Analysis of the Preferences for a New Convenient Seafood Product: Empirical Application for Spain and Norway

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Abstract

Fish and seafood products represent a very healthy food, low in saturated fats and offer an excellent source of protein essential for our health. However, very often, consumer behaviour would seem to infer that seafood products do not rank particularly highly in terms of preference, this being due to the perception of various physical and psychological costs, which represent barriers to consumption. Consequently, there is an opportunity to develop new tailor-made seafood products more adapted to recent demand. The aim of this study is to analyse the overall preference of young consumers for such a new seafood product. The experiments were carried out in two European countries: Spain and Norway, with samples of 349 and 296 young people respectively. The study permits to infer how consumers weight the product dimensions against each other when arriving to overall preference for the product and also to estimate how these have an influence on overall satisfaction and future intention to consume. Evidence suggests that liking for the sensory aspects plays a dominant role in (sea)food product choice and consumption, as it explains most of the satisfaction and intention to consume the product. The relative contribution of health and convenience aspects is significant only on intention to consume, but not on satisfaction. Consequently, appropriate strategies for promoting seafood eating behaviour among young people might benefit from an increase attention towards product likes and/or convenience rather than messages emphasizing health alone.

Keywords: consumer behaviour, preferences, seafood, convenience.

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1. INTRODUCTION

Nowadays research is paying more and more attention to seafood products owing to them well meeting the needs of our society. Fish is a product low in saturated fats and is an excellent source of essential proteins for our health. However, despite that, a series of factors limits its consumption. Seafood products do not fit into the current consumer's preferences due to their very perishable nature, their high preparation costs, or to some of their physical features (bones, scales, smell etc). In order to surpass these consumption barriers, new seafood products are being developed which, on one hand, will attempt to reduce preparation and cooking costs, and, on the other, improve their sensory properties. They are convenience seafood products which, as has just been explained, intend to respond to the modern consumer's needs in that the time factor, especially for younger consumers, is of great relevance, as much as in the purchasing process as in the subsequent acts of cooking and consumption. To meet this objective, a detailed analysis of young consumers' preferences has been made, with the sensorial, convenience, health, and, therefore, the weight or influence these factors have over the satisfaction and future intention to consume this product being analysed. The study is based on recent surveys carried out in two European countries: Spain and Norway.

Next, the analysis is divided into four parts. Firstly, we detail the theoretical background of the preferences and based on that we will develop the hypothesis. We will then explain the methodology we have followed: sample selection, product description, selected variables, measuring scales and analysis technique. Straight away we test the reliability and validity of the scales, contrast the hypotheses and present the results, in order to conclude with a discussion on the results and the principal implications derived as much for the consumer as for the industry.

2. THEORETICAL FOUNDATIONS AND HYPOTHESIS

According to some theories and models different attributes of the product may play a role in the determination of preferences and choice. Previous literature (Wierenga, 1983; Steenkamp, 1993) categorized these attributes in three dimensions i) hedonic/sensory dimension, that collects the sensory properties of the product related to feelings of pleasure or delight in consuming it; ii) commodities/functional dimension, that have to perform certain functions relevant to the consumer; it refers to the health benefits of the product and convenience benefits or use-related aspects of the product; iii) expressive or symbolic dimension which refers to attributes of the product that express status, exclusiveness, distinction, brand, and others. According to Wierenga (1983) the overall preference for a product is the result of the relevant perceptual dimensions (a process affected by needs, motives, socio-cultural or situational elements), the beliefs of the consumer with respect to the effectiveness of the dimensions, as well as the way the consumer trades-off these dimensions against each other (preference functions). Based on the theoretical foundations, we develop a model which tries to analyze the overall preference of young consumers for a new seafood product. Specifically, the objective of this study is to infer how consumers weight the product dimensions against each other when arriving at overall preferences for the product and to estimate how this influences overall satisfaction and future intention to consume. In the following section, and given that we are working with a new food product, and hence one that lacks symbolic dimension, we will focus exclusively on sensory and functional parameters (health and convenience).

