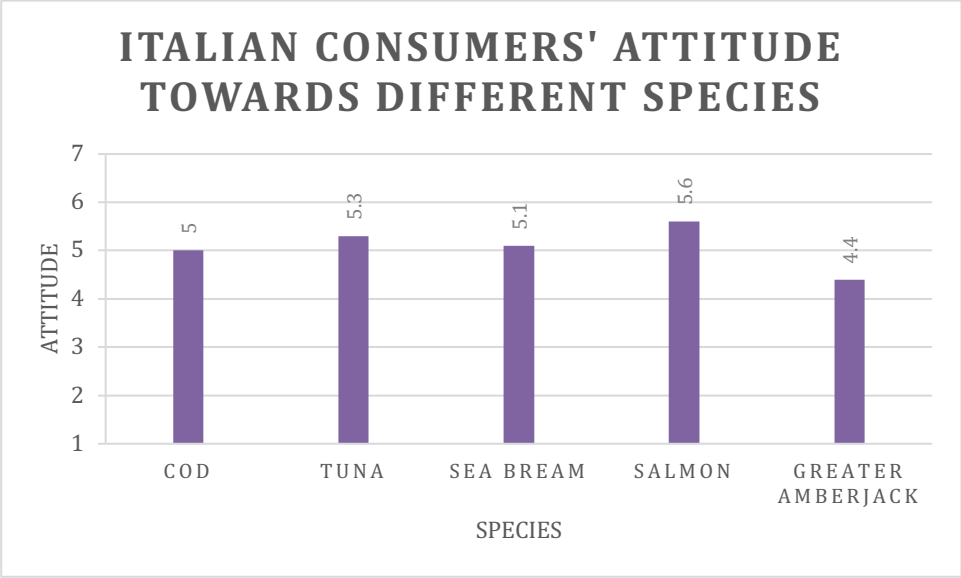


Figure 3.4 shows Italian respondents' attitude towards all species they saw on the national retailer's website. The scores are rather high i.e. in the range of 5- 5.5 (mean). Salmon is evaluated most positively (mean=5.6); Greater amberjack clearly has the lowest, yet a positive attitudinal score (mean=4.4).

Table 3.18 shows the fish Italian respondents bought in the experiment. Most Italian consumers bought salmon, closely followed by tuna. An amazing 51 consumers (16.0%) bought greater amberjack. Name recollection is lower for greater amberjack than for the other species. Moreover, there is some name confusion mainly with tuna (9.8%). However, Italian consumers also have trouble remembering the name of cod.

Table 3.18. What is the name of the fish you bought? (recode) x Chosen Fillet; Italy

	Chosen fillet - Task 2					
Recall name of fish bought	Cod	Tuna	Salmon	Greater Amberjack	Sea bream	Total
Cod	**16**	1	1	1	1	20
	59.3%	1.2%	1.1%	2.0%	1.6%	6.3%
Tuna	2	**56**	2	5	0	65
	7.4%	**67.5%**	2.1%	9.8%	0.0%	20.4%
Salmon	0	5	**75**	1	2	83
	0.0%	6.0%	**78.9%**	2.0%	3.2%	26.0%
Greater amberjack	1	0	1	**26**	0	28
	3.7%	0.0%	1.1%	**51.0%**	0.0%	8.8%
Sea bream	1	1	3	0	**53**	58
	3.7%	1.2%	3.2%	0.0%	**84.1%**	18.2%
Other	4	9	2	4	2	21
	14.8%	10.8%	2.1%	7.8%	3.2%	6.6%
Don't know	3	11	11	14	5	44
	11.1%	13.3%	11.6%	27.5%	7.9%	13.8%
Total	27	83	95	51	63	319
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Segments and switching behaviour

Table 3.19 shows that most of the 52 Italian respondents that bought greater amberjack are in the segment innovators and early adopters 26.9% and 20.4% of these segments.

Of those that did not choose greater amber jack 28 (8.7% of total) were willing to switch after having received extra information about the new species. The majority of these people are in the early majority category (Table 3.7, rows 2 and further). Another 49.8% of all consumers was willing to consider/try the new species. These numbers look impressive.

Like in the other countries the willingness to consider is particularly high in the innovative groups (innovators and early adopters 51.9 and 61.1 % respectively), but also significant in the other categories. In particular the early majority segment is also well interested in trying the new species (45.7% of this segment). Again the main difference is based on consumers' low/high innovativeness and unrelated to consumers' the need-to-sample the new product first.

Accounting for consumers that are not interested in the new species the maximum penetration in the Italian market would is 100% minus 25.2%= 74.8%.

Table 3.19. Segments and switching to greater amberjack (after receiving extra information); Italy.

	Segment				
	Innovators	**Early adopters**	**Early majority**	**Late majority**	
willingness to purchase greater amberjack	high innov./ low need to sample	high innov./high need to sample	low innov./high need to sample	low innov./low need to sample	**Total**
Great amberjack. chosen	14	22	6	10	**52**
	26.9%	20.4%	8.6%	11.0%	**16.2%**
Not selected but willing to switch	4	9	9	6	**28**
	7.7%	8.3%	12.9%	6.6%	**8.7%**
Not selected but willing to consider/try	27	66	32	35	**160**
	51.9%	*61.1%*	*45.7%*	38.5%	**49.8%**
Not selected and indifferent to extra info	7	11	23	40	**81**
	13.5%	10.2%	32.9%	*44.0%*	**25.2%**
	52	108	70	91	**321**
Total	100.0%	100.0%	100.0%	100.0%	**100.0%**
Segment size in total	16.2%	33.6%	21.8%	28.3%	**100.0%**

$\chi^2(9)= 43.020$. $p < 0.001$. Note in italics dominant switching pattern of segment.

Predicting attitude and purchasing of greater amberjack

The results of Hayes PROCESS analysis for Italy are shown in Table 3.20. The outcomes show that the model explains approximately 50 % of variance in attitude and 19.5 % of acceptance of greater amberjack for the Italian consumers in our sample. Interesting are the results of the mediation analysis. Innovativeness has a direct effect on attitude of amberjack but not on purchasing/trial. So, innovativeness' impact on trial is *completely mediated* by attitude towards greater amberjack.

Table 3.20. Results Hayes PROCESS analysis Italy.

DV=attitude greater amberjack	Coeff	se	T	p
constant	-.5030	.6679	-.7532	.4519
Innovativeness	**.3483**	**.0652**	**5.3389**	**.0000**

ENVIRONMENTAL-condition	.0709	.1341	.5285	.5975
PRICE-condition	-.1212	.1321	-.9171	.3598
TRACEABLE-condition	.0003	.1327	.0024	.9981
Attitude tuna	**.3236**	**.0596**	**5.4320**	**.0000**
Promotion proneness	**-.1614**	**.0647**	**-2.4944**	**.0131**
Attitude aquaculture	-.0340	.0714	-.4763	.6342
Category knowledge	**.2880**	**.0540**	**5.3338**	**.0000**
Environmentalism	.1055	.0661	1.5963	.1114
Gender male/ female=0/1	.0577	.1331	.4334	.6651
Age	.0106	.0069	1.5372	.1253
Education	.0934	.0736	1.2692	.2053
Family size	-.0147	.0598	-.2456	.8061
R^2=.4979; F=23.4207; p<.0000				

DV=acceptance greater amberjack	coeff	se	T	p
constant	**1.5110**	**.5136**	**2.9421**	**.0035**
Attitude greater amberjack	**.2222**	**.0438**	**5.0680**	**.0000**
Innovativeness	-.0034	.0524	-.0643	.9488
ENVIRONMENTAL-condition	.0599	.1031	.5812	.5615
PRICE-condition	.0427	.1017	.4203	.6746
TRACEABLE-condition	-.0899	.1019	-.8817	.3786
Attitude tuna	**-.1594**	**.0479**	**-3.3259**	**.0010**
Promotion proneness	.0271	.0502	.5389	.5903
Attitude aquaculture	.0329	.0548	.6000	.5490
Category knowledge	.0552	.0434	1.2720	.2043
Environmentalism	.0389	.0510	.7625	.4464
Gender male/ female=0/1	-.1144	.1023	-1.1184	.2643
Age	-.0083	.0053	-1.5627	.1192
Education	-.0220	.0567	-.3884	.6980
Family size	**.1069**	**.0460**	**2.3256**	**.0207**
R^2=.1949; F=5.2907; p<.0000				

Test of direct and indirect effects				
X=innovativeness	Effect	SE	T	p

X on acceptance greater amberjack	-.0034	.0524	-.0643	.9488
		Boot SE		Boot (LLCI-ULCI)
X on attitude greater amberjack	**.0774**	**.0236**		**(.0372; .1317)**

Italy: n=321. Number of bootstrap samples for bias corrected bootstrap confidence intervals: 1000; Level of confidence for all confidence intervals in output: 95.00; Significant effects are printed bold.

Innovativeness and category knowledge (β=.35 and .29 respectively, p<.01) positively affect attitude towards greater amberjack. Attitude towards tuna also has a positive effect on attitude of grater amberjack (β=.32, p<.01). However, price/promotion proneness has a negative influence on attitude toward the new species (β= -.32, p<.05). So, a rebate would seem less useful for launch in Italy.

Regarding the drivers of acceptance of greater amberjack we note a highly significant effect of attitude towards greater amberjack and a negative impact of attitude towards tuna (β=.22, and -.16, p<.01). We also note positive effect of family size on acceptance of greater amberjack (β=.11, p<.05).

In sum, for Italian consumers the label new and link with tuna are important, but less so price discount.

3.3.5 Spain

Descriptives

Table 3.21 show the regarding Spanish consumers' familiarity and attitude towards aquaculture. Consumers know aquaculture (mean=4.02) and have a favorable attitude too (mean overall attitude=5.42 on a 7 points scale).

Table 3.21. Attitude towards Aquaculture Spain*.

	Mean
Useful	5.58
Safe	5.33
Should be encouraged	5.32
Morally acceptable	5.30
Necessary alternative for catching wild fish	5.56
Overall attitude†	**5.42**
Familiarity	**4.02**

N=320; †Cronbach's alpha= .950; * What do you think of aquaculture. i.e., fish farming as a production method?

Figure 3.5 shows the Spanish respondents' attitude towards all species they saw on the national retailer's website. The highest scores are for salmon and tuna (mean= 5.6 and 5.3 respectively). Greater amberjack has a rather low mean score of 3.5., i.e. below the scale mid-anchor point of 4.

Figure 3.5. Overall attitude toward fish species Spain.

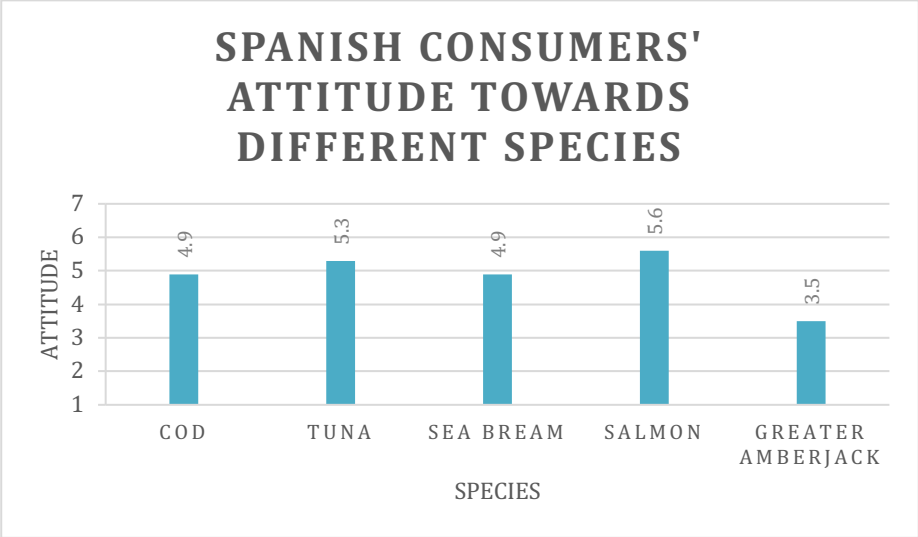


Table 3.22 shows Spanish consumers' choice of fish in the experiment. Most bought Salmon, i.e. 99 or 31.0%. The second option selected was tuna with 86 buyers. 40 consumers chose greater amberjack, which equals 12.5%. It is only slightly less than the number of people who preferred cod (i.e. 44 or 13.8%).

Just over half of consumers, i.e. 55% remembered the name of the new species correctly. The remembering regarding the names of the other species was, as one might expect, much higher (>70%). Only for salmon name recollection was excellent (90.9% correct).

