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The Future for Salmon in France

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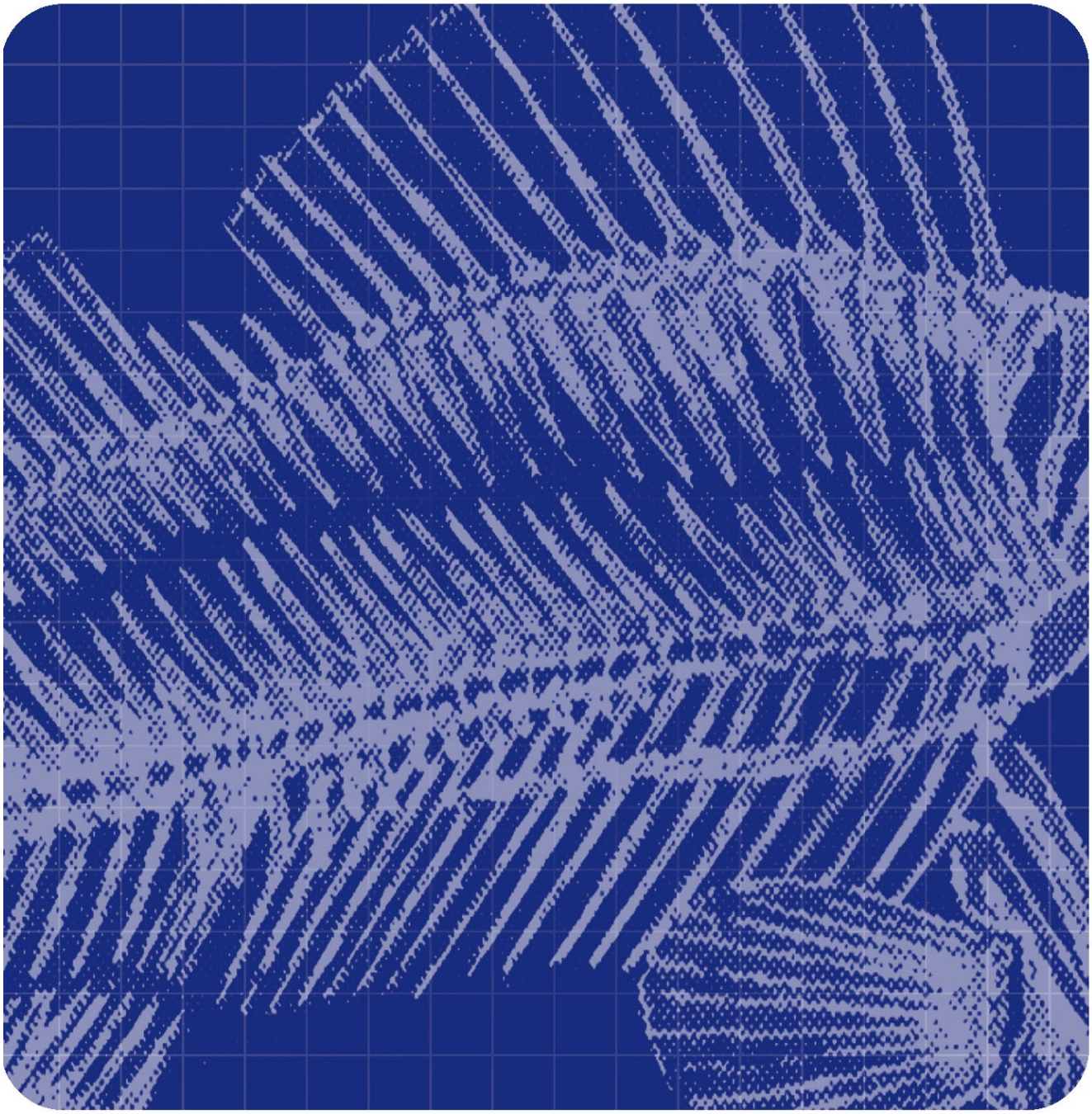

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PREFACE

This report is one of several reports from the research project “Production of farmed salmon” and is funded by the Research Council of Norway. The present report on findings from a survey among French actors in the marketing channel for seafood. The prime goal is to discuss sides of the future market development for farmed salmon in France.

We would like to thank all the respondents who has spent time on this project and provided us with valuable information. We will also give thanks to the Research Council of Norway for the funding of the project. Thanks also to colleagues at the Norwegian Institute for Fisheries and Aquaculture who have contributed with comments and contributions to the report.

Tromsø 2000-04-25

Frode Nilssen
Project leader

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1 EXECUTIVE SUMMARY

The aim of the research project is to explore future trends and potential market opportunities for farmed salmon in France. Based on a survey carried out with French salmon industrialists, traders and sociologists, this project identifies the major factors that will influence salmon consumption in the 10 years to come and the fields where relevant intervention would most likely stimulate further growth.

1.1 A quite unique position

Salmon is endowed with several positive attributes highly valued by industrialists and retailers (stable supplies, large volumes, and stable price) and by consumers (good image), that no other fish product has. This award to farmed *Salmo salar* with a rather unique position, for today and for the years to come.

Yet, several elements have been identified as to constitute potential threats to the species future performances. Quality, namely fat content and flesh texture, and safety need to be better monitored, consider a majority of French actors.

1.2 Opportunities for growth or market saturation

All market segments offer opportunities for growth in the ten years to come believe operators, but some more than others. No declining segment has been foreseen.

Table 1 Opportunities for growth or market saturation

	Market segments
High potential, unconditional	• Retail market for plain chilled salmon • Retail market for chilled value added products
Positive potential, under conditions	• Catering market for salmon as entrées or main dish • Retail and catering market for smoked salmon • Low profile catering segment
Low potential	• Retail market for frozen plain fish

1.3 Conditions for further growth

The development of some market segments will occur under conditions, believe French operators.

A drop in price would be a determinant factor for the development of salmon sales in the low profile catering segment (both institutional and commercial restaurants). Needless to say, this would be beneficial to all segments.

Product development and innovation were also cited as of decisive influence for the future of salmon sales. Considered as a key issue, 11 of the respondents reported that they are actively working on new products projects based on farmed salmon.

Higher quality control, safety guaranties and traceability were also cited as prerequisite conditions for the development of sales on the specific segment for institutional catering,

1.4 Changes in demography structure

The demographic structure is changing The population is ageing, and households are increasingly being reduced. If the first variable has not yet been integrated the elaboration of specific salmon based products, all industrialists confirmed to take into account the growing demand for smaller portions.

1.5 Ethic, food safety and hygiene issues

The majority of the respondents reported that the "welfare" of the salmon, and the supply of "ecologically produced" salmon will not represent a major market segment for farmed salmon products. By contrast, they believe that French consumers would have a strong negative attitude towards genetically modified salmon.