2.1 SENSORY PREFERENCE

Various studies which attempt to identify the underlying motives for fish consumption (Leek, 2000; Myrland et al. 2000) consider the principal factor responsible for the product's rejection is represented by the sensory or hedonic dimension: the product's sensory properties, mainly its appearance (colour, shape, homogeneity, defects), smell, taste, texture or consistency. Qualitative studies undertaken with consumers in the United Kingdom show that the agents who

do not purchase this product think that fish offers less variety in terms of taste, that it is less consistent than meat, it has a less pleasant physical appearance on purchase and its smell is not very appetising on consumption (Leek et al., 2000). Other recent empirical evidence (Sveinsdóttir, 2006) reveals that the taste is, for young Icelandic consumers, the most important attribute when purchasing fish or seafood products, and that, on making the selection, the young person's preference sways more toward products like pizza, pasta, hamburgers, chicken, veal or pork, which are products with a high caloric content and extra sensory potential. From the previous theoretical and empirical evidence, we have considered it appropriate to analyse the relative importance of the sensory factor in satisfaction with a new seafood product - designated "fish-burger" - characterised by a few health properties attached to any seafood product and furthermore with an obvious convenience aspect. For this, our first hypothesis would be:

H1: The sensory dimension is the most influencing factor in young people's satisfaction with the product.

2.2 HEALTH AND PREFERENCES

If taste is the most important sensory property at the time of consumption, it is appropriate to point out that in the case of fish, the health variable is also highly relevant. From the consumer's point of view, a product's health benefits include different aspects: the preventive/curative/health effect; the nutritional value/ rich in proteins; dietetic / low saturated fat content / digestive; naturalness / organic; and finally, food safety. Some health benefits of fish are more widely known than others, and the best examples are: "low fat content", "rich in omega 3 fatty acids" and "rich in vitamins and mineral salts". However, there are enough occasions where consumers, especially the young, despite knowing that fish is good for their health, do not request it. The most recent research has shown that the aspects of fish related to health depend on the significance health has for the end consumer. Thus, Pollard et al. (1998), Leek et al. (1998) show that the motivational aspects like awareness or the importance of health (as in the case of older people) are more appropriate in explaining fish consumption than simply the fact

that fish is healthy. From this finding, we can infer that fish or seafood products in general are presented as food with very good health properties, which may exert a notable influence over product satisfaction and consumption/purchase intentions. This aspect will exert more influence with regard to the consumer who is more aware of the food/diet – health relationship. Therefore, we can formulate the following hypothesis:

H2: The perception of health related benefits exerts a positive influence over product satisfaction.

H2´: The perception of health related benefits exerts a positive influence over the intention to consume the product.

2.3 CONVENIENCE AND PREFERENCES

Within the properties which confer functional utility to the consumer (the so-called commodities) there can also be found convenience benefits or use-related aspects of the product. Where a seafood product is concerned, convenience will refer to the benefits a consumer may obtain or the physical or psychological costs arising from purchasing, handling, preparing, preserving, consuming the product or post-consumption. Where less experienced consumers are concerned, especially among young people, there is a negative predisposition toward the process of purchasing fish motivated not so much by the relatively high monetary cost, as by the psychological cost related to incapacity for selecting and handling the product, the time and effort required to prepare it, the satisfaction or satiety after consuming the product. As recent empirical evidence, we have found that, for instance, in the case of young Icelandic consumers aged between 15-26 years, there is a preconceived idea that, despite being healthy and nutritious, fish is very difficult to prepare or has too many bones on consumption (Sveinsdóttir, 2006). In this context, it is considered that a seafood product will hold more value for the young consumer if, as well as obtaining better sensory properties, the food industry manages to reduce the psychological or physical costs perceived by consumers in relation to its preparation, cooking and consumption, without compromising its health aspect. The convenience benefits

provide the consumer with satisfaction before, during and after consumption, given that this saves energy and time which will later be spent on other leisure or restful activities. This fact is what justifies that, the convenience aspect exerts an influence not only over the satisfaction experienced at the time of consuming the product, but also over future consumption/purchase intentions. From what has been previously stated we can formulate the following hypothesis:

H3: The perceived convenience in the product exerts a positive influence over satisfaction.

H3´: The perceived convenience in the product exerts a positive influence over the intention to consume the product.

2.3 SATISFACTION AND INTENTION TO CONSUME

Because satisfaction is one of the most-used constructs to define and assess a general evaluation of products and services (Oliver, 1997), we intend to include satisfaction measures as one facet of our general evaluation construct. Satisfaction has been defined and measured in different ways over the years (Oliver, 1997). While earlier studies defined satisfaction as a transaction-specific product episode, recent studies argue to define satisfaction as a customer's overall experiences to date – as cumulative satisfaction, like attitude (Johnson and Fornell, 1991). In this study, we want to define individual satisfaction as a consumer's personal overall evaluation of satisfaction and pleasure with the product. Even though our experiment covered a situation defined as a transaction-specific evaluation, it will be influenced by previous experiences with similar products and expectations towards the product.