Table 3.22. What is the name of the fish you bought? (recode) x Chosen Fillet; Spain

	Chosen fillet - Task 2					
Recall name of fish bought	Cod	Tuna	Salmon	Greater Amberjack	Sea bream	Total
Cod	**32**	5	2	2	2	43
	72.7%	5.8%	2.0%	5.0%	4.0%	13.5%
Tuna	0	**64**	0	1	0	65
	0.0%	**74.4%**	0.0%	2.5%	0.0%	20.4%
Salmon	4	5	**90**	2	1	102
	9.1%	5.8%	**90.9%**	5.0%	2.0%	32.0%
Greater amberjack	0	1	0	**22**	0	23
	0.0%	1.2%	0.0%	**55.0%**	0.0%	7.2%
Sea bream	1	0	1	2	**36**	40
	2.3%	0.0%	1.0%	5.0%	**72.0%**	12.5%
Other	2	4	2	4	6	18

	4.5%	4.7%	2.0%	10.0%	12.0%	5.6%
Don't know	5	7	4	7	5	28
	11.4%	8.1%	4.0%	17.5%	10.0%	8.8%
Total	**44**	**86**	**99**	**40**	**50**	**319**
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Segments and switching behaviour

Table 3.23 shows that most of the 12.5% of Spanish respondents that bought greater amberjack belongs to the segments of innovators and early adopters. Greater amberjack buyers represent 10.3 and 19.7% of these segments, respectively.

Of those that did not choose greater amber jack 44 or 13.8% (of total) were willing to switch to greater amberjack after having received extra information about the new species; the majority again in the innovator and early majority categories (Table 3.23, rows 2 and further); 15.3 and 18.3%. Another 159 or 49.4% of the Spanish sample were willing to try the new species after receiving this extra information.

Interesting is that willingness to consider/try is highest in innovator and early adopter categories, but also very strong in the other two more conservative consumer segments.

Accounting for consumers that are not interested in the new species the maximum penetration in the Spanish market would is 100% minus 24.4%= 75.6%.

Table 3.23. Segments and switching to greater amberjack (after receiving extra information); Spain.

	Segment				
	Innovators	**Early adopters**	**Early majority**	**Late majority**	
willingness to purchase greater amberjack	high innov./ low need to sample	high innov./high need to sample	low innov./high need to sample	low innov./low need to sample	**Total**
Great amberjack chosen	6	14	4	16	**40**
	10.3%	19.7%	6.8%	12.1%	**12.5%**
Not selected but willing to switch	9	13	6	16	**44**
	15.5%	18.3%	10.2%	12.1%	**13.8%**
Not selected but willing to consider/try	38	36	26	58	**158**
	65.5%	*50.7%*	*44.1%*	*43.9%*	**49.4%**

Not selected and indifferent to extra info	5	8	23	42	**78**
	8.6%	11.3%	39.0%	31.8%	**24.4%**
	58	71	59	132	**320**
Total	100.0%	100.0%	100.0%	100.0%	**100.0%**
Segment size in total	18.1%	22.2%	18.4%	41.3%	**100.0%**

$\chi^2(9)= 30.033$. $p < 0.001$. Note in italics dominant switching pattern of segment.

Predicting attitude and purchasing of greater amberjack

Table 3.24 shows the outcomes of Hayes PROCESS analysis for the Spanish sample. The model explains 26.8% of variance in attitude and 19.5% of acceptance of greater amberjack for our Spanish respondents. The results of the mediation analysis show that the effect of innovativeness is *partially mediated* by attitude towards greater amberjack, that is both the direct effect and indirect effects are significant. However, we note that the direct effect is much stronger than the indirect effect, i.e. β=.15 compared to .05 (p<.05).

Attitude towards greater amberjack is positively influenced by innovativeness (β=.26, p<.01) and category knowledge (β=.24, p<.01). For Spanish consumers price proneness also has a positive effect on attitude towards greater amberjack (β=.14, p<.05), and age has a negative impact. The latter implies that the elderly are less likely to adopt, i.e. try the species. However, the effect is rather small: β= -.02 (p<.05). Attitude towards tuna's effect on attitude is positive but does not reach significance (p=.0744).

Acceptance of greater amberjack is driven by attitude and innovativeness of the individual Spanish consumer (β=.19 and .16, p<.01 respectively).

Table 3.24. Results Hayes PROCESS analysis

DV=attitude greater amberjack	coeff	se	t	p
Constant	1.1390	.8863	1.2851	.1997
Innovativeness	**.2636**	**.0792**	**3.3278**	**.0010**
ENVIRONMENTAL-condition	-.3790	.3623	-1.0462	.2963
PRICE-condition	.0155	.1637	.0947	.9246
TRACEABLE-condition	.1540	.1799	.8560	.3927
Attitude tuna	.1301	.0727	1.7900	.0744
Promotion proneness	**.1441**	**.0726**	**1.9861**	**.0479**
Attitude aquaculture	-.0412	.0749	-.5505	.5824
Category knowledge	**.2406**	**.0682**	**3.5262**	**.0005**
Environmentalism	.0046	.0839	.0545	.9565
Gender male/ female=0/1	-.0481	.0819	-.5873	.5575
Age	**-.0217**	**.0089**	**-2.4535**	**.0147**
Education	-.0146	.0877	-.1669	.8676
Family size	.0418	.0719	.5810	.5617

R^2=.2680; F=8.6195; p<.0000

DV=acceptance of greater amberjack	coeff	se	t	p
Constant	**1.1926**	**.5395**	**2.2106**	**.0278**
Attitude greater amberjack	**.1898**	**.0347**	**5.4691**	**.0000**
Innovativeness	**.1584**	**.0489**	**3.2358**	**.0013**
ENVIRONMENTAL-condition	.3139	.2203	1.4246	.1553
PRICE-condition	-.0222	.0993	-.2237	.8231
TRACEABLE-condition	-.0422	.1093	-.3859	.6998
Attitude tuna	-.0638	.0443	-1.4388	.1512
Promotion proneness	-.0129	.0443	-.2903	.7718
Attitude aquaculture	.0277	.0455	.6096	.5426
Category knowledge	-.0178	.0423	-.4213	.6738
Environmentalism	-.0452	.0509	-.8874	.3755
Gender male/ female=0/1	.0540	.0498	1.0855	.2786
Age	-.0034	.0054	-.6227	.5340
Education	-.0581	.0532	-1.0911	.2761
Family size	.0402	.0437	.9210	.3578
R^2=.1948; F=5.2720; p<.0000				

Test of direct and indirect effects				
X=innovativeness	Effect	SE	t	p
X on acceptance greater amberjack	**.1584**	**.0489**	**3.2358**	**.0013**
		Boot SE		Boot (LLCI-ULCI)
X on attitude greater amberjack	**.0500**	**.0192**		**(.0185; .0932)**

Spain: n=320. Number of bootstrap samples for bias corrected bootstrap confidence intervals: 1000; Level of confidence for all confidence intervals in output: 95.00; Significant effects are printed bold.

3.4 Cross country analysis

Drawing on the above data we also make a cross country comparison of acceptance of greater amberjack fillets between the five target countries, i.e. UK, Germany, France, Italy and Spain. The aim is to determine which country or countries is/are most receptive of the new species and its product, and thus can best be targeted first when entering the EU market. Also similarities and difference in drivers of acceptance are explored.

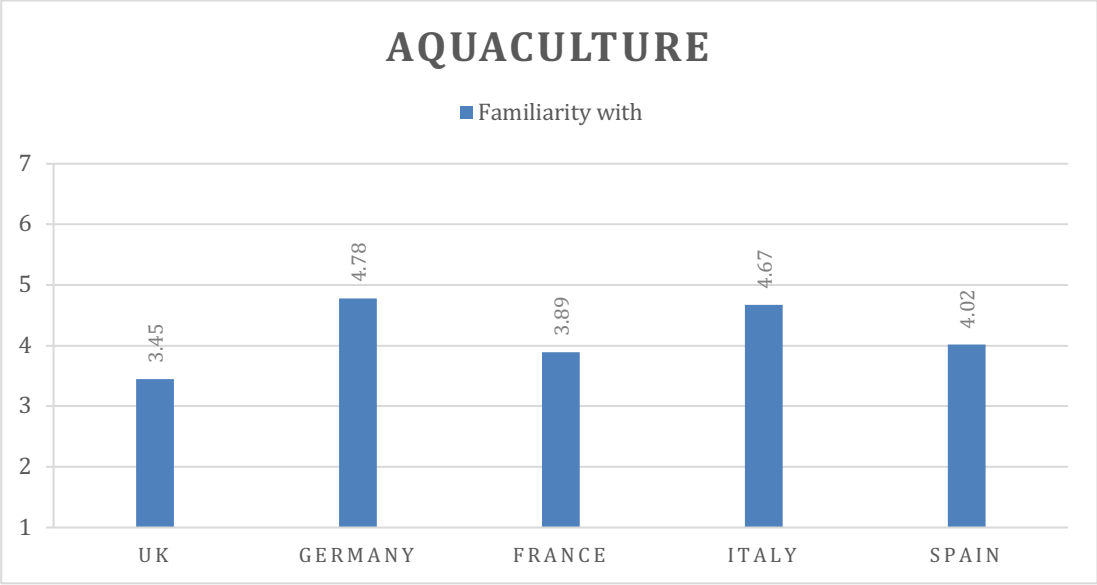
3.4.1 Familiarity of aquaculture

The results of Figure 2.6 show that aquaculture as concept is best known in Germany and Italy (mean=4.78 and 4.67 respectively). France and Spain hold a middle position (i.e. mean=3.89 and 4.02 respectively). Consumers in the UK seem least familiar with aquaculture (3.45).

However, overall familiarity of aquaculture remains limited given that 4 is the midpoint of the scale. Still, the data seem to suggest that Germany, Italy and possibly Spain could be easier markets to approach.

The data also suggest that providers may have more missionary to do in establishing the concept. Consumers may be made more aware in general and of the benefits in particular. *Developing the right and positive association of aquaculture is important. Associations and government could help in this regard by funding campaigns to help build these correct consumer cognitions, particularly if they also desire to stimulate aquaculture production and consumption.*

Figure 3.6. Familiarity of aquaculture in the 5 countries



3.4.2 Willingness to purchase greater amberjack

Table 2.1 shows the percentage of consumers that purchased the new fish in the virtual market test experiment. The percentage of first time buyers is rather similar across all five countries; approximately 12.5% chose to purchase greater amberjack in each country, except for France where percentage of consumers that bought greater amberjack was slightly (10.0%) and Italy where it is significantly higher (16.2%)!

Those that did not select greater amberjack in the virtual market test received additional information and then were asked if they wanted to reconsider their decision. A healthy number of consumers switched towards the new species; overall an 11.0% switched (see Table 2.1, last column second line). The highest levels of switching occurred in France and Spain, i.e. 14.7 and 13.8%, respectively.

Combining both those that directly purchased greater amberjack and those that bought it after receiving extra information (something that might also happen when offered an instore trail) we note a total of 23.5% overall 'adopters'. Further exploring this percentage that directly and indirectly bought greater amberjack fillets (see bottom of Table 2.1 for sum of options 1+2) we note a *split between Southern versus Northern countries*: The former have significant higher levels of joint acceptance than the latter, i.e. $\pm$ *25% versus 20%.*

Table 3.25. Acceptance of greater amberjack by consumers in the 5 countries.

Acceptance of greater amberjack	Country					
	UK	Germany	France	Italy	Spain	Total
1.Great amberjack chosen	38	39	32	52	40	201
	12.0%	12.0%	10.0%	16.2%	12.5%	12.5%
2.Not selected. but willing to switch	27	30	47	28	44	176
	8.5%	9.2%	14.7%	8.7%	13.8%	11.0%
3.Not selected, but willing to consider/try	130	142	98	160	158	688
	41.0%	43.7%	30.6%	49.8%	49.4%	42.9%
4.Not selected, and indifferent to extra info	122	114	143	81	78	538
	38.5%	35.1%	44.7%	25.2%	24.4%	33.6%
Aggregate percentage chose & switched to greater amberjack, i.e. 1+2	*(20.5%)*	*(21.2%)*	↔ *(24.7%)*	*(24.9%)*	*(26.3%)*	*(23.5%)*
Total	317	325	320	321	320	1603
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

$\chi^2(12)= 62.890$. $p < 0.001$. Note in italics dominant switching pattern of segment.

Carefully also looking at detailed results of table 2.1, we also like to note the dichotomy in the French market. The French are positive towards greater amberjack on the one hand but also have a major share of people uninterested and even rejecting the species (44.3%)! In contrast consumers uninterested in the Spanish and Italian market is rather low, only some 25% making for a maximum acceptance potential of 75% of consumers in these markets.