This set of questions emphasizes the belief that French consumers know very little about farmed salmon production conditions. French consumers do not mind about the welfare conditions of farmed salmon and are not especially attracted by "ecologically produced" salmon. Yet, they will definitely not accept genetically modified salmon. Today, consumers are not or little concerned about farmed salmon as a product, but they are negative to GMO products. What would be their reaction tomorrow will depend upon the information they will get. Several respondents consider that the way the media will present the farmed salmon industry, in the near future, will have a massive and direct impact on tomorrow status of farmed salmon in consumers' mind. This consequently might alter their buying decision process.

Finally, commenting these issues constituted an opportunity for a majority of French operators to say that an improved vertical co-operation and communication from farmers all the way up to French professional actors would be beneficial to the whole industry. Traceability and transparency appeared to be recurrent concepts all through the interviews.

2 INTRODUCTION

The purpose of this paper is to report on the findings from a survey carried out within a research project on exploring the ”Future trends for farmed salmon and farmed salmon products in France”. *The aim of the research project is to explore future trends and potential market opportunities for farmed salmon in France*. Looking into the future with a social science perspective is in itself a challenge. One reason for this is related to the fact that research within the social sciences is mainly occupied with studying and analysing past event rather than looking into the future. Hence the methodological tools and techniques in social sciences are designed for the analysis of the past, whereof some conclusions can be drawn to make implications and assumptions about future trends (Sheth et al, 1988).

The starting point for the research is based on an empirically driven and rather wide research problem: “to study future market trends for farmed salmon in France”. In general, wide research problems gives rise to several other problems. One basic and very common problem that arises in such circumstances is the dilemma of time and resources available at the one hand and the quality of the results at the other hand. Implicitly in this statement lies the appreciation of the relationship between precision and specificity of a research problem and the ability to explain and predict, based on the findings of the research. In order to provide research with explanatory power it is necessary to identify and determine the variables from which the cause of the effect or result stems (the answer to the “why question”). While wrestling with the problem at hand here – predicting future market trends – the causes of why the various development patterns are likely to occur must be identified. In doing so it is necessary to address design and methodological issues. The problem of looking into the future does, hence, call for methodological delimitation and clarifications. This issue will be elaborated on in the next chapter where an account for the choice of research design and methodology is given.

Looking at the future market development for a particular type of foodstuffs one could expect to find some peculiarities or characteristics that are important for the evolution of future customer behaviour. Drawing on the existing body of literature on future trends in the markets for foodstuffs, a two-tired angle of incidence comes to light (Nilssen, 1999). One strand of the use of the notion of trends is tied to how the demands for food products shape the development of products and product categories. The other strand of literature is discussing the relationship between future trends for foodstuffs and the influence of external determinants in terms of shaping existing and new market segments, preferences and attitudes. Some examples of external factors can be life style and demography, as noted by Sheth et al. (1999) or contemporary issues pertaining to production and marketing of food products like food safety issues and gene modification of living organisms (Adam, 2000).

Seen from a wider perspective the two angles of incidence represent merely two sides of buying behaviour, whether it is industrial buyers or the final consumer. While the first angle of incidence is engaged with explaining how demand shape the development of new products and markets, the second perspective goes one step further back focusing on the conditions causing the change in buying behaviour. The research on which this paper is based draw on

the latter perspective. Taking it, we view buying behaviour as the use of a product (farmed salmon), the critical question would then be:

> *What are the main factors affecting future use of farmed salmon in France, and based on this, what are the main potential directions for the future market development?*

While the main aim of this paper is to discuss potential future market developments for farmed salmon in France, inevitably some supplementary methodological considerations pertaining to future research and trends must be drawn. The need to emphasise methodology is caused by the peculiarities of futures research within the social sciences and also the rather diffuse representation of the notion of "trends". The discussion of aspects of the futures research methodology is mainly meant for creating a background understanding of the problem, but does also provide for a framework for the discussion of potential future developments reported in this paper.

3 A PERSPECTIVE ON TRENDS

Although the research question may seem pretty straightforward at first sight, it is important to note that the conclusions related to the research question are dependent on the perspective and semantic interpretation chosen for the trend or futures study. The lexical definition of "trends" reveals no obvious unequivocal understanding of the notion. According to the Webster's dictionary the notion of "trends" is defined as:

> *"…a line of general direction or movement" or ""the general movement in the course of time of a statistically detectable change"*

Likewise the current stream of literature reveal an ambiguous use of the notion of trends. Looking into the scholarly literature on trends, the dominance of the econometric stream of research is dominant. While there are attempts to predict future trends (Garcia-Ferrer and Queralt, 1997; Smith, 1997), the majority of this work is based on econometric projection techniques. One example on this stream of research can be found in the journals "International Journal of Forecasting" and "Technological Forecasting and Social Change".

Within the more "soft" side of the social sciences we find another approach to the futures research. In broad terms, there are basically two strands that stand out in this relationship; trends and scenarios, which quite often are mixed and used in discussions of future developments in various contexts. In one respect this touches upon the core of the problem of futures studies. While trends basically indicate a long-term tendency or main direction of a development, scenario-development is but one of several methodological approaches that can be used for describing future developments. Two other acknowledged, yet significantly different, methods for predicting future developments are the Delphi-method and the forecasting/prognosis techniques.

The task of exploring the future market trends is a contradiction in terms, at least within the social science. The reason for this relates to the appreciation that the overall aim of the social science is to provide general explanations to "why" questions (Frankfort-Nachmias and Nachmias, 1992:9):

When scientists ask for an explanation of why a given event or behaviour has taken place, they as for a systematic and empirical analysis of the *antecedent factors* that are responsible for the occurrence of the event or behaviour.

The contradiction at hand is that we are aiming at exploring and explaining phenomena that have not yet happened. And, to add to the problem, we need to explain these phenomena with antecedents that may not have come into force. Having said this, one must emphasise that the scientific problem of futures research and prediction is well covered with writing, and hence there are several methodological tools available for the researcher get to grips with the task. Some of the most commonly used methods are the Delphi technique and Scenario thinking. According to Kaynak et al (1994) the Delphi technique is basically a market research

technique for determining factors that will eventually alter the future of an industry. The source of information that constitutes the basis for the prediction here is statements from various experts that are assumed to know the subject well. Like the trend studies the Delphi technique provides one outcome of the future perspective only[2]. A contrast in this respect is the scenario (or multiple scenario) technique which provides the decision maker with a set of alternative development patterns, conditioned by the effect of the social, economic, political and technological forces that bear on the future development (Mandel, 1982).

As a contributor to decision-makers, the futures research is mainly oriented towards practical implications and application. Even though the different techniques offer slightly different perspectives, whether it is projection, trend studies or multiple scenarios, they all are important contributors to decisions on strategic choices for the future. It is, however important to be aware of the difference between the two basic strands of futures. In table 1 the principal differences between the two strands of futures research is compared.