Concerning intention, this is often defined as an indication of how much effort people are planning to exert in order to perform the behaviour (Ajzen, 1991). Intention is assumed to capture the motivational factors that influence human behaviour. In a few studies, intention is used as a mediator between satisfaction and repurchase behaviour (Mittal and Kamakura, 2001). Here, we considered the previous step and analysed satisfaction as a mediator between preferences dimensions and intention. Based on this, we suggest that the intention to consume

or purchase the product in the future will be notably influenced by the satisfaction experienced with the product. The hypothesis we can prove would be:

H4: The satisfaction experienced by the consumer exerts a notable influence over the intention to consume the product.

3. METHODOLOGY

Sample selection

To test the hypotheses previously formulated, we analyzed data obtained in a quantitative investigation on some 645 young consumers. There were two experiments performed in the month of January 2006 in Norway, and in the month of April 2006 in Spain. The sample, selected according to the random sample method, included 296 young Norwegians from the Troms region and 349 young Spaniards from Galicia, with an average age of 20 and 22 years respectively. The random error, with maximum indetermination (p=q=50) and with a confidence margin of 95.5%, was 5.3% for Spain and 5.8% for Norway.

The product

The tested product – designated fish-burger – had been developed by the Norwegian Institute of Fisheries and Aquaculture (NIFA) in collaboration with a private Norwegian company. The burger included 60% white fish and 40% additional ingredients and was refrigerated and pre-cooked, that is to say, ready to heat and eat. In both consumer tests, respondents were asked to taste a sample of the product and indicate their degree of liking, attitudes or intention to consume the new product in the near future.

The variables

As we have previously explained, consumers' preferences, satisfaction and intention to consume the product are global constructs that reflect different facets or dimensions. In order to evaluate these multidimensional concepts in practice we resorted to the so-called observable variables measured on different types of scales. In this study, we used semantic differential scales to

evaluate the sensory attributes such as appearance, taste and texture, health and nutritious aspects. Likewise, we used Likert scales to measure the attitude toward different convenience aspects (e.g. easy and quick to prepare) and scales of probability to evaluate the different facets of the intention to consume the product in the future (see Table 1).

Table 1. Observable variables and measuring scales

Observable variable	Measuring scales
Appearance	7-point scale: 1= Bad appearance… 7= Good appearance
Taste	7-point scale: 1= Bad taste… 7= Good taste
Texture	7-point scale: 1= Bad texture… 7= Good texture
Healthy	7-point scale: 1= Unhealthy… 7= Healthy
Nutritious	7-point scale: 1=Innutritious… 7= Nutritious
Convenience	"The fish-burger is easy to prepare" "The fish-burger is fast to prepare" 7-point scale: -3=Totally Disagree…3=Totally Agree
Satisfaction	7-point scale: 1= Bad… 7= Good product. 7-point scale: 1= Unsatisfactory… 7= Satisfactory. 7-point scale: 1= Unpleasant… 7= Pleasant
Intention to consume	"Within the next x weeks I want to eat this product" "Within the next x weeks I will try to eat this product" "Within the next x weeks I plan to eat this product" 7-point scale: 1= Very unlikely… 7 = Very likely.

5. RESULTS

First of all, we want to prove that each observable variable that has been measured represents a distinct facet to the proposed concepts in the theoretical part (convergent validity) and that the said concepts, also called latent variables, constructs or factors, are different in themselves

(discriminant validity). In order to show this, we undertook a confirmatory factor analysis using the Amos 5.0 programme which groups the observable variables correlated among themselves and confirms the singularity of the factors. In the second phase, we will show the existent causal model between the factors (and indirectly the hypotheses previously formulated by applying the covariance structures analysis). Additionally, the goodness of fit of the model was shown by calculating the statistic chi-squared ($\chi 2$). However, as confirmed by various studies, this indicator is not very appropriate when dealing with large samples (Browne and Cudeck, 1993). This is why it is usual to resort to other statistics amongst which can be found the Root Mean Square Error of Approximation (RMSEA), the Normed Fit Index (NFI), the Comparative Fit Index (CFI) and the Goodness of Fit Index (GFI), this last one is also very sensitive to the dimension of the sample (Anderson and Gerbing, 1988). The model fits well to the data if the NFI, CFI and GFI register values superior to 0.90, and the RMSEA is less than 0.10 (Browe and Cudeck, 1993).