Based on these results, the best market to first enter for a provider of greater amberjack would be Italy probably followed by Spain.

3.4.3 Drivers of acceptance between markets

Table 2.1 summarizes the drivers of acceptance of greater amberjack by respondents of the virtual market test of the 5 target markets (see results Hayes PROCESS analyses of Deliverable 30.6). The original model that was estimated focused on the impact of consumer innovativeness (and a set of covariates) on (i) consumer acceptance of greater amberjack but mediated by (ii) consumer attitude towards greater amberjack. Consistent with this for each country to two columns and dependent variables are shown, i.e. attitude and accept(ance) of greater amberjack. The objective is to identify drivers across our five markets. The full or partial mediation that is noted at the bottom of the table refers to the fact whether innovativeness filters

completely through attitude or also still has a direct effect on acceptance/willingness to buy. In the case of UK and Italy everything filters through consumer attitude (full mediation).

First, consumer innovativeness is a core variable driving acceptance of the new species. Other variables that consistently and positively affect attitude towards greater amberjack are: category knowledge and attitude towards tuna. It suggests that innovative and knowledgeable customers are most likely to be positively valanced toward our new species. Furthermore, the communication of similarity with tuna clearly has a positive impact. For all countries except Spain it is a significant driver. *Based on these findings we conclude that communicating 'new' and the relationship with tuna makes perfect sense for providers launching greater amberjack (fillets) in these countries of the EU.*

Environmentalism (or environmental experimental condition) is an important driver of acceptance in Germany and France. Although for the other 3 countries environmentalism has no significant effect there generally is an effect of this variable of around the level of significance of p<.1 for these countries. It seems to point to an emerging trend of consumers' increased sensitivity to environmental issues in countries like Italy and UK. *So, using environmental friendly production claims for positioning the new species are a good option too.*

Finally, we note that the constant is significant in several countries, i.e. Italy, Germany, and Spain. Constant in our set up was the presence of: the cue "new" and the communication of the similarity of the new species with tuna. The label Diversify and health claim Omega3 were also omni-present. It confirms the importance of new and category information. It extends also suggests the power of communicating brand name and health information.

Table 3.26. Aggregate results comparing drivers regarding attitude and acceptance of greater amberjack in 5 target countries

	Countries									
	UK		Germany		France		Italy		Spain	
Dependent var. (Independent var's)	**attitude**	**accept**	**attitude**	**accept**	**attitude**	**accept**	**attitude**	**accept**	**attitude**	**accept**
Constant				●				●		●
Attitude greater amberjack		●		●		●		●		●
Innovativeness	●		●	●	●	●†	●		●	●
ENVIRON-cue			●†‡		●	●†				
PRICE DISCOUNT-cue			●							
TRACEABILITY-cue										
Attitude tuna	●		●	●	●		●	●		
Promotion proneness							●		●	
Attitude aquacult										

Category knowledge	●		●		●		●		●	
Male/ female=0/1										
Age									●	
Education		●								
Family size				●				●		
R^2	.42	.21	.37	.22	.46	.19	.50	.20	.27	.19
Mediation of X on Y	Full mediation		Partial mediation		Partial mediation		Full mediation		Partial mediation	

●: refers to positive effect; ● refers to negative effect.
†: effect of p<.062; ‡: not ENVIRON-cue but effect of environmentalism.
X=innovativeness; Y=acceptance of greater amberjack;
Highlighted are common drivers
Data source: Deliverable 30.6

3.5 Conclusion

We performed an experiment to study the effectiveness of the market launch strategy of greater amberjack fillets in our five target markets. The aim was to test in a competitive, real life setting, since in all previous tests respondents saw the product without alternatives present.

A virtual online store context was created simulating the fish counter of a national retailer. Consumers evaluated the site as positive and realistic. Next, they were instructed to shop for a piece of fish for a family meal. Approximately 12.5% of consumers bought greater amberjack. Another 10-12.5% was willing to switch after having been given the opportunity and receiving extra information about the species and its way of production. Even more people were willing to try the new fish, approximately 30% in France but up to 49.4 and 49.8 p% in Spain and Italy. Acceptance does seem higher in the countries Italy, France and Spain then in Germany and UK. It probably is caused by their higher involvement with fish species and products.

Acceptance is highest in consumer segments with high consumer innovativeness scores. The latter was further supported by our regression analyses (Hayes PROCESS analyses). Consumer innovativeness, category knowledge, and a positive attitude towards tuna were significant antecedent of a positive attitude towards greater amberjack in most countries. This is consistent with the fixed communication cues that were provided in the experiment of 'new' and 'similar to tuna'.

As environmentalism had a positive effect in some countries this could also be considered as extra unique selling point when designing the final marketing strategy. Traceability and safety played a minor, none significant role in our results.

Remarkably, price promotion (proneness) plays a negative role rather than positive role, except in Spain. It could be due to less price concerned innovators being the major driving force behind great amberjack acceptance in our experiment (see e.g., Schuhmacher, Kuester, and Hultink 2017).

Interesting are the cross country results. First, we noted that consumers in most countries are familiar with aquaculture and have a positive attitude towards it too. Second, the southern countries seem more interested and open to the new fish species and its product. Particularly Italy has a high initial adoption rate, closely followed by France and Spain. However, Italy and Spain seem most promising since there the number of uninterested consumers is low (some 25% compared to 44.7% in France).

4. Launch: Simulations of marketing strategies

4.1 Introduction

Our final study focuses on exploring the joint effects of *advertising* and *channel decisions* on take-off of greater amberjack's new product sales and its diffusion in the market place. More specifically, we focus on the impact of small *versus* large advertising expenditures, and narrow *versus* full-fledged channel coverage (e.g., Schuhmacher, Kuester, and Hultink 2017) on outcomes using formal simulations. A narrow strategy involves small scale launch and features small inventory deployment and manufacturing capacity. A full-fledged channel strategy involves large scale launch aiming for the market at large. It requires large inventory deployment and large manufacturing capacity in an attempt to ensure supply levels.

For the simulations we will use *system dynamics* (SD) modeling. SD modeling is especially suitable for studying complex systems that involve interactions and feedback loops, delays, and non-linear relationships. It has been used in several studies on new product development and organizational decision making regarding innovation management (e.g., Smets, van Oorschot and Langerak 2013; Walrave, van Oorschot and Romme 2011). These studies have demonstrated the usefulness of the approach for studying dynamic organizational systems.

A SD model is comprised of stocks, flows, and variables that combined through links form feedback loops. A stock concerns the state or accumulations of a process of a system at any point in time (e.g., amberjack inventory). A flow refers to an activity or process that influences the value of a stock (e.g., amberjacks sold in a week). Variables are dependent on stocks and/or flows (e.g., turnover generated by amberjack).

The relationships between the different components of a SD model are formally captured in a set of mathematical equations and constitute the structure of the model. These equations (between variables) are shaped by so-called decision rules: the guiding principles that determine how structural elements of the model relate to one another. In this respect, the philosophy of system dynamics rests on the belief that the behavior of the system is principally determined by its structure, that is, the interrelated set of equations (Sterman 2000). This structure allows for the investigation of the system's behavior, including the exploration of experiments (So called if-else simulations). More specifically, a SD model can be used to explore the impact of new policies (e.g., what happens if a particular channel strategy and advertising level is selected?) or policy changes (e.g., what if advertising spending is increased?).

4.2 Model description for launch of the new species

4.2.1 Model specification

Drawing on the generic launch model developed by Cui, Zhao, and Ravichandran (2011), we developed a model of launching our new fish species. The original model focused on the role of advertising and channel decisions, but was limited to initial adoption without considering repurchase behavior, and also had a simple goods-manufacturing perspective concerning the growth of production/inventory levels. So, the model was adapted for fresh food conditions and then used to explore the effect of launch scale (narrow vs. full-fledged) on new product adoption. The final set of mediating mechanisms we considered involved: (i) price management, and (ii) production/inventory management, next to the original (iii) advertising management, (iv) channel management ones.

The full system dynamics model is displayed in Figure 4.1—which illustrates all components including the mediating mechanisms listed above. In this figure (a) the stocks are denoted by boxes, (b) the flows are denoted by the black arrows, and (c) the variables are denoted by the black arrows. We also refer to Appendix C, which includes an additional accounting module (which was also present in Cui et al. 2011, but has been extended to fit the fresh food context). Notably, consumers buy fresh food products regularly, and fresh food production of fish products cannot be intensified or extended so easily; moreover it may be subject to an unstable product supply (e.g., fish disease causing disruption in supply). Below we discuss the changes that we made to the original model in more detail.

Changes to the Cui et al. model

Figure 4.2 shows the developed, i.e. completely updated model. Table 4.1 offers a brief explanation of legend, i.e. color scheme used.

Seven changes were implemented to capture the fresh fish product(ion) context, and to enable for experimentation:

1. *Introduction of weekly advertising, channel development, and production capacity development budgets.* Since the model stimulates the market launch of a product of a new species it is important to determine the investment strategy. We are specifically interested in the allocation of means, i.e. budget for consumer advertising, and budget for channel development. The advertising, channel, (and production) budgets are defined as constants ranging between 0 and 1. Note, however, that the budgets combined cannot exceed 1. The following formula was added:

$$dist\ capacity\ budget = 1 - dist\ ad\ budget - dist\ channel\ budget$$

Figure 4.1. Original product launch model of Cui et al. (2011).