Table 2 Difference between trends/prognosis and multiple scenarios

Trends/prognosis	*Multiple Scenarios*
The future is certain	The future is *un*certain
The most likely development	Several possible/likely developments
The future is unsusceptible to influence	The future is susceptible to influence
Focus on consequences	Focus on possibilities
Passive adaptation	Active interface

Adapted from the Copenhagen Institute for Futures Studies 1999

In this case the multiple scenario type approach was chosen as a framework for the study. One of the reasons for this is the appreciation of the stance that the future development is shaped by both predictable and less predictable factors. The uncertainty related to less predictable factors, calls for careful consideration when future development patterns are developed and suggested.

The discussion of scenarios is based on the identification of key factors that are expected to influence on the future development - in this case the demand for and use of farmed salmon in France. A major problem for those involved in developing future scenarios is related to reducing the immense amount of data and information that might impinge on the development. It is therefore necessary to reduce the data into a limited number of possible factors and outcomes hereof. In the broadest sense these main categories of factors can be summed up as psycographic factors, demographic factors and economic-structural factors. I addition does the more general question of food safety issues also call for attention (Nilssen, 1999; OECD, 1998). Within the frame of these three generic categories the question of what are the main factors that serve as are driving forces for the future market trends, and what are the main uncertainties that shape the future development of the market for farmed salmon (Shoemaker, 1995; Wilson, 1992). The factors that are emphasised in this work are developed from a literature review reported in a separate research note. The factors are as follows:

[2] For a discussion of this issue see i.e. Asplund 1979, Scwarz 1976, Nilssen 1999.

Psycographic factors

- Time as scarce factor
- More people are working from home
- More women are taking non-housework jobs

Demographic factors

- Ageing population
- The household size decreases
- Increase in ethnic diversity

Economic-structural factors

- Increase in electronic communication
- Accessibility for purchases are increasing
- Concentration at the retail level is increasing

Food safety and environment and ethics issues

4 METHODOLOGY

The in-depth information on these issues is acquired through a three-tired process. First, the existing stream of literature on factors shaping future trends in general, and future market trends for foodstuffs in particular are examined. At this stage the main emphasis is laid on the economic-structural factors, while factors pertaining more directly to consumer behaviour are identified for subsequent use and investigation. In addition to the literature review, a preliminary survey among processors, importers and retailers dealing with salmon and salmon based products in France was carried out during the autumn 1998 and 1999. The main reason for carrying out the preliminary study was to test out the relevance of the key factors that we identified through the literature review. Drawn from the results hereof a questionnaire was developed for formal interviews of selected respondents in France, dealing with salmon.

The questionnaire is semi-structured, consisting of some open-ended questions and some closed questions. The questionnaire is taking the respondent through a set of questions dealing with factors that are assumed to be important forces to shape the future.

Part 1. Farmed salmon and the French market

- The general perception of salmon with focus on positive and negative attributes
- A general impression of the current market situation and the potential for future development

Part 2. Factors affecting the future market development

- Psycographic factors
- Demographic factors
- Economic-structural factors
- Food safety issues

Part 3. Background/structural variables describing the sample

The first part of the questionnaire consist of open-ended questions dealing with positive and negative attributes of salmon today that bear on the future prospects for the market development. The reason for using open-ended questions is to allow for the respondents to point at *any* factor that s/he feel are important for the future development for the salmon market in France.

Secondly, the respondents are confronted with a set of statements and assertions to which s/he is asked to report to what extent s/he agrees or not or to what extent this is perceived as important or not. These questions are based on the results from the preliminary field and literature, and measure the respondent's appreciation of various factors that has been put forward as important in the existing literature on future food trends.

The main survey has been carried out during the first quarter of the year 2000. The study is based on information collected from a total of 28 industry representatives, seafood specialists

and food sociologists. A total of 21 key industry executives have been asked their perception of today and tomorrow salmon market in France. The companies in the sample vary somewhat in size in terms of amount of salmon purchased, between 100 metric tonnes to approximately 9.000 tonnes (h&g weight). In total, the respondents included in the survey are handling a significant amount of the salmon that flow from exporters and into the French market. The categories of business organisations included in the survey are supermarket chains, processors, wholesalers, and smoking houses. Measured by salmon volumes traded by respondents' organisation, 35-50% of each category was covered. Some of the organisations perform several of the tasks represented in the four categories, and all of them import the salmon products directly from the country of origin (i.e. Norway, Scotland, Ireland and Chile) themselves without intermediary agents. The categorisation of the organisations is, hence, based on their core activity.

Table 3 Volumes of salmon products purchased in 1999 (product weight) distributed on organisation category.

Volume / *Type of organisation*	*3500t or less*	*More than 3500t*	*Sum*
Processor	6	4	10
Retailer (chain)	1	2	3
Wholesaler	3	1	4
Smoking house		3	3
Sum	*10*	*10*	*20*

The relative importance of the sample, compared to the overall volume processed or traded at each stage of the channel, is shown in table 2. Further the sampling strategy is also based on a judgement of the respondents ability to contribute to the study with various visions on future market trends for farmed salmon in France. In this respect emphasis has been laid on the current product portfolio, product range, and interest for and proved ability to new product development.

Table 4 A characterisation of the representativity of the sample in terms of volumes handled (1999) distributed on product category.

Rank	*Market segment*	*Stage in the channel*	*Equivalent round fish weight**	*Share of the sample*
#1	Chilled, retail	Retailers	30.000 tonnes	40%
#2	Smoked	Producers	30.000 tonnes	50%
#3	Chilled, catering	Wholesalers	20-25.000 tonnes	25%
#4	Chilled, frozen, ready meals and other preparations	Producers	5.000 tonnes	45%
#5	Frozen, retail	Retailers	<2.000 tonnes	>50%
#6	Frozen, catering	Wholesalers	>4.000 tonnes	>50%

* Round, gutted fish

Although one might expose oneself to critique based on this particular sampling strategy, it must be mentioned that this strategy has been successfully used in attempts to forecast future

trends and outcomes (Frankfort-Nachmias and Nachmias, 1992). It should also be mentioned that the number of actors in the intermediate market in France has been steadily decreasing due to the concentration in the food industry in the downstream end of the market. While there will always be some turnover in the population of business organisations operating in intermediate markets, there are still no signs that the process of industry concentration yet has reached the end.

The respondents are carefully selected across different levels of the vertical marketing channel. Although they are not so many in numbers, the variety of different roles and functions in the marketing channel dealing with farmed salmon in France is presumably well represented. The sample covers a relatively substantial part of the volumes of farmed salmon that flow into the French market. The total number of representatives from industrial enterprises is 19. In one instance two representatives from a company have been interviewed. In addition, there are two researchers, one food engineer, and a representative from the French fisheries governancial body included in the survey.