Confirmatory factor analysis: Reliability and Validity of the scales

The convergence validity has been shown by examining the factor loading λ –lambda- of each observable variable in the factor and the common variance shared by all the variables with their respective factor. The reliability of the scales has been examined through the Cronbach α coefficient. All the results are set out in Table 2. The factor loadings (lambda´s) are all high and significant ($p<0,001$: t-value >10) with values between 0.63 and 0.95. Every individual variable shares sufficient variability with the underlying factor (convergent validity). The value of the reliability coefficient α Cronbach is found at the interval (0.82; 0.96) with which it is above the acceptable minimum limit 0.60 (Hair et al., 1998). Each factor has to represent a singular construct, and therefore the observed variables have to weigh upon a single factor (discriminant validity). To show this requirement the correlations between the factors of the model have been calculated. Table 3 brings evidence of the model's discriminant validity. Overall, the model we are proposing enjoys good reliability and acceptable convergent and discriminant validity.

Table 2. Standardized coefficients of factor analysis and reliability of the scales

Factor	Observable variable	Factor loading λ	α Cronbach
Sensory preference	Appearance:	0.63	0.820
	Taste:	0.89	
	Texture:	0.80	
Health preference	Healthy:	0.90	0.896
	Nutritional:	0.90	
Convenience preference	Easy to prepare:	0.95	0.966
	Fast to prepare:	0.99	
Satisfaction	Bad-Good:	0.90	0.916
	Unsatisfactory/Satisfactory:	0.91	
	Unpleasant/Pleasant:	0.85	
Intention to consume	Want to eat:	0.92	0.908
	Plan to eat:	0.82	
	Try to eat:	0.90	

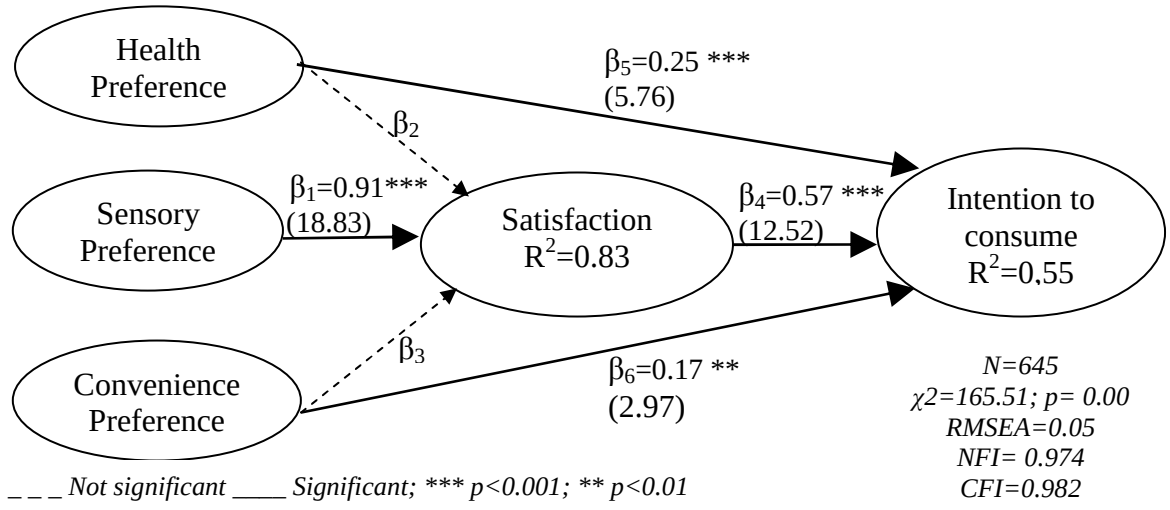
Table 3. Correlation between factors of the structural model

Factor	1	2	3	4	5
1. Sensory Preference	1				
2. Health Preference	0.68	1			
3. Convenience Preference	0.16	0.02	1		
4. Satisfaction	0.80	0.56	0.13	1	
5. Intention to consume	0.72	0.55	0.20	0.70	1

Causal analysis and model test

Figure 1 shows the results of the causal analysis which relates the three dimensions of preferences with product satisfaction, and consecutively, with the intention to consume the product in the future. At the first stage, it is observed that the sensory dimension is the one which explains 90% of the variability in product satisfaction (β_1=0.91); none of the other two variables – health and convenience – exert significant effects upon the same (p>0.05). This data confirms our first hypothesis (H1), but not the hypotheses H2 and H3. In the second phase, the three dimensions contribute significantly (p<0.01) to the model explaining the 55% variance in the intention to consume. The sensory dimension of the preference function is the most important factor, explaining the variation in the intention to consume with a standardized regression coefficient of β_4=0.57 (t=12.52), which permits us to show the fourth hypothesis (H4). The health dimension with a significant coefficient β_5=0.25 (t=5.76) is at the second position and finally the convenience dimension with a significant coefficient β_6=0.17 (t=2.97), ratifying the hypotheses H2´ and H3´. Furthermore, the value of χ^2 and other goodness of fit indices can be observed. Despite χ2 not having a significant result (165.51; df =56; p=0.00), all the other indices provide evidence of a good data fit (RMSEA =0.05; CFI=0.982; NFI=0.974).