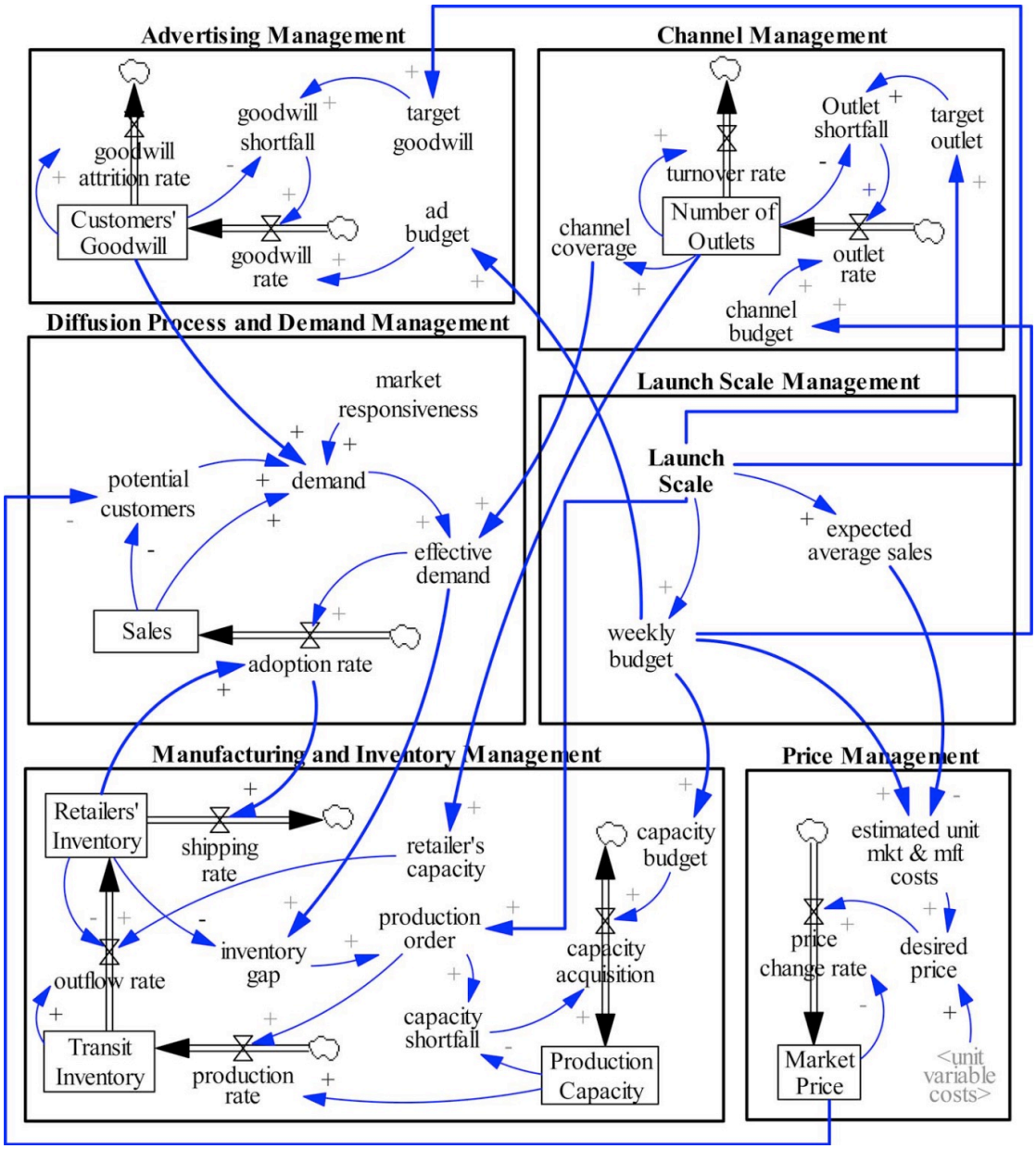
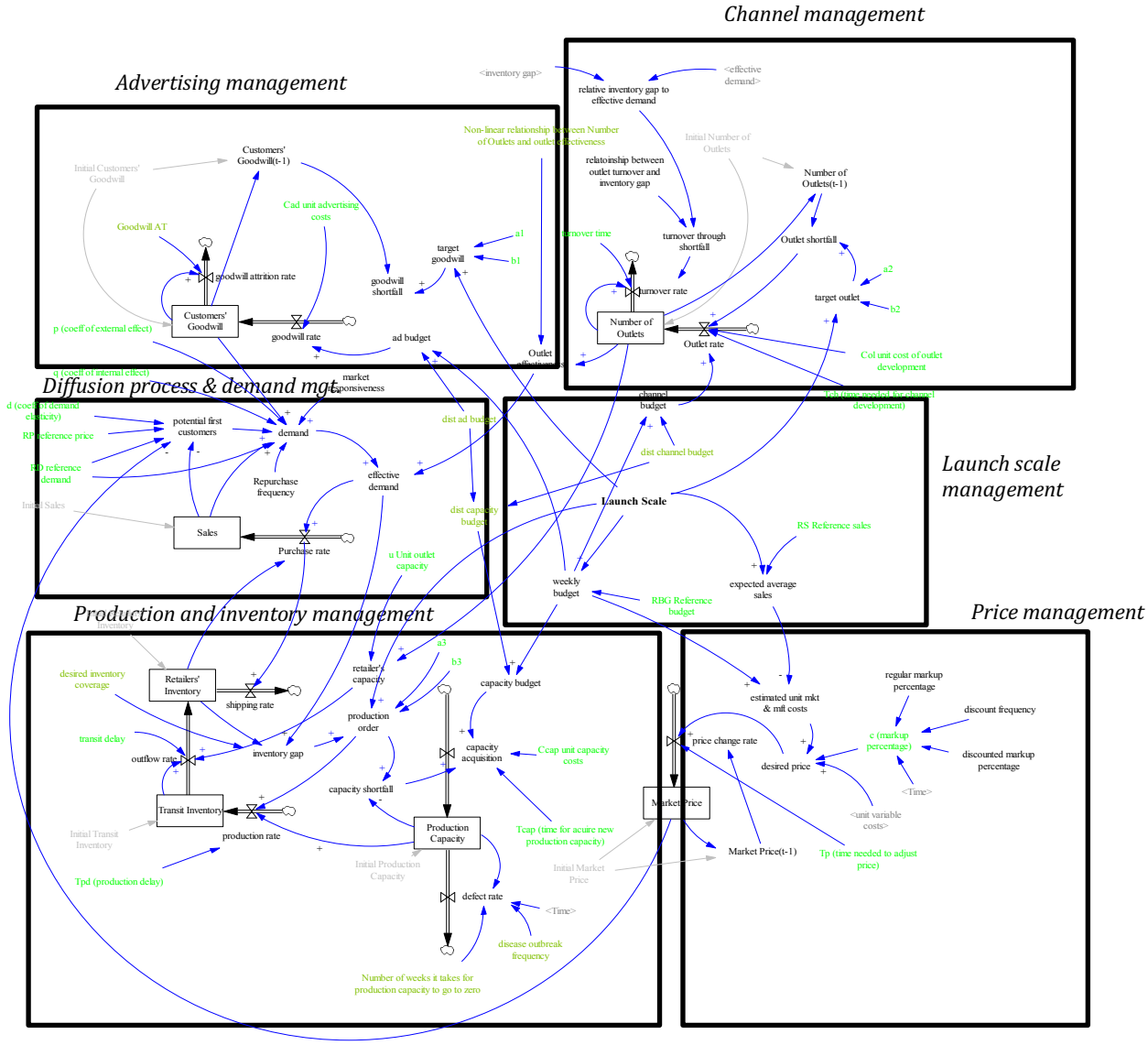


Table 4.1 Legend for the color-coded schema in the model

Color	Implication
Black	Variable/Flow/Stock adopted from the base model (Cui et al., 2011)
Gross Green	Constants described in Cui et al. (2011) but omitted from Figure 4.2 (for readability reasons)
Matte Green	Variables that were added to capture the fresh fish product(ion) context
Grey	Initial values of the Stocks and/or copies of variables (i.e., so-called shadow variables)

Figure 4.2. Final system dynamics model of product launch for fresh food products (including all extensions made)



2. *Accounting for repurchasing behavior, i.e. allow for consumers to engage in trial and then continue to buy or not buy, depending on a certain distribution (i.e. market responsiveness and goodwill).* Consistent with this a repurchase factor was added to the demand function. The variable 'potential customers' was renamed to 'potential first customers' and the 'adoption rate' was relabeled to 'purchase rate'. The new demand formula is as follows:

$$\text{Demand} = \text{MAX}(1, \text{PFC} * \text{p} * \text{CG} * \text{MR} + \text{PFC} * \left(\frac{\text{Sales}}{\text{Sales} + \text{PFC}}\right) * \text{q} * \text{CG} * \text{MR} + (\text{RD} - \text{PFC}) * \text{RF} * \text{CG} * \text{MR})$$

Abbreviations in the formula:

PFC = Potential first customers

p = coefficient of external effect (due to innovators)

CG = Customers' Goodwill

MR = Market responsiveness

q = coefficient of internal effect (due to imitators)

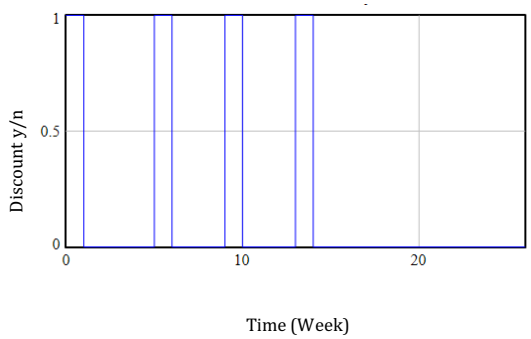
RD = Reference demand

RF = Repurchase frequency

3. *Introduction of discounts (on the markup percentage).* Since it is common in retailing to offer discounts, this option was added to the model. Specifically, the markup percentage (already included in the original model, was adjusted to account for such (initial or even periodical) discounts. More specifically, a so-called lookup function was created which defines the week or weeks in which a discount is offered. Figure 4.3 illustrates such a lookup function. In our case, we assume 4 periods of discounts at the beginning of the launch to stimulate interest and initial purchases (i.e., 1 = discount, 0 = no discount).

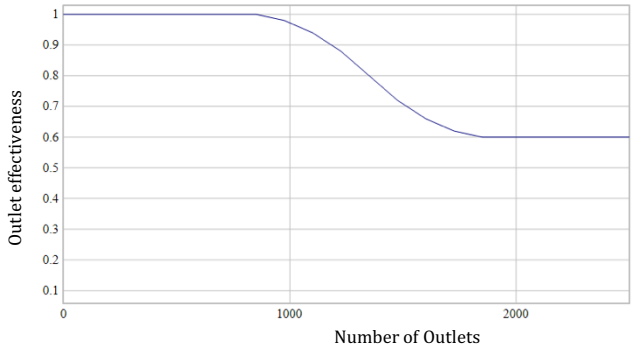
$$c\ (markup\ percentage) = \text{ if then else}(\text{discount frequency}(\text{Time}) = 1, \text{discounted markup percentage}, \text{regular markup percentage})$$

Figure 4.3. Lookup function of discount frequency over multiple weeks of the introduction. (in the example discounts are offered in weeks 1. 5. 9. 13).



4. *Define the relation between outlet effectiveness and number of outlets.* Cui et al. (2011) defined a channel coverage variable based on the empirical evidence of Kotler and Lilien (1983). We assume that early, innovative retailers are more professional/helpful and thus more effective than retailers that enter a market later; they act more as copy cats and laggards. The innovators are more entrepreneurial in spirit and better motivated. The idea is captured by Figure 4.4: as the number of outlet grows (x-axis), the effectiveness of the outlets declines (y-axis).

Figure 4.4. Assumed non-linear relationship between Number of Outlets and outlet effectiveness.



5. *Introduction of a factor of outlet turnover influenced by the relative inventory gap.* If a new product runs out of stock, availability will decline, which is assumed to negatively impact adoption and repurchasing. If the provider cannot replenish (retailer) stocks, retailers may wait but may also decide to discontinue the product (i.e., supermarkets require certainty and an inflow of product). To capture this market dynamic the following equations were introduced:

$$Turnover\ rate = MAX\left(\frac{Number\ of\ Outlets}{turnover\ time}.turnover\ through\ shortfall\right)$$

$$Turnover\ through\ shortfall = relationship\ between\ outlet\ turnover\ and\ inventory\ gap\ (relative\ inventory\ gap\ to\ effective\ demand)$$

$$Relative\ inventory\ gap\ to\ effective\ demand = \frac{inventory\ gap}{effective\ demand}$$

6. *Introduction of a defect rate for the provider's production capacity.* The production of fresh products is characterized by potential scale up challenges. Production capacity is difficult to extend; it requires careful planning. Moreover, production output may suddenly be hampered or even drop to 0 due to, for instance, a bacterial infection. Occurrence of disruption was added to the model, in a similar manner as how the price discount percentage was added: As a lookup function. While an interesting option to explore, the function was not used while obtaining our results (as described in 4.3).
7. *Actual formulas and constants (parameter settings) used in the model.* Table 4.2 shows overview of model settings used.

The full model documentation can be found in Appendix C, including a figure showing the complete accounting module.

Table 4.2. Values of all constants used

Constant	Explanation	Value	Notes (for selected constants)
a1	determines the target goodwill as a function of the Launch Scale.	0.2	Constant goodwill target in the European aquaculture market independent of launch scale.
b1	determines the target goodwill as a function of the Launch Scale.	0.4	Variable goodwill target in the European aquaculture market depending on launch scale.
a2	determines the target number of outlets as a function of the Launch Scale.	1,200	Based on a mongers-only strategy (narrow launch); UK market situation.
b2	determines the target number of outlets as a function of the Launch Scale.	3,300	Based on a mongers and one or more retail chains strategy (fat launch); UK market situation.
a3	determines the production order size as a function of the Launch Scale and inventory gap.	4	Based on Cui et al. (2011)
b3	determines the production order size as a function of the Launch Scale and inventory gap.	6	Based on Cui et al. (2011)
regular markup percentage	Markup percentage over cost price in a situation when there is no discount.	0.2	Based on Cui et al. (2011)
discounted markup percentage	Markup percentage over cost price in a situation when there is a discount.	0.1	Discounted markup percentage in the current market simulation; based on 10% discount.
Cad unit -- advertising costs	Advertising cost per week.	300,000	Based on Cui et al. (2011)
Ccap unit -- capacity cost	Costs for developing additional production capacity of 1kg fish per week.	5.20	Fixed/kg fillet investm, fin, maintenance, wages in euro (65%)
Cin (unit -- inventory cost)	Costs of holding one kg of fish in inventory.	0.025	Based on Cui et al. (2011)
Col unit costs of outlet development	Cost of developing one additional outlet channel.	500	Based on Cui et al. (2011)

D(coeff of demand elasticity)	Elasticity of the demand.	-0.45	Based on the price sensitivity fresh fillets UK from D29.6 (T.9, p.25).
Desired inventory coverage	Desired coverage of inventory in weeks.	6	Based on Cui et al. (2011)
dist ad budget (regular/high)	Percentage of the weekly budget allocated to advertising.	0.33/0.5	0.33 in case of a push strategy. 0.5 in case of pull strategy.
dist channel budget (regular/high)	Percentage of the weekly budget allocated to channel development.	0.33/0.5	0.5 in case of a push strategy. 0.33 in case of pull strategy.
FINAL TIME	Total time simulated.	26	The launch was simulated for the first 6 months, i.e. 26 weeks.
g (rate of marginal cost reduction)	Percentage reduction of cost over time.	0.000014	The marginal costs reduction is scaled down linearly comparing the initial variable costs w.r.t. the initial variable costs in Cui et al. (2011)
Initial Goodwill	Existing customer goodwill.	.3	The value 0.3 is chosen as initial positive attitude for new products by consumers.
Initial investment	Initial investment cost.	3,000,000	Initial investment costs of a cage production systems are approximately 3 million euro. (D30.7)
Initial market price	Price of one kg fish at launch.	25	Initial market price is approximated on 25euro/kilo.
Initial number of outlets (narrow launch / full launch)	Initial number of outlets available at launch.	750 / 2100	750 in case of a narrow launch. 2100 in case of a fat launch. Based on UK market situation.
Initial production	Production level in kg at launch.	0	Set to 0 for modeling purposes.