The bulk of the respondents are interviewed face-to face, and a few through telephones. The interviews are carries out on the respondent's native language, which is French. This latter point is of importance since it reduces the possibility for cross-cultural semantic errors, such as misinterpretation and misunderstanding. The conduct of the interview has also been laid out so to enable the researcher to probe and ask for elaboration on questions of particular interest.

5 BACKGROUND & MARKET SITUATION

The French economy is one of the strongest in Europe, with the GDP per capita being higher than the EU average (106 per cent). A general opinion among economic analysts seems to be that the positive economic development through 1997 will continue in the economy. The economic growth has increasingly being generated by domestic consumption and investments. The forecasts made by INSEE expect a continuation of the growth in the economy. Despite of the growth expectation, there are some uncertainties related to the introduction of the shorter legal work-week from 39 to 35 hours. The OECD analysts do, however, estimate the new scheme to have only small impacts on the French economy (OECD 1999).

According to official French statistics, the French seafood production fell by 5.4% in 1997, to 821,154 tonnes, due to a reduction in both wild catch and aquaculture. According to the French consumer survey Agency, SECODIP, French household purchases of fresh finfish increased by almost 3% in volume in 1997, to 145,700 tonnes.

Sales of pre-packaged fresh finfish have developed significantly since the mid-nineties and do represent nearly 10% of supermarket sales. Yet, after two years of high increase 1997 and 1998, development halted in 1999 (12.705 tonnes), most likely because of the high price increase in most species. Salmon was one of the few species to progress in 1999.

The main sources of French seafood products is the United Kingdom and Norway. For the first time in 1999, Norway became number one seafood supplier (in value terms) ahead UK with imports worth 2,02 billion FF. The per capita consumption is estimated to 28kg (input weight), which is equivalent to the European consumers' average (Monfort, 1998). Over the past ten years the demand has been quite stable, with a 1% per annum increase recorded (Paquotte).

Dominance of Chilled Seafood

The French market for seafood is dominated by the category of chilled (> t°) products, including all live, fresh, smoked, dried and salted items. In this category, two sub-groups are important: live shellfish (mainly oysters and mussels) and chilled finfish.

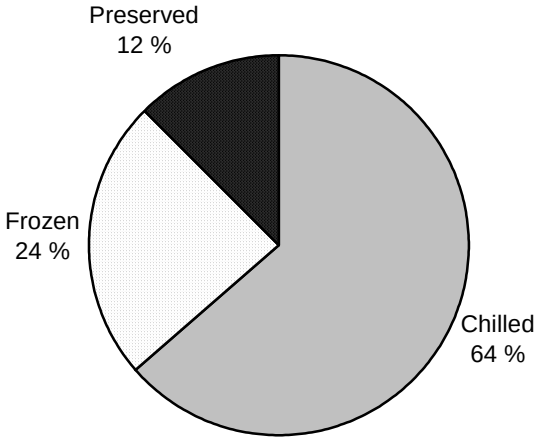

Figure 1 The French Market for Seafood, in 1998, in value. Source : Ofimer (2000)

5.2 Market channels in France

There are two main channels for food products in France (as for most western economies);

- The catering sector
- The retail sector

The retail sector is primarily concerned with the dine-at-home market. In Western Europe this generic market segment represent approximately 80% of the total food sales, in volumes (Gordon, 1998). The two main outlet types are hypermarkets and supermarkets at the one hand, end independent grocers and open consumer market outlets.

The French seafood-marketing channel consists of a wide variety and a high number of actors performing different functions from importers, agents, traders, wholesalers, processors, retailers, restaurants etc. To illustrate the point it can be mentioned that the number of food retail outlets in France (1997) was as much 57.786, whereof close to 8 thousand and 1 thousand was super- or hypermarkets respectively (Euromonitor 1998a). The retail sector is highly concentrated where the market is dominated by four companies (retail chains) with around 55-60% market share (Corstjens and Corstjens, 1995; Gauthier, 1996). The strong concentration at the retail level has put a squeeze on the suppliers in general, and on the wholesalers in particular. One effect hereof is the development of the home shopping/delivery segment. This segment has primarily been concerned with frozen food and other shelf-stable food products. In France home delivery of food products represent approximately 15% of retail sales. While the home delivery E-commerce with foodstuffs has been relatively stable an estimate of the development over the next 10 years has been set to around 10-15% increase for packaged groceries (Gordon, 1998).

The catering sector can be divided in four generic segments: Social, workplace, commercial and transport segments. The largest are the Social catering and the commercial segments representing schools, universities/higher education, health sector, prisons and the army, and cafés, bars and restaurants respectively. The number of consumer catering outlets was 148 thousand (1997), whereof close to 81 thousand was restaurants, 45 thousand was cafe's and bars and 19 and two thousands was hotel catering and fast food outlets, respectively (Euromonitor, 1998b)., the catering sector is correspondingly fragmented. In the catering sector the fast-food chain, McDonalds, is the single leading operator with a market share (value) of 5,3% in 1997 (Euromonitor, 1998b).

The relative importance of the social versus commercial catering segments was as in favour of the social sector both in 1995 and 1998. It is also worth mentioning that the annual growth in very modest with approximately 5% over the three-year period.

Table 5 The relative importance of social versus commercial catering the segments in France in 1995 and 1998

	Meals/year	*% of meals served in 1995*		*Estimated Trend 1995/2000*
	(millions)	*Social*	*Commercial*	*% yearly increase in no. of meals*
1995	6625	56	44	0,5
1998	6940	53,3%	46,7%	
Turn-over (billion FF)	299 000	34,3%	65,7%	

Source: GIRA Sic

The main players in the seafood sector are not that many. In example there are 4000 fishmongers, (Monfort, 1998), while there are less than 20 large producers of frozen seafood in France (Pàlsson, 1993). In addition there are a relatively large number of other intermediate actors in the seafood-marketing channel. However, of practical reasons it has been necessary to reduce the number of respondents in the survey. Our sampling strategy has therefore been judgmental (purposive sampling). By using this sampling strategy we have, maintained a sample of respondents with high relative importance in the trade with farmed salmon in France measured by the relative volume processed or traded by the respondents.

5.3 Supremacy of Supermarkets

If we consider that the market is split into the retail and the catering outlets, it must be said that the first one dominates with 78% (in value terms) of all seafood traded. Retail distribution of food products, including seafood, has changed dramatically over the past two decades. Since the early sixties, supermarkets[3]' share in food distribution has increased considerably.

[3] We name supermarkets, retail store of size ranging from 400 m² to 2.500m². Hypermarkets, or large supermarkets are stores with size above 2.500 m². The two types of stores are referred to as "GMS" in French, i.e. "Grande et Moyenne Surfaces".

The following table illustrates today importance of supermarkets in seafood retail distribution, and indicates that these outlets are responsible for an even higher proportion of salmon sales.