Figure 1. The preference function and its relationship with satisfaction and intention to consume



6. DISCUSSIONS AND IMPLICATIONS

The overall objective of this study was to estimate how consumers weight the sensory preference against health and convenience when arriving at overall preferences for a new convenient seafood product. A first result, which is in agreement with our first hypothesis, shows that consumers' preferences for the new seafood product is decisively conditioned by the sensory or hedonic dimension, which explains 80% of young persons' satisfaction with the product. Furthermore, the evidence suggests that the hedonic motive plays the dominant role in the intention to consume the product. Comparatively, neither health aspect nor convenience aspect influences the product satisfaction.

However, our results suggest that the perception of health related benefits in the new seafood product could constitute a motive for the intention to purchase or consume the product in the future (in accordance with H2´) although, as it's obvious, it cannot guarantee the actual purchase of it. In fact, in the literature a lot of discrepancies have repeatedly been found between health perceptions, revealed intention and actual seafood intake. It turns out that young consumer healthy eating is not a sufficient motive for consuming a particular food (Leek et al., 1998), as would be the case of the fish-burger. According to Kuhl (1987), intention often means only a commitment to perform an activity as opposed to a mere desire to perform it. Although people can feel committed to perform activities requested by them of others, when it comes to actual behaviour, they might need to identify the commitment as some part of the self to be motivated in order to implement an intention. In addition, even tough many young respondents may understand and value the health benefits that new seafood product may offer, it often cannot determine the consumers' perception of product efficacy, and therefore, the consumers are not likely to purchase it regularly unless the product is enjoyable in sensory aspects.

With regard to hypothesis H3, the data do not verify any significant relationship between the perceived convenience in the product and the satisfaction, but it does so between the convenience and the intention to consume the product (H3´). Convenience, according to Leek et

al., (2000), can be defined as a situational factor and therefore its relevance depends on the moment, the place or the company in which the subject finds him/herself. Despite the experiment attempting to describe the individual's consumption experience, according to Rozin (1990) the consumer's behaviour may be understood solely in a social context. That explains the fact that, despite being perceived as a very convenient product, there is no significant relationship between the assessment of this aspect and the satisfaction with the product. The result also confirms other results of some American studies about consumption (Gempesaw et al., 1995; Kinnuncan et al., 1993) which obtained very low relationships between convenience and the consumption of fish.

Empirical evidence about the relative contribution of health and convenience determinants versus sensory/hedonic or liking appears to be scarce. From a survey with more than 2000 students, Woodward et al. (1996) found for example that the self-reported usual frequency of consumption of a diversity of food could be better predicted by liking and parental usage of the food than perceptions of the food's health quality and friends' usage. Also, in another study, Steptoe et al. (1995) ordered ´sensory appeal`, health, convenience and price as the most important factors taken into account by their subjects when choosing what to eat.

To sum up, sensory appeal, health and convenience are important factors in the intention to consume the product, although only the sensory plays a decisive role in satisfaction with the product. Health is certainly not the most important factor in choosing the seafood product, and this supports the argument that a multidimensional approach to motives governing seafood choice is appropriate. Appropriate strategies for health promotion should perhaps be developed for sectors of the population with different priorities. If, for young people, taste takes precedence over health and convenience, then education and information about healthy and convenience seafood that is also tasty, readily available and easy to prepare might be of greater value than messages emphasizing health alone. The potential effect of such an intervention is illustrated in a study showing that prompts pointing at both the tasty and the healthy character of a restaurant

dish stimulated its sales to a greater extent than prompts pointing only at the healthy character (Colby et al., 1987)

Moreover, there is currently a trend among the young population not to consider an inappropriate food as a risk factor for their health (MAPA, 2006) and altering their habits toward healthy products like fish is no easy task. At the same time, the importance of the sensory properties in current society has increased as food consumption has become more individualised. The phenomenon, much speculated by the food industry, has materialized in the development of products with different tastes, textures and colours to satisfy the tastes of very heterogeneous groups. In this context the transforming seafood products industry must be very active at the time of exploiting this trend and promoting its products, not only for their health aspects, but also for the sensory and convenience aspects. Further research will be necessary to be able to offer the young consumer a more appetizing, convenience fish product without compromising its health aspect.

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