Initial production capacity	Production capacity at launch.	3,300	3,300 kg/week is based on the ramp up of King Fish (startup) in The Netherlands.
Initial retailers' inventory	Initial inventory at the retailers.	0	Set to 0 for modeling purposes.
Initial sales	Initial sales at launch.	0	Set to 0 for modeling purposes.
INITIAL TIME	Start time of the simulation.	0	
IVC Initial variable cost	Variable costs per unit (that will decline by g over time).	2.80	Var /kg fillet –feed, livestock, energy in euro (35%). (Reference: selling price without marketing cost 9.60 euro/kg, with total cost farmer of 8 euro/kg and assumed profit of 1.60 excl. marketing cost) (See D30.7)
LS Launch scale (narrow/full)	The size of the launch which ranges between 0 and 1.	0.07/0.8	0.07 in case of a narrow launch. 0.8 in case of a fat launch.
Market responsiveness	The extent to which market demand responds to launch efforts.	0.257	The percentage innovators in UK market is 25.7%. (See D29.4).
Nr. of weeks it takes for prod-uction capacity to go to zero	Number of weeks it takes for the production capacity to go to zero (e.g. by a disease outbreak).	1	Constant is set to 1 for modeling purposes, the function predicts that production capacity will drop to 0 in case of a disease outbreak.
p (coeff of external effect)	Demand from innovators, determined by external effect (such as mass media).	0.1254	Based on virtual market test, UK market situation (based on section 3.3.1).
q (coeff of internal effect)	Demand from imitators, determined by internal effect (i.e., interpersonal communications).	0.31	Based on virtual market test, UK market situation (based on section 3.3.1).
RBG reference budget	Estimation of required budget prior to launch, that serves as a reference during the simulation.	500,000	Taking the cost and time of certification into account, the reference budget is estimated at 500,000 euro.

RD reference demand	Total market potential, i.e., the total number of customers that may purchase the product.	9,268,966	Estimated number of customers based on annual retail tonnage in UK divided by fish purchase per person per week (336,000/14.5) corrected for average family size (assumed: 2.5).
Repurchase frequency	Frequency of repurchasing, after purchasing for the first time.	0.5	Assumed repurchasing rate
RP reference price	Price that serves as a reference during the simulation.	25	Based on D30.4 the reference price is set at 25 euro.
RS Reference sales	Estimation of reference sales prior to launch, that serves as a reference during the simulation.	15,000	Assumed /Set at 4.5% market share of UK market (15,000/336,000=4.5%)
Tcap	Time to acquire new production capacity.	130	Assumed time for adding farming production capacity will take an estimated 2.5 years.
Tch	Time needed for channel development	26	Based on D30.3 the average time for channel development is 6 months or 26 weeks.
Tp	Time needed to adjust price	4	Assumption that change of price will take on average 4 weeks.
Tpd	Production delay – time needed for the production process to complete.	52	Based on D30.1-30.2 (p.17) 1 kg of greater amberjack needs one year to grow, i.e. 52 weeks. (6 kg needs 2,5 years)
Transit delay	Time it takes to get the fish from the transit inventory to the retailers' inventory.	2	The estimated time for transport plus slaughter, fileting/processing and packaging is 2 weeks.
Turnover time	Time it takes for a channel to turnover (e.g. stop selling the product).	50	Based on Cui et al. (2011).
Unit outlet capacity	Kgs of fish a single channel can maximally hold for one week.	240,000	Based on historical data of 202,000 per year and accounting for growth, the unit outlet capacity is estimated at 240,000.

4.2.1 Strategic launch decisions

Although some have argued that any new product supply will generate its own demand, particularly at the aggregate level (Say's law), marketing scholars would argue that it requires serious advertising expenditure to create awareness for the new product and building (brand) preference (or in our case building preference for the new species compared to other species on the market). In fresh fish markets advertising is generally not performed by the provider, i.e. farmer but left to the retailer. Consequently, in fish providers' cost models/structures marketing costs are small or simply absent (see e.g. D 30.7). Leaving (branding and) advertising to a third party means that the provider has no control and will not build brand equity, since the provider/farmer sells a generic product to the retailer. Moreover, if retailer spending remains below par demand is likely to not be stimulated and thus fall short. As a result products may remain unsold. For this reason it is better for a provider of the new species to support its launch with an adequate marketing budget. Marketing expenditures will increase the chance of a good product to succeed in the market place.

Marketing budget can be used for push and pull purposes. That is, it can be allocated to building retail channels that then sell the product (push strategy) but it can also be used to directly address and convince consumers to buy the new fish species/product (pull strategy). If advertising towards consumers of both provider and retailers remains low, consumer awareness levels will probably stay low and demand will fall short. In contrast, if advertising spending on consumer advertising is more generous the chance of creating awareness and preference in the market for the new species will be much higher. Then acceptance /adoption rate and diffusion of the products in the marketplace will be much higher. We will explore the three strategies; equal channel building efforts and consumer advertising efforts; high channel building efforts/low consumer advertising; and low channel building efforts /high consumer advertising expenditures (also see Table 4.3).

Second, similar to Cui et al. (2011) we study a narrow (small) versus full (fat) launch. Cui et al. (2011) stress the importance of an accurate forecast of market demand. In case of low demand a narrow launch will be the best option. It will help target the demand present and prevent oversupply. However, if demand is high and wrongfully a narrow channel strategy is selected short supply may occur. It will leave customers and outlets frustrated and can result in loss of market share and other opportunity cost. For fish species and their products an alternative logic may apply. For new species that are difficult to breed scaling up production may be hard since providers struggle to mater aquaculture techniques. Creating extra production capacity will require serious investments and time to sort things out. Further, infections and other health problems may disrupt production output, causing a collapse of supply and market. From that point of view, a narrow channel strategy may thus be preferred as it is easier to manage and control. It can help reduce the chance of supply falling short unexpectedly and facilitate prompt and adequate response if required.

From a modelling point of view, we will vary 'launch scale' (to mimic a retailer vs monger strategy) in combination with varying the relative distribution between advertising budget, channel budget and production capacity budget. Table 4.3 provides and overview of our experiments. Notably, following experimentation with the model, a 'full launch' is best mimicked by setting the 'launch scale' to a value of 0.8, while for a 'narrow launch' the 'launch scale' was set to 0.07 (Notable, 'launch scale' may mathematically vary between 0 and 1). Furthermore, we assume that a full launch involves 2100 outlets (e.g., supermarket chains), while a small launch involves 750 outlets (local businesses etc.). Furthermore, in line with our discussion on the marketing budget described above, we varied the budget in the following manner: (a) equal distribution of the budget over all ends (so 1/3 each), (b) emphasis on advertising (1/2 the budget, a push strategy) at the expense of capacity budget, and (c) emphasis on channels (1/2 the budget, a pull strategy) at the expense of capacity budget.

As such, we conduct 6 launch experiments:

- First, a fat launch with an equal emphasis on advertising and outlet investment (full launch).
- Second, a narrow launch with an equal emphasis on advertising and outlet investment (narrow launch).
- Third, a fat launch with an emphasis on advertising (fat push launch).
- Fourth, a narrow launch with an emphasis on advertising (narrow push launch).

- Fifth, a fat launch with an emphasis on channel development (fat channel launch).
- Sixth, a narrow launch with an emphasis on channel development (narrow channel launch).

Also see Table 4.3 for an overview (incl. associated model settings).

Table 4.3. Experimental setup.

Experiment #	**Launch scale**	**Initial outlets**	***Relative budget***		
			Advertising	**Channel**	**Capacity**
1 – Full launch	0.8	2100	1/3	1/3	1/3
2 – Narrow launch	0.07	750	1/3	1/3	1/3
3 – Fat push launch	0.8	2100	1/2	1/3	1/6
4 – Narrow push launch	0.07	750	1/2	1/3	1/6
5 – Fat pull launch	0.8	2100	1/3	1/2	1/6
6 – Narrow pull launch	0.07	750	1/3	1/2	1/6

4.3 Results

Figure 4.5 shows the effect of the different launch strategies on sales. Note that the results for experiment 1 and 5, while not being precisely the same, overlap to such degree that the difference is not visible in Figure 4.5. Interestingly, all full launch scenario's (exp. 1, 3, and 5) perform better, in terms of cumulative sales than the narrow scenario's (exp. 2, 4, and 6). Full/fat launches allow for better market coverage and thus generate more buyers resulting in higher sales than smaller launch scales and niche approaches.

Investing in advertising by using a high advertising budget is particularly effective in the context of a full/fat channel strategy; in this case additional advertising budget fosters adoption and thus increases sales significantly. By involving many retailers and high advertising a high market presence is realized. Interestingly, in case of a narrow channel strategy, the additional advertising expenditures seem counter-productive. The lack in market coverage through too few (extra) stores then results in lagging turnover.

So, in case of a full launch, an emphasis on advertising (scenario 3) works best; while in case of a narrow launch, an even distribution of resources of the different end (scenario 2) generates the best results (although substantially lower sales are realized compared to scenario 3). While in both cases retailers appear capable of reaching customers effectively and convincing them to purchase the new product, the positive effect of full-fledged launch on outcome is higher than for a niche approach. The lower effectiveness of advertising under niche conditions is, however, somewhat counterintuitive as generally advertising is considered to have a positive, extra effect.

Figure 4.5. Sales over time.

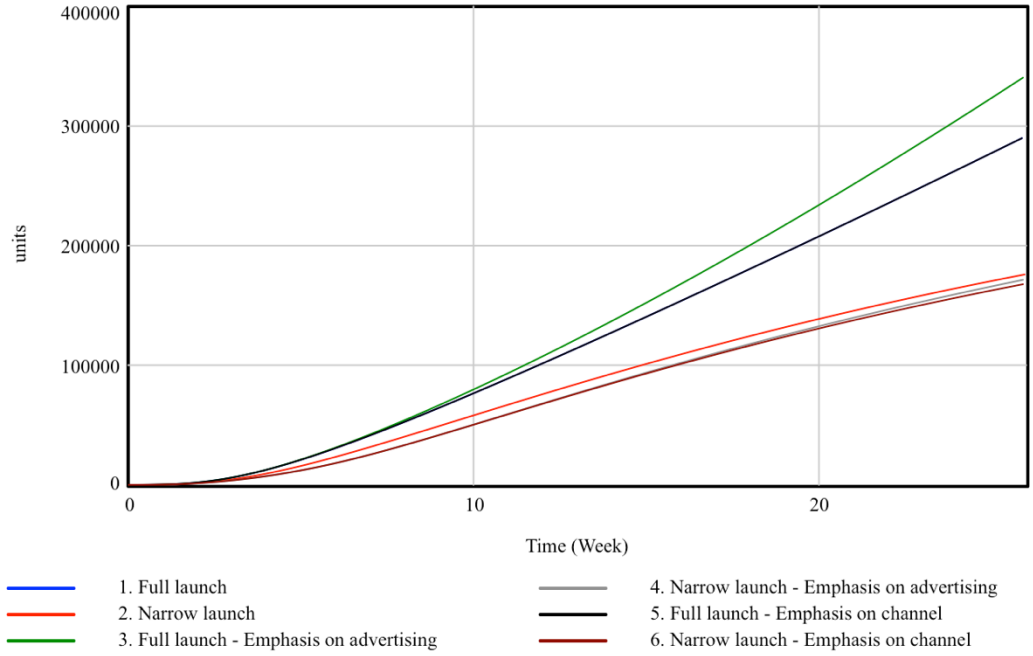
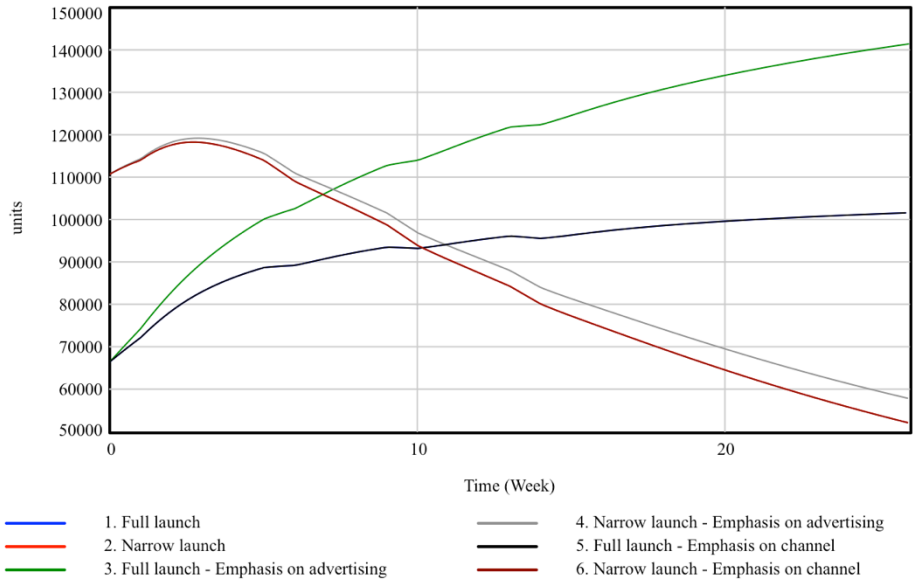


Figure 4.6 traces this unexpected finding back to effective demand development (Note that in Figure 4.6 the results for experiment 1 and 5 overlap; as do 2 and 6. We observe that the effective demand (i.e., *potential sales)* is initially higher for all narrow launch scenarios (i.e., 2, 4, and 6)—as we assumed that sales through mongers will be more effective. However, such high effective demand, in case of a narrow launch, cannot be met as investments in production capacity will also be lower—this then negatively influences effective demand over time. Notably, the mongers involved in the narrow approach are also highly dependent on fish product sales. Therefore, if the product does not catch on early (e.g., due to production problems) they need to prune their assortment accordingly; they may see waiting for production to pick-up, as too expensive.