Table 6 The retail market : Supermarkets market share, in value, in 1998

Segment	*Market share*
Chilled seafood	63%
Chilled salmon	79%
Frozen seafood	71%
Canned seafood	>90%
Smoked fish	91%
Smoked salmon	94%

Source : Ofimer (1999)

This remarkable performance results from the fact that salmon attributes and salmon industry comply quite well with these chains specific requirements. Salmon carries a very positive image of exclusive product. It is available at moderate prices, in large quantities, all year through. It is easily accessible, thanks to the proximity of production sites and logistics efficiency. Finally, all ingredients are there to launch large-scale promotional campaigns (Monfort, 1995).

5.4 Potential changes

The supremacy of large scale retail chains in seafood distribution is a hard fact that leaves little uncertainty for the 10 years to come in the field, except for the possible development of e-commerce.

5.4.1 New products

The growing needs for timesaving products of French buyers, including householders and caterers' chef, have been evidenced earlier (Monfort, 1997). Cleaning, cutting into portions, pre-cooking, and assembling are more and more often done by industrialists. But, today consumers want even more from industrialists, not only do they prefer pre-processed products but they increasingly want fully prepared items e.g. ready meals, "elaborated delicatessen". The market for these products is nascent and, believe many operators, what is today a niche will become a much wider segment in the years to come.

5.4.2 Quality/safety : new concerns

Food product quality and safety are becoming increasingly important to French private and professional buyers. These new requirements follow a clear upward path, from the consumers to the retailers, from the retailers to industrialists, from industrialists to raw product producers (fishermen, fish farmers), everyone expecting from its upstream partner to do what is necessary to prevent them from food safety failures.

5.5 Salmon in France

France is today the most important salmon market in Europe, with over 110.000 tonnes (output weight) imported in 1999, of which farmed *Salmo salar* represents over 85%.

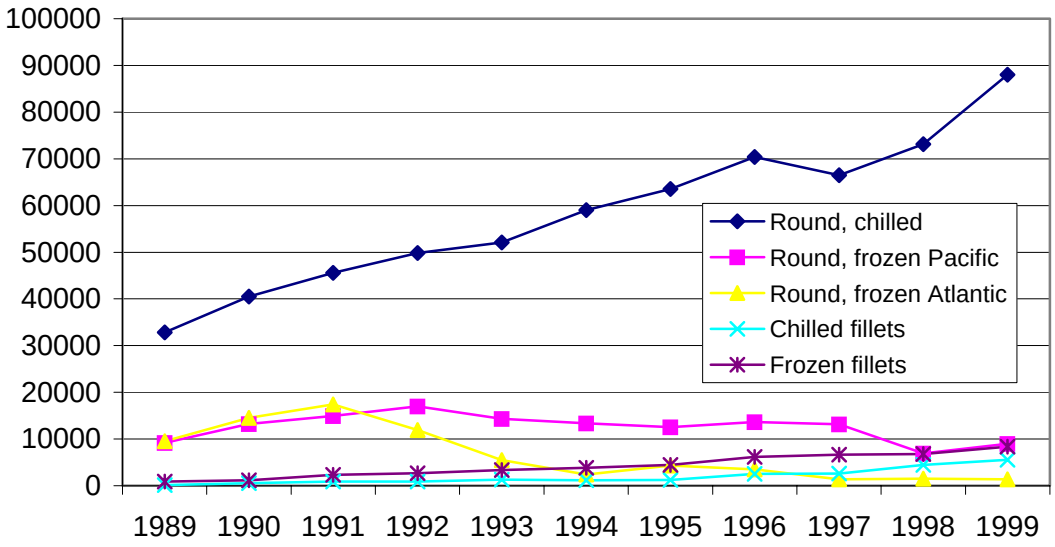

Figure 2 France Imports of Salmon Products, in Output Weight (tonnes). Source : Eurostat, National customs data

5.6 Markets Segments

Although it is not a common species in the country, farmed Salmo salar has rapidly gained market shares to become the number one species on several market segments.

Table 7 Leading fish species in the French consumer market across product categories

Market segment	*Chilled, retail*	*Chilled, catering*	*Frozen, retail*	*Frozen, catering*	*Smoked, retail*	*Smoked, catering*	*Frozen ready meals*
#1	Farmed salmon	Farmed salmon	Whitefish	Whitefish	Farmed salmon	Farmed salmon	Alaska Pollock

Source : Ofimer, Nielsen

The retail market absorbs approximately 30.000 tonnes of chilled farmed *Salmo salar*, where the bulk (over 85%) is distributed by supermarkets. The smoking industry processes an estimated 30.000 tonnes of salmon per annum, of which over 95% is believed to be *Salmo salar*.

According to recently released data[4], 24.000 tonnes of salmon have been utilised by the catering industry in 1998, of which 18.700 tonnes of chilled products (9.700 tonnes of round fish and 9.000 tonnes of portions) and 5.500 tonnes of frozen products (1.200 tonnes whole + 4.300 tonnes portions).

[4] Ofimer (2000)

Table 8 Farmed Salmo salar *by segment in 1998/1999*

Rank	*Market segment*	*Equivalent round fish weight**
#1	Chilled, retail	30.000 tonnes
#2	Smoked	30.000 tonnes
#3	Chilled, catering	20-25.000 tonnes
#4	Chilled, frozen, ready meals and other preparations	5.000 tonnes
#5	Frozen, retail	<2.000 tonnes
#6	Frozen, catering	>4.000 tonnes

* Round, gutted fish

6 PRESENTATION OF THE DATA

The survey is divided in three sections:

- First, the respondents are asked to report on their perception on farmed salmon and its most positive and discouraging attributes, and future possibilities in the food market.
- Second, the respondents are asked to report on their opinions and beliefs about the future market for farmed salmon in France.
- Lastly, the respondents are reporting on their use of farmed salmon and also the company characteristics.

6.1 Perceived attributes of farmed salmon

When the respondents were asked to state the most *positive* attributes that immediately comes to mind related to farmed salmon, stable deliveries, a positive image (with the consumer), and stable product quality, stood out as the three main variables. The respondents is free to mention whatever comes to mind related to farmed salmon, and there are no restrictions on the number of items/attributes. As shown in table 3, few attributes were related to the technical quality of the farmed salmon as a product.

Table 9 The most positive attributes related to farmed salmon (n=21)

Attributes	*Frequency*
Stable deliveries	10
Positive image (with the consumers)	8
Stable product quality	5
Stable price	2
Healthy product	1
Possibility for traceability	1
Other	4

Interestingly the positive image related to salmon is still valid among consumers. An important explanation for this is mainly related to the old connotation of luxury and special treats when salmon was served. This, despite the fact that farmed salmon is widely available in most retail outlets and restaurant categories to a reasonable price. When the respondents were asked to state the most *discouraging* attribute(s) that immediately comes to mind related to farmed salmon, it was mainly factors related to the technical product quality that was brought up. The three most frequently mentioned factors were hygiene risk, low/unstable product quality, and too high a fat content. The full results are shown in table 4.