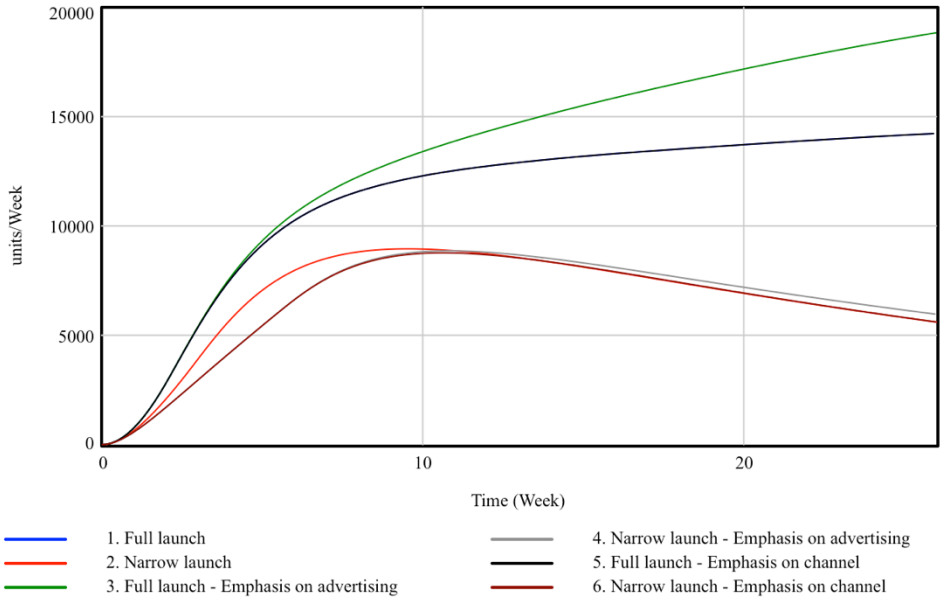
As such, we note that, that eventually, a full/fat channel strategy and high advertising stimulates effective demand—and subsequent adoption more. In a similar vein, Figure 4.7 denotes the *purchase rate*—which is a function of the effective demand in combination with the retailer's inventory (i.e., this figure thus shows how much of the effective demand can actually be turned into sales). For full/fat strategies keep rising, but not for niche approaches.

Figure 4.6. Effective demand over time



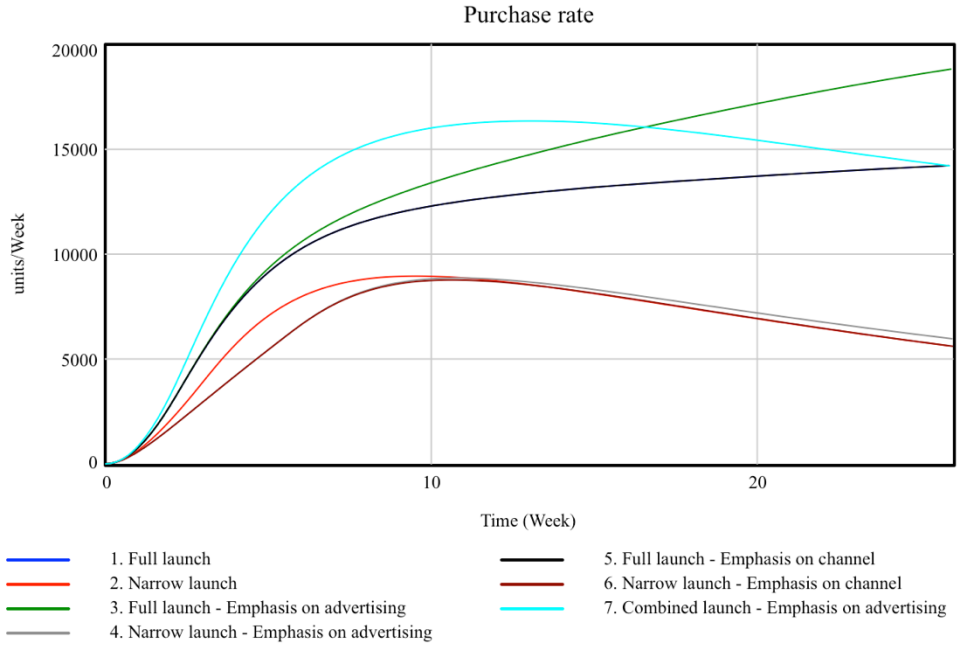
More specifically, Figure 4.7 shows a typical S-shaped growth curve for new product's adoption (note that in Figure 4.7, the results for experiment 1 and 5 overlap). That is, the purchase rate for the new species first grows and then stabilizes. In case of a full launch, in combination with an emphasis on advertising, however, the purchase rate continues to grow. This continuous increase in the level of purchases seems determined by the peak at the beginning of each curve. As this peak is higher for high advertising and full/fat launch alternatives, the resulting final levels of market demand/purchases are higher too. In case of all narrow launch scenarios, the peak seems (too) lower, and the purchase rate (after an initial phase of growth) starts to decline. These results suggests that an extra investment capacity, while stressing advertising do pay off for providers that are willing to make them.

Figure 4.7. Purchase rate over time.



Given these results, we also ran a simulation of a combined large-retailer – monger strategy (i.e., 'launch scale' was set to .5) in combination with an emphasis on advertising. More specifically, this simulation mimics a mid-sized launch, which targets both retailers and mongers. The results, in terms of purchase rate, can be seen in Figure 4.8 (scenario 7; note that the results for experiments 1 and 5 overlap). Interestingly, initial growth in sales (which is the accumulation of the purchase rate) is very fast—yet not sustainable. As was the case with the monger scenario's earlier, over time, the purchase rate starts to drop.

Figure 4.8. Purchase rate in a 'combined' experiment.

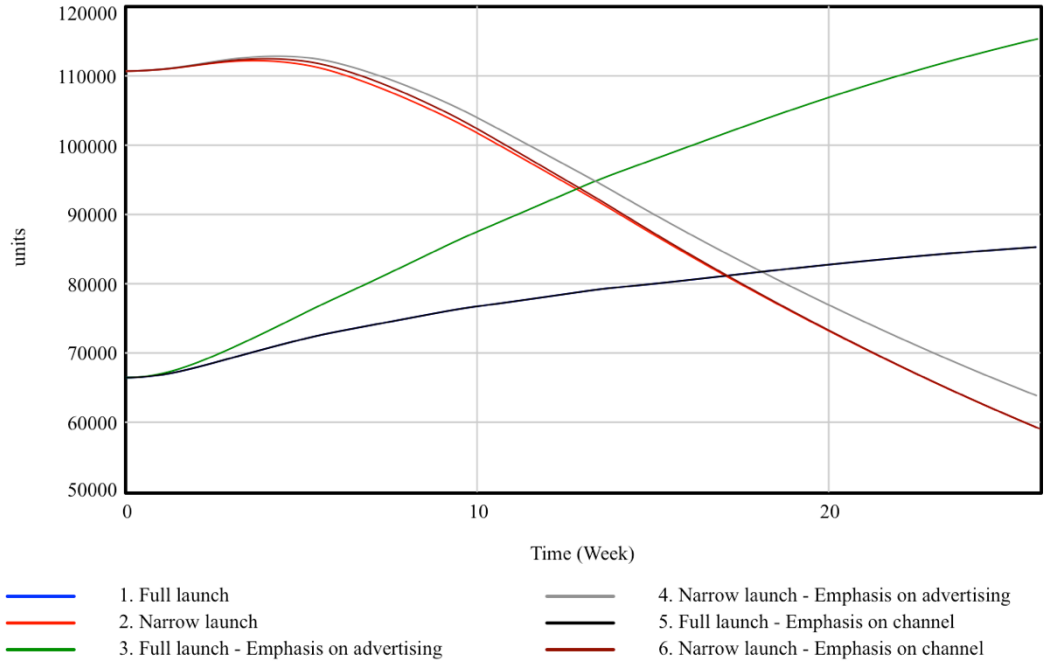


This decline in purchase rate can, in turn, be traced back to the effect that the inventory gap has on the number of outlets—which in turn determine, to a certain extent, the effective demand. The results for the inventory gap, in Figure 4.9, show a high initial gap for monger strategies. It points toward a more effective uptake in demand in case of a narrow channel strategy. A narrow strategy focuses on fish mongers who may be better able to convince their clients to try the new species; people trust their local monger (see study 1). The initial demand in this case is therefore higher (which causes also for a [too] large inventory gap, in case of a narrow strategy with a relative high investment in marketing, which subsequently causes the outlet number to drop—for reasons as outlined earlier—and therefore sales to decline). This can also be seen in Figure 4.8 (purchase rate), where despite the high demand, the narrow strategy simulations show a lower amount of realized sales.

The full launch strategy has a very different effect on demand and inventory levels. The effectiveness of the average store is low(er) which results in a slow(er) start; it takes time to create initial demand, despite possible higher investments in advertising. However, such dynamic allows for a more steady growth, as production is allowed to more gradually adjust to the increase in demand[3]. This is a core reason why the full launch scenario works so well.

[3] As a result of the full launch, demand keeps increasing, which causes the inventory gap to increase over time. However, the overall increase in sales, outlets, and capacity seems to counteract the negative influence of product shortage as the purchase rate keeps increasing (Figure 4.9).

Figure 4.9. The inventory gap over time.



4.4. Conclusions

Concluding, we can state the following. A fat launch seems to be most effective in terms of cumulative sales during the early launch phase. Such launch strategy is best complemented with an emphasis on advertising. This is necessary to compensate for the lower effectiveness of the type of outlet (i.e., retailers). The slower uptake in demand, compared to a narrow (monger) launch, also implies that production is allowed to pick up. That is, demand and supply can be better matched, making this a very feasible strategy. This is highly important as supermarkets require secure and constant deliveries to continue carrying an item, i.e. keep it in their assortment (Helgesen 2007). A narrow launch, through mongers, does not require an emphasis on advertising. On the contrary, this even works counterproductive, as demand surpasses (the initially lower) supply to such degree that mongers might decide to stop selling the new product—as both mongers and/or customer might not be willing to wait. The challenge, therefore, is to ensure a continuous supply which prevents outlets from deciding to leave once the provider is unable to deliver.

Of course, these results are subject to a number of limitations, including the structure of the model and the specific setup of the different experiments. However, by drawing from Cui et al. (2011) and careful calibration of the model (see Table 4.2), we believe the results provide a good insight into the dynamics associated with initial sales of the new product in different scenario's (incl. market potential)

5. Overall conclusions

The results of the preliminary categorization experiment confirm the importance of offering category information for unfamiliar food products, i.e. in our case for greater amberjack fillets. It supports results from prior food research (Tuorila, Meiselman, Cardellob, and Lesherc 1998). Extra information about structure and taste of greater amberjack is less or not important. While the first offers consumers an anchor to store information the latter leads to more processing, which generally leads to less positive attitudes. Yet, communicating new and offering category information is very useful and thus recommended. Particularly if the information comes from a credible source, e.g., fish monger, it will be trusted and thus accepted. It will also help overcome perceived risk of not having tasted the fish before buying. The results align with Banovic et al., 2012 who found that for unfamiliar products consumers used more extrinsic information (info around the product) while for familiar products they relied more on intrinsic information and sensory attributes.