Table 10 The most discouraging related to farmed salmon (n=21)

Attributes	*Frequency*
Too high fat content/bad taste (6+3)	9
Hygiene risk	8
Low/unstable product quality	6
Negative image (with consumers)	3
Problems with suppliers	3
Saturated market	2
Possible genetically modified (fish or fodder)	1

The factors of too high fat content and bad taste are merged because the perception of bad taste of the fish was caused by too high fat content. Hygiene risk was mainly related to fear for bacteriological and chemicals contamination. In this relation the listeria bacteria and dioxins were most frequently mentioned. The increasing fear for sanitary errors and bacteriological contamination that has come to surface during the survey should be seen in relation to the increase in large scale foodstuffs scandals that hit Europe during the past few years. A few examples of this is the BSE ("mad cow disease"), the large scale product recall of Coca Cola in Belgium, and the outbreak of and media focus on several listeria incidents.

Attributes that are reported on product quality are both mentioned as positive and negative with a relatively high score. The different dimensions of the notion of product quality explain this apparent contradiction. The positive attributes mainly refer to consistency in freshness due to good availability and logistics.

> *"…farmed salmon is always very fresh, which is not the case for all fish species…"*
>
> *"…farmed salmon freshness is "regular" over time"…*

The main negative attribute connected to the quality dimension of the fish – aside from the high fat content/bad taste items, is related to the texture of the fish.

> *"…it can be bad, this depends on the farmers attitude…*
>
> *"…it can be too soft…"*

Considering the high unanimity of the perceived freshness of farmed salmon in France, the negative attributes reported as low/unstable quality may be merged with the other quality item (too high fat content/bad taste). The reason for this is that a too soft texture mainly is connected with a too high fat content or the type of fat in the fish (animal vs marine fat)– provided that the salmon is fresh and well handled otherwise[5].

[5] The problem of the less satisfactory texture of the fish is a relatively hot and disputed topic. There are several different suggetions for explanations for the causes of the texture problem. We will, however not dive into this discussion here.

After having developed a status of farmed salmon amongst the industrial actors in France, the respondents were asked to report on their belief on the main obstacles and advantages of farmed salmon, in general, in relation to the future consumption. The question is divided in two, one focusing on the view of the industrial actors, the other referring to the consumers' perspective. The two sets of questions, about the industrial customer's and consumer beliefs, represent slightly different aspects of the future requirements for and uses of farmed salmon. Although the actors in the intermediate market are likely to mirror the main preferences of their target customers (consumers), we presume that the business organisations would tend to emphasise slightly different values, i.e. stability of deliveries, and technical quality.

This assumption proved to be confirmed through the interviews among the 14 respondents answering these questions. A wide variety of concerns related to farmed salmon that are potential obstacles for meeting the future needs and wants of consumers was revealed. However, the question of food safety stood out as the main concern. Seven out of 14 respondents (50%) reported that they consider hygiene related risk as an obstacle for the future market development for farmed salmon. Further four respondents mentioned sparse information from their suppliers as another potential problem. As to the actors in the intermediate market, sparse information and price concerns (too high price) were accentuated.

As regards the main advantages of farmed salmon for the future market development the positive image, availability, and low price was most frequently mentioned[6]. At the other side, the actors in the intermediate market emphasised large volumes and availability as the main advantage for farmed salmon in the future market.

6.2 Opportunities for growth or market saturation

The respondents were asked to indicate to what extent they consider the restaurant and retail market segments as opportunities for growth or saturated markets. The reported evaluations relates a range of product categories whereof some mainly pertain to retail markets (smoked, fresh, whole, fillets, steaks, cutlets, etc). In the declarations' analysis, which follow we only consider argued answers and do not take into account the « does-not-know » answers.

6.2.1 Retail market

"The retail market for salmon products. In the ten years to come, do you see opportunities for growth or do you consider the following segments as saturated"

[6] Several respondents quoted prices as a negative attribute (too high); but this statement referred to the specific situation characterising the end of year 1999 and first quarter of 2000. Concomitantly, the same respondents said that, on the long run the price stability of farmed salmon was favourable to the species compared to wild ones.

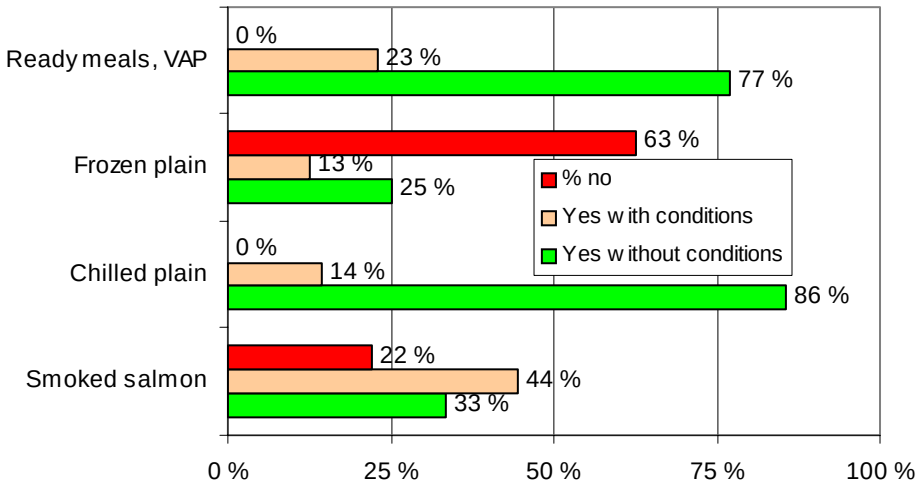

Figure 3 Prospects for chilled plain salmon and value added products' segments

A high percentage of respondents are confident upon the growth of the segments for plain chilled salmon (+86%) and ready meals/ value added products (+77%), unconditionally.

On the market for ready meals/ value added products, most respondents attributed good growth prospects on the specific and nascent segment for chilled elaborated salmon based items gathered under "traiteur de la mer" category. This category of products includes all salmon items, more elaborated than plain fillets, but not as much as ready meals.

"… Everything needs to be created on this segment…"

No growth for plain frozen salmon

A majority of respondents (63%) consider that the market for frozen plain salmon is not going to grow. The reasons are twofold; some say that, thanks to purchasing power expected improvement, consumers shall continue to give their preferences to chilled products as has been observed in recent years; others argue that on this very price minded segment, the advantage goes and shall remain onto wild Pacific salmon. Although this segment is not seeing as promising, developments, including packaging and items format redefinitions, are however required, for maintaining sales.