Consistent with this outcome we communicated 'new' and tuna as nearest neighbor in the virtual market test that was conducted subsequently in all five target countries. Price discount, traceability, and environmental cues were used as experimental factors. However, our aim to make the test as realistic as possible overwhelmed consumers and, as a result, manipulations did not work as planned. Consequently, we analyzed the data in a different way. Based on the fact that 'new' was the main message accompanying the new species and its fillets, we focused on consumers' innovative disposition as main driver and studied its direct and mediated effect on consumers' acceptance of the new species. Acceptance was composed of consumers' actual buying behavior of the new fish (those that in the experiment bought the fish) and for those that did not purchase it their willingness to switch or try it were considered (both upon receiving extra information about the new species and its production method).

The results of this mediation analysis (Hayes PROCESS analysis, model 4), showed that innovativeness is indeed a major driver of willingness to accept the new species. This is consistent with results of a new consumer behavior study of the EC on EU fish consumption (EUMOFA 2017). However, in all countries this effect is mediated by attitude formation towards the new species. In Germany, France and Spain it involved partial mediation, while in UK and Italy it concerned full mediation. Because attitude towards closest neighbor tuna had a positive effect on attitude towards greater amberjack, communicating the category information is again found to be important. Communication of 'new' and 'similar to tuna' underlies consumer attitude and acceptance of greater amberjack in the marketplace. This is important for the launch strategy, as the new product is unfamiliar.

In addition, the PROCESS results showed a minor effect of environmental disposition on attitude and purchasing of greater amberjack. Effects were only borderline, but may refer to the emerging trend of environmental concerns guiding consumer fish purchases. Because it offers a unique selling point and possibility to better position the new species and its aquaculture production method it would seem a good idea to communicate too. This advice corroborates with prior results reported in Deliverables D29.8 and D29.6 that showed that a pro-environmental message and ASC logo both were important communication cues that positively affected consumers' attitude towards a new fish product.

The number of consumers that bought greater amberjack in the experiment was pretty large. Despite the fish having the lowest attitude score of all the alternatives offered (probably caused by unfamiliarity) consumers' curiosity and variety seeking behavior stimulated them to try it anyway. Offering consumers who had not immediately been persuaded to purchase the new fish product a second chance, after having received extra information about the product, let to a significant number of people indicating willingness to switch or try the new fish species. Based on this data we estimate the general acceptance rate for greater amberjack fillets between 25 and 50%. The acceptance rate is highest in the segment of innovative consumers. This is consistent with results and predictions of Deliverable 29.2: "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." (p.23).

In addition, differences in acceptance levels between countries were noted. Southern countries were more inclined to try and buy the new species than Northerners. Particularly Italian consumers seemed open and interested in adopting the new greater amberjack fillets. It could be targeted first, i.e. used as lead country. These observed differences noted between national markets match those reported in D29.4 regarding consumers' variations in their initiative to try new fish species.

All in all the virtual experiments offer important extra information to detail a provider's market launch. By placing consumers in a real life store context and asking them to buy fish for a meal we were able to collect important information on their preferences. In this context, greater amberjack was only one of the alternatives present. Hence, it was presented in competition with several main competitors, i.e. direct substitutes. The results showed that the new product was well accepted, i.e. performed rather well; it was

approximately 12.5% of consumers' first choice and another 10-12.5%'s second choice (willingness to switch when offered the opportunity).

Finally, the systems dynamics modelling effort drew attention to other aspects of the market launch. A general model of new product launch was adapted for the marketing of fresh food, such as fresh fish. Several extra strategic launch decisions such as channel and advertising strategies, specifically narrow versus full-fledged or fat launch, push versus pull advertising and limited versus large marketing budget were explored.

The results suggest that channel strategy is the most important variable driving adoption and market diffusion of the new product. A full (fat) launch reaches the whole market. Consequently, it benefits from heavy advertising. However, this investment in advertising is also necessary to compensate for the lower effectiveness of the type of outlet (i.e., retailers). A narrow launch, i.e. niche approach works well too. However, this does not require high advertising to make it work. High advertising expenditure in combination with narrow launch even works counterproductive; demand surpasses (the initially lower) supply and can deplete stocks completely. If mongers and consumers respond negatively to such out of stock situation it may hurt the new species' market development.

The additional inventory gap analyses confirm the supply issue. They stress the challenge, in particular in the case of narrow launch and high advertising, to ensure a continuous supply which prevents outlets from deciding to leave once the provider is unable to deliver. It is extremely important for mongers but more so for supermarkets, which demand secure and constant deliveries to continue carrying an item, i.e. keep it in their assortment (Helgesen 2007). A large period of shortage could result in consumers and particularly retailers abandoning, i.e. dis-adopting the new species.

The system dynamics modeling results point out that the decision to adopt a fat or narrow approach will mainly be determined by the production capacity and ability of the provider to ramp up production. As long as production is limited a narrow approach (in a single country) is to be favored.

The current test results clearly show that market demand for the new species is present and provide information for providers and their partners to develop a solid market launch strategy.

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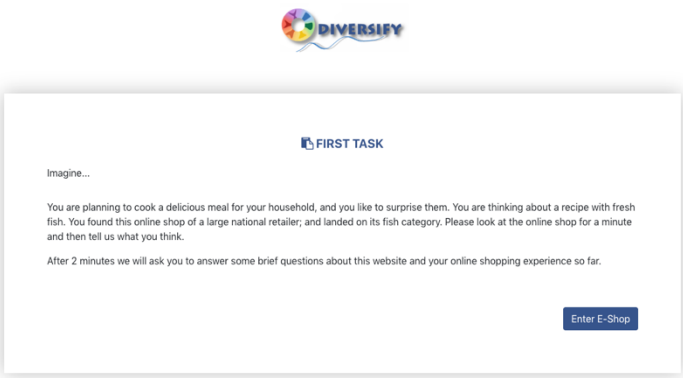
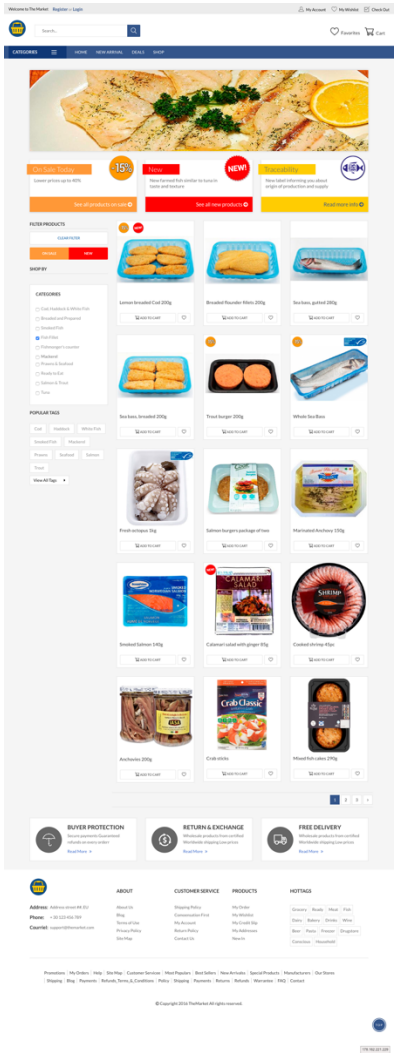
APPENDIX A

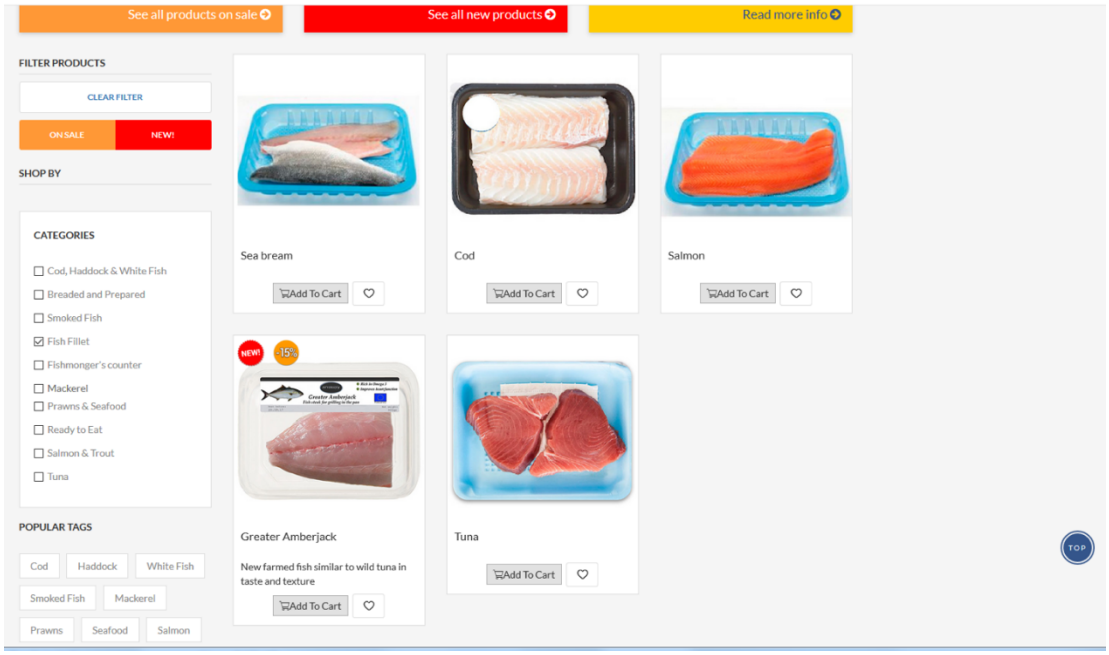
Screen shots of page 1 (landing page) of e- shop (fish counter retailer)





APPENDIX A (Cont'd)

Screen shot of page 2 of e- shop



APPENDIX B

Overview of study measures

Attitude towards buying from website

I would have positive feelings towards buying a product from this site

The thought of buying a product from this website is appealing to me

It would be a good idea to buy a product from this website

Attitude towards new species (based on Hassanein and Head 2007. Vitell. Rallapalli. and Singapakdi 1993)

I have noticed this product (Greater Amberjack)

I am aware of the Greater Amberjack fillets

In my opinion this is an attractive product (Greater Amberjack)

I did consider Greater Amberjack fillets for my recipe

Environmentalism (Kilbourne. Beckmann. and Thelen 2002)

I am concerned about the environment

I buy environmentally friendly products whenever possible

I reduce household waste whenever possible

I use products made from recycled material whenever possible

I buy organic food whenever possible

Innovativeness (Goldsmidt and Hofacker 1991)

I often like to try new products as soon as they come out

In general. I am among the first in my circle of friends to buy a new product when it appears

If I heard that a new fish was available in the store. I would be interested enough to buy it

New fish products I do like to try before other people do

I will not buy a new fish product if I haven't tasted/tried it yet (Reversed)

Product and promotion ethics (Vitell. Rallapalli. and Singapakdi 1993)

Products offered should be safe and fit for intended uses

Communications about products offered should not be deceptive

False and misleading advertising should be avoided

Sales promotions that use deception or manipulation should be avoided

Safety

I like to assure myself that my food is safe

I like to know that my food comes from a trusted source

I like to know the origins of products I consume

It is important to consider the safety of food we eat

Promotion proneness (newly developed)

Generally I buy things that are on sale

I enjoy buying price promotions because they offer good value for money

I enjoy looking for good deals

Promotions are great to try out different products

Attitude towards aquaculture.

What do you think of aquaculture. i.e. fish farming as a production method?

Useful

Safe

Should be encouraged

Morally acceptable

Necessary alternative for catching wild fish

Category knowledge

I know more about fish than other people do

I have a lot of knowledge about how to prepare fish

I have a lot of knowledge about how to evaluate the quality of fish

APPENDIX C

Full description of the System Dynamics model (Vensim)

```
turnover through shortfall=
        relationship between outlet turnover and inventory gap(relative inventory gap to effective demand\
                )
        ~       channel/Week
        ~               |

relative inventory gap to effective demand=
        inventory gap/effective demand
        ~
        ~               |

Total Profit= INTEG (
        profit rate,
                0)
        ~       euro
        ~               |

Total Costs= INTEG (
        weekly costs,
                Initial Investment)
        ~       euro
        ~               |

demand=
        MAX(1,potential first customers*"p (coeff of external effect)"*Customers' Goodwill*market responsiveness\
                 + potential first customers
        *(Sales
        /(Sales+potential first customers*"unit correction units/customer"))*"q (coeff of internal effect)"\
                *Customers' Goodwill
        *market responsiveness +
        (RD reference demand-potential first customers)*Repurchase frequency*Customers' Goodwill\
                *market responsiveness)
        ~       units
        ~               |

Purchase rate=
        MAX(0,MIN( effective demand , Retailers' Inventory))
        ~       units/Week
        ~               |

relatoinship between outlet turnover and inventory gap(
        [(0,0)-(10,200),(0,0),(0.1,0.02),(0.5,15),(0.7,27),(0.9,41),(1,50),(2,150),(3,250),(\
                4,350)],(0,0),(0,0),(0,0),(0,0),(0,0),(0,0),(0.1,1),(0.2,4),(0.3,6),(0.4,9),(0.5,15\
                ),(0.6,21),(0.7,27),(1.12016,33.1754),(10,40))
        ~       Dmnl
        ~               ~       :SUPPLEMENTARY
        |

total inventory=
        Retailers' Inventory + Transit Inventory
        ~       units
        ~               |

Retailers' Inventory= INTEG (
        outflow rate-shipping rate,
                Initial Retailers' Inventory)
        ~       units
        ~               |

inventory gap=
        DELAY1( MAX(effective demand - Retailers' Inventory, 0), desired inventory coverage)
        ~       units
        ~               |

Repurchase frequency=
        0.5
        ~       1/goodwill
        ~               |
```

```
turnover rate=
        MAX(Number of Outlets/turnover time,turnover through shortfall)
        ~       channel/Week
        ~               |

Sales= INTEG (
        Purchase rate,
                Initial Sales)
        ~       units
        ~               |

shipping rate=
        Purchase rate
        ~       units/Week
        ~               |

disease outbreak frequency(
        [(0,0)-(50,1)],(0,0),(24,0),(26,0),(52,0))
        ~       Week
        ~               |

"c (markup percentage)"=
        if then else(discount frequency(Time) = 1, discounted markup percentage, regular markup percentage\
                )
        ~       Dmnl
        ~               |

Number of weeks it takes for production capacity to go to zero=
        1
        ~       Week
        ~               |

regular markup percentage=
        0.2
        ~       Dmnl
        ~               |

defect rate=
        if then else(disease outbreak frequency(Time) = 1, Production Capacity/Number of weeks it takes for production capacity to go to
zero\
                ,
        0)
        ~       (units/Week)/Week
        ~               |

discounted markup percentage=
        0.1
        ~       Dmnl
        ~               |

Production Capacity= INTEG (
        capacity acquisition-defect rate,
                Initial Production Capacity)
        ~       units/Week
        ~               |

discount frequency(
        [(0,0)-(26,1)],(0,1),(1,1),(1.00001,0),(5,0),(5,1),(6,1),(6.00001,0),(9,0),(9,1),(10\
                ,1),(10.0001,0),(13,0),(13,1),(14,1),(14.0001,0),(26,0))
        ~       Dmnl
        ~               |

Initial Investment=
        3e+06
        ~       euro
        ~               |

Initial Production=
        0
        ~       units
        ~               |

Total Production= INTEG (
```

```
        volume increase,
                Initial Production)
        ~       units
        ~               |

capacity shortfall=
        MAX(production order/"unit correction 1/Week for production order" - Production Capacity\
                , 0)
        ~       units/Week
        ~               |

"unit correction 1/Week for production order"=
        1
        ~       Week
        ~               |

"unit correction customer/units"=
        1
        ~       customer/units
        ~               |

Outlet rate=
        MIN( Outlet shortfall / "Tch (time needed for channel development)" , (channel budget\
                / Col unit cost of outlet development))
        ~       channel/Week
        ~               |

goodwill rate=
        ad budget/Cad unit advertising costs
        ~       goodwill/Week
        ~               |

potential first customers=
        MAX((RD reference demand-Sales) * EXP( "d (coeff of demand elasticity)" * LN( Market Price\
                /RP reference price ))*"unit correction customer/units", 0 )
        ~       customer
        ~               |

"unit correction units/customer"=
        1
        ~       units/customer
        ~               |

capacity acquisition=
        MIN ( capacity shortfall / "Tcap (time for acuire new production capacity)" , (capacity budget\
                / Ccap unit capacity costs
        ))
        ~       (units/Week)/Week
        ~               |

Initial Market Price=
        30
        ~       euro/units
        ~               |

Number of Outlets= INTEG (
        Outlet rate-turnover rate,
                Initial Number of Outlets)
        ~       channel
        ~               |

"Number of Outlets(t-1)"=
        DELAY FIXED(Number of Outlets, 1, Initial Number of Outlets)
        ~       channel
        ~               |

Initial Retailers' Inventory=
        0
        ~       units [0,?]
        ~               |

ad spending=
        goodwill rate*"unit correction euro/goodwill"
```

```
        ~       euro/Week
        ~               |

Outlet shortfall=
        MAX( target outlet - "Number of Outlets(t-1)", 0)
        ~       channel
        ~               |

price change rate=
        (desired price - "Market Price(t-1)" )/ "Tp (time needed to adjust price)"
        ~       euro/units/Week
        ~               |

Cad unit advertising costs=
        7.5e+06
        ~       euro/goodwill
        ~               |

Initial Customers' Goodwill=
        0.3
        ~       goodwill [0,1,0.05]
        ~               |

capacity spending=
        capacity acquisition*"unit correction euro*Week/units"
        ~       euro/Week
        ~               |

Initial Production Capacity=
        3300
        ~       units/Week [0,3000]
        ~               |

channel spending=
        Outlet rate*"unit correction euro/channel"
        ~       euro/Week
        ~               |

Transit Inventory= INTEG (
        production rate-outflow rate,
                Initial Transit Inventory)
        ~       units
        ~               |

"unit correction euro/goodwill"=
        1
        ~       euro/goodwill
        ~               |

Customers' Goodwill= INTEG (
        goodwill rate-goodwill attrition rate,
                Initial Customers' Goodwill)
        ~       goodwill
        ~               |

"Customers' Goodwill(t-1)"=
        DELAY FIXED(Customers' Goodwill, 1, Initial Customers' Goodwill)
        ~       goodwill
        ~               |

goodwill shortfall=
        MAX(target goodwill - "Customers' Goodwill(t-1)", 0)
        ~       goodwill
        ~               |

Initial Transit Inventory=
        0
        ~       units [0,?]
        ~               |

Initial Number of Outlets=
        750
        ~       channel [0,10000]
```

```
        ~       full launch = 2100
                small launch = 750
        |

"unit correction euro*Week/units"=
        1
        ~       euro*Week/units
        ~               |

Initial Sales=
        0
        ~       units
        ~               |

"unit correction euro/channel"=
        1
        ~       euro/channel
        ~               |

"Non-linear relationship between Number of Outlets and outlet effectiveness"(
        [(0,0.6)-(10000,1)],(0,1),(850,1),(975,0.98),(1100,0.94),(1225,0.88),(1350,0.8),(1475\
        ,0.72),(1600,0.66),(1725,0.62),(1850,0.6),(2500,0.6),(10000,0.6))
        ~       Dmnl
        ~               |

desired inventory coverage=
        6
        ~       Week
        ~               |

outflow rate=
        MIN(retailer's capacity, Transit Inventory/transit delay)
        ~       units/Week
        ~               |

ad budget=
        dist ad budget * weekly budget
        ~       euro/Week
        ~               |

dist capacity budget=
        1-dist ad budget-dist channel budget
        ~       Dmnl
        ~               |

Outlet effectiveness=
        "Non-linear relationship between Number of Outlets and outlet effectiveness"(Number of Outlets\
        )
        ~       Dmnl
        ~               |

transit delay=
        2
        ~       Week
        ~               |

weekly budget=
        RBG Reference budget * Launch Scale
        ~       euro/Week
        ~               |

Goodwill AT=
        20
        ~       Week
        ~               |

profit rate=
        (Market Price - unit costs) * Purchase rate
        ~       euro/Week
        ~               |

capacity budget=
        dist capacity budget * weekly budget
```

```
        ~       euro/Week
        ~               |

channel budget=
        dist channel budget * weekly budget
        ~       euro/Week
        ~               |

dist channel budget=
        0.33
        ~       Dmnl [0.05,0.49]
        ~               |

goodwill attrition rate=
        Customers' Goodwill/Goodwill AT
        ~       goodwill/Week
        ~               |

"Market Price(t-1)"=
        DELAY FIXED( Market Price,  1,  Initial Market Price)
        ~       euro/units
        ~               |

dist ad budget=
        0.5
        ~       Dmnl [0.05,0.49]
        ~               |

turnover time=
        50
        ~       Week
        ~               |

Market Price= INTEG (
        price change rate,
                Initial Market Price)
        ~       euro/units
        ~               |

retailer's capacity=
        Number of Outlets * u Unit outlet capacity
        ~       units/Week
        ~               |

u Unit outlet capacity=
        240000
        ~       units/Week/channel
        ~               |

"Cin (unit inventory cost)"=
        0.025
        ~       euro/units/Week
        ~               |

inventory costs=
        "Cin (unit inventory cost)" * total inventory
        ~       euro/Week
        ~               |

a1=
        0.2
        ~       goodwill
        ~               |

a2=
        1200
        ~       channel
        ~               |

a3=
        4
        ~       Dmnl
        ~               |
```

b1=
0.4
~ goodwill
~ |

b2=
3300
~ channel
~ |

b3=
6
~ Dmnl
~ |

RD reference demand=
9.26897e+06
~ units
~ |

revenue rate=
Market Price * Purchase rate
~ euro/Week
~ |

Ccap unit capacity costs=
5.2
~ euro/(units/Week)
~ |

RS Reference sales=
15000
~ units/Week
~ |

market responsiveness=
0.257
~ Dmnl
~ |

Col unit cost of outlet development=
500
~ euro/channel
~ |

target outlet=
a2 + b2 * Launch Scale
~ channel
~ |

"d (coeff of demand elasticity)"=
-0.45
~ Dmnl
~ |

"Tch (time needed for channel development)"=
26
~ Week
~ |

"Tgw (time needed for advertising effort to generate goodwill)"=
12
~ Week
~ |

expected average sales=
Launch Scale * RS Reference sales
~ units/Week
~ |

"g (rate of marginal cost reduction)"=
1.4e-05

```
        ~       euro/(units*units)
        ~               |

Total Revenue= INTEG (
        revenue rate,
                0)
        ~       euro
        ~               ~       :SUPPLEMENTARY
        |

"Tp (time needed to adjust price)"=
        4
        ~       Week
        ~               |

"Tpd (production delay)"=
        52
        ~       Week
        ~               |

"Tcap (time for acquire new production capacity)"=
        130
        ~       Week
        ~               |

"p (coeff of external effect)"=
        0.1254
        ~       units/(customer*goodwill)
        ~               |

IVC initial variable cost=
        2.8
        ~       euro/units
        ~               |

"K (constant ratio for fixed minimum spending to reference budget)"=
        0.5
        ~       Dmnl
        ~               |

Launch Scale=
        0.5
        ~       Dmnl
        ~               |

weekly costs=
        weekly fixed costs + weekly variable costs
        ~       euro/Week
        ~               |

weekly fixed costs=
        ad spending + capacity spending + channel spending + inventory costs
        ~       euro/Week
        ~               |

RBG Reference budget=
        500000
        ~       euro/Week
        ~               |

production order=
        inventory gap * (a3 + b3 * Launch Scale)
        ~       units
        ~               |

unit variable costs=
        IVC initial variable cost - Total Production * "g (rate of marginal cost reduction)"
        ~       euro/units
        ~               |

RP reference price=
        25
        ~       euro/units
```

```
        ~                       |

"q (coeff of internal effect)"=
        0.31
        ~       units/(customer*goodwill)
        ~                       |

volume increase=
        production rate
        ~       units/Week
        ~                       |

unit costs=
        ZIDZ(Total Costs, Total Production)
        ~       euro/units
        ~                       |

target goodwill=
        a1 + b1 * Launch Scale
        ~       goodwill
        ~                       |

weekly variable costs=
        unit variable costs * volume increase
        ~       euro/Week
        ~                       |

desired price=
        ("estimated unit mkt & mft costs" + unit variable costs) * (1 + "c (markup percentage)"\
                )
        ~       euro/units
        ~                       |

effective demand=
        demand*Outlet effectiveness
        ~       units
        ~                       |

"estimated unit mkt & mft costs"=
        weekly budget / expected average sales
        ~       euro/units
        ~                       |

production rate=
        MIN( production order / "Tpd (production delay)" , Production Capacity)
        ~       units/Week
        ~                       |
```

APPENDIX C (Cont'd). Figure C1. Overview of the accounting module