Smoked salmon only if…

Only a third of all respondents consider that the market for smoked salmon will grow, unconditionally. Near half of them (44%) mentioned a positive growth, provided that quality efforts, marketing actions and product development are undertaken. 22% consider the market as saturated.

"The retail segment for smoked salmon "

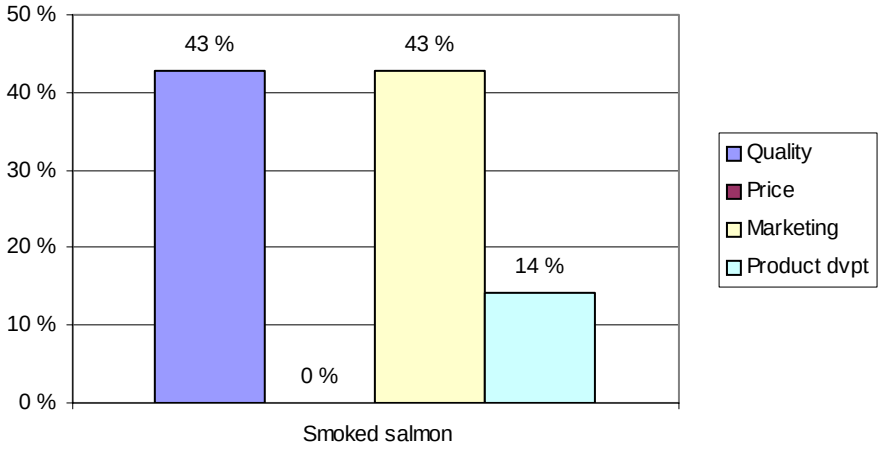

Figure 4 The main factors that will affect future growth on the retail level

43% of all respondents who consider opportunities on the segment for smoked salmon, mention quality as being a prerequisite condition. By quality, respondents referred to:

- Raw fish quality including controlled of fat content,
- Guaranties on salmon feed (reference made to dioxin, antibiotics, genetically modified meal, etc.),
- Guaranties on bacteriology

The same number of respondents considered that this market could develop under specific marketing actions. This is worth mentioning that marketing actions have not been quoted in other segment.

> *"…Efforts on segmentation designed for the consumers and not for the buyers as it is done today is required…"*

Several respondents consider that the market could be stimulated by the development of high quality, private label products.

Finally, product development was also mentioned. Although no one consider that much can be developed on the market for standard products, several respondents say that there is room for a « *for-every-day* » item. This would require a mix of some product development (right packaging, right size, right price) and marketing efforts (right communication and label).

Salmon in Restaurants

"The catering market for salmon products. In the ten years to come, do you see opportunities for growth or do you consider the following segments as saturated?"

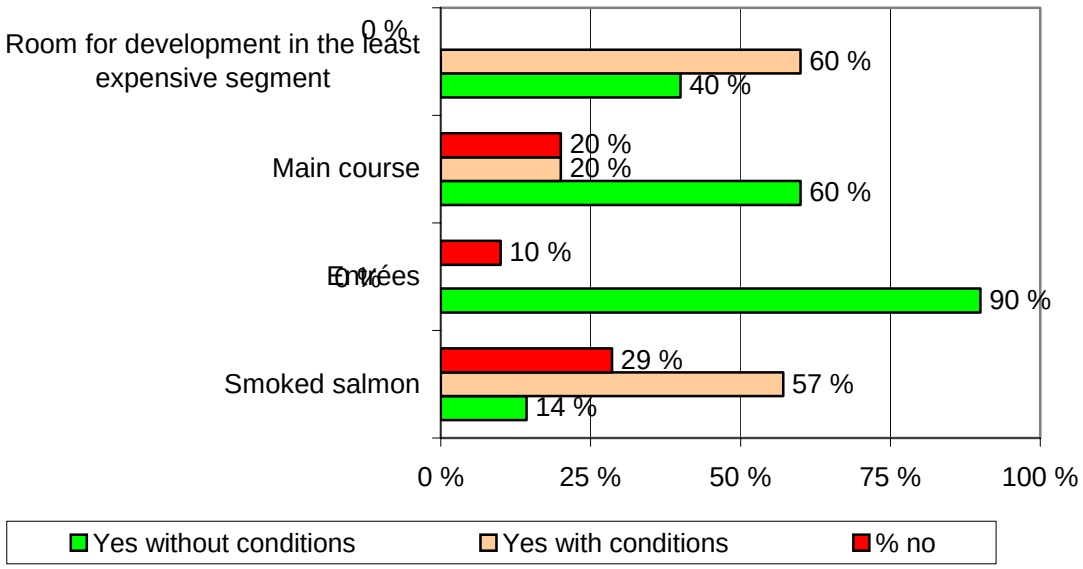

Figure 5 The growth potential for farmed salmon in the restaurant market across product categories

Good growth for salmon based entrées other than smoked salmon

A high majority (90%) of all respondents are confident on the fact that the segment for salmon based « entrées » other than smoked salmon will grow, unconditionally. References are made to products where salmon is the main ingredient (carpaccio, other raw preparations), or the secondary ingredient (salads, pastries, etc.).

A majority of respondents also see a positive growth on the main course segment. Yet it must be said that this opportunity is often quoted with direct references to the social catering market, where today sales are very little developed

Development of smoked salmon under conditions

Over half of respondents considered that the development of smoked salmon sales on the catering segment will only occur under the specific conditions of a drop in prices. This would be the condition for the social sector to be given the chance to afford this item quality improvement to ensure the supplies of a 100% risk free product.

High potential on the low profile catering segment provided a drop in prices

All respondents see a positive growth in the low profile restaurant segment, under the condition of a drop in prices (50%), and an improvement in quality. 40% sees a positive growth without conditions, mentioning that a better use of salmon could be made, and that specific products based on salmon left-overs (chunks, bits and pieces)are in the process to be created.

Conditions for growth

Some respondents considered that a noticeable positive growth in the above mentioned segments could be recorded provided that certain conditions would prevail.

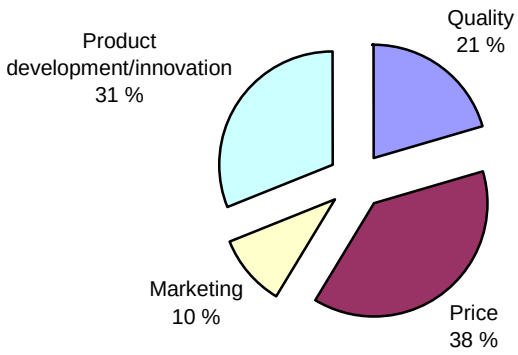

Figure 6 "Positive growth would be recorded under the condition that actions in the following fields are undertaken?"

Price and product development

Of all, prices' drop was the most cited (38%) as a positive factor for further growth[7]. This was especially mentioned when considering the low profile catering segment ; most respondents consider that institutional catering (schools, hospitals, canteens), which today buys very little *Salmo salar* offers an important potential.

Product development and innovation was the second condition mentioned as being able to boost sales; and we dare say that, even when not explicitly expressed by respondents, all had this argument in mind. On both the chilled and the frozen plain fish segments, supplies of precisely graded products are supposed to stimulate purchases of both householders and caterers.

Quality was cited by 21% of all respondents who considered that sales would develop under conditions. This was especially quoted several times in the case of smoked salmon. Under this generic term, we find:

- The quality of the raw product, namely lower fat content
- A clear quality segmentation, with the argument that today, although the assortment is large, the supply is quite confusing ;
- Safety guaranties and traceability: those arguments were especially strongly utilised with reference to the market for smoked salmon and the institutional catering segment;

[7] It must be noted that interviews were run in a period of increasing prices. Most respondents mentioned the short term situation, which was felt as critical by some of them. This was especially mentioned when considering the low profile catering segment ; most respondents consider that institutional catering (schools, hospitals, canteens) and low class commercial outlets (fast food, cafeterias),which today buy very little *Salmo salar* offers an important potential.

First, these questions arose because the output (smoked salmon) is sold and consumed raw i.e. it bears a higher sanitary risk compared to cooked items. Second, the institutional catering segment (that is schools, hospitals etc) has a significant higher risk aversion related to food poisoning or food-related incidents, and are therefore very concerned with quality control and traceability.

The most promising segment in the 10 years to come?

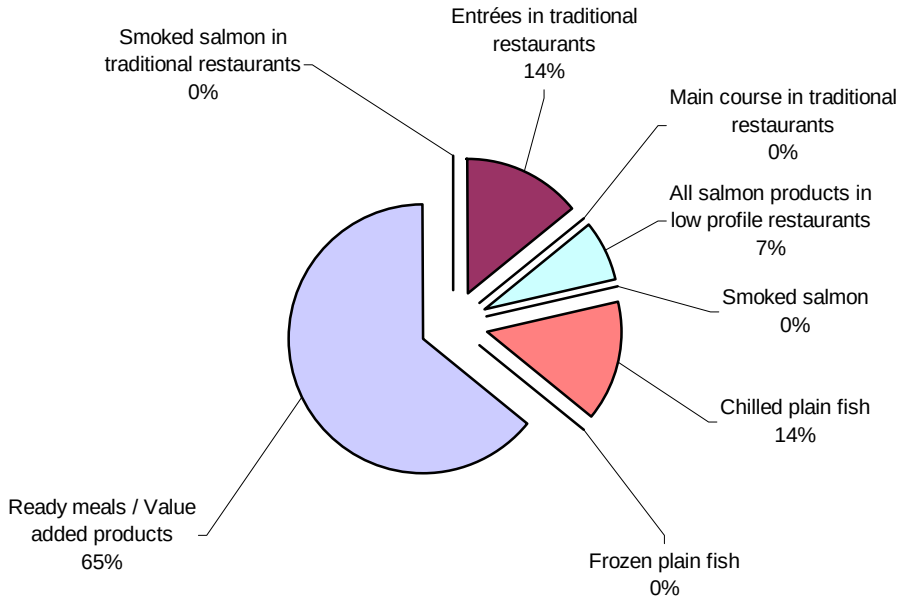

Figure 7 "Evaluation of market segments as offering the highest potential for growth in the 10 years to come?"

Value added products and entrées

The segment for value added products is by far, and with no surprise, the segment the most often cited as the most promising for the ten years to come. The sales of salmon based value added products' is expected to development partly at the expense of the non-processed segment. But it is also believed to attract new customers. This segment growth will also be made possible, say respondents, because salmon is endowed with characteristics, which make it very convenient for processing (large supplies, all year availability, complexion, etc.).

Furthermore, both the housewife and professional chefs in the catering business want products that are easy to prepare and easy/quick to cook. All respondents agrees that industrialists, due to the above-mentioned factors increasingly will take on the responsibility of process the salmon, which consists of transforming a raw fish into an attractive edible item (ready to serve). Both of the two buyer groups devote less time for preparing food.

Chilled plain fish

Despite the high level of sales, some respondents believe this segment, still offer the highest opportunities. Reference was made to the development of portion sized, fixed-weight products, pre-packed or not.

Low profile restaurants

Opportunities on the segment for low profile restaurants exist, said some respondents, with the supply of low priced-items made from *Salmo salar* chunks, pieces, minced meat, all low priced items which could in the future be better utilised than today.

Smoked salmon

No respondent considers the smoked salmon segment as the most promising. The majority (if not all) refers to the market as mature.

7 FUTURE MARKET DEVELOPMENT - NEW PRODUCTS AND NEW MARKETS?

The questions related to future market trends and development is based on items identified through the preliminary phase of the study as noted in chapter 2. The investigation revealed three main factors that are regarded as the main influential forces, Psychographic, Demographic and Economic/structural factors. In addition the food safety issue was identified as an important factor that are expected to influence on future consumer behaviour related to food choice. Both through the literature review process, the preliminary research and the main survey, the food safety issue (in a broad sense) proved to be among the most conspicuous factors related to future consumption of food in general and farmed salmon in particular.

7.1 Demographic issues

The demographic factors considered in this survey are related to family size, age composition of the consumers in general, and the increasing presence of immigrants/new fellow countrymen.

Interestingly, the respondents in the sample did not consider demand for «ethnic» food as pertinent at all for the future consumption of salmon[8]. A possible explanation for this is that the bulk of immigrants in France tend to gather mainly in Paris or greater Paris (the Ile-de France region), Marseilles, and other major cities, and hence is seen as a local phenomena rather than a general trend issue affecting seafood demand.

The questions on the respondent's beliefs about the future trends for farmed salmon are mainly related to new product development. The reason for this is simply grounded in the appreciation of the increasing focus on new product development (NPD) within the food industry. When confronted with statements on the issues of age composition and household size, the respondents reported that alterations in the age composition among French consumers was not considered as important in the NPD process. On the other hand, the question of household size is considered as important among the majority of the respondents. Bivariate analyses of these data against company type reveal no bias on the beliefs across company size or type (retailer, processor etc).

[8] In this particular case ethnic food is interpreted as a demographic factor related to special food preferences of consumers of foreign origin

Table 11 The significance and importance of new product development due to changes in the age composition and household size in France

	Age composition	*Household size*
Not important	*11*	*2*
Neither/nor	1	*2*
Important	4	*13*
Missing	5	4
Total	*21*	*21*

When probing on the issues the vast majority report that they regard the age composition problem as an interesting and useful background variable, yet, without making explicit use of the information in their marketing strategies or NPD activities.

As to the case of household size, this seems to be seen as a different and far more important issue for the actors in the French marketing channels for seafood. Most of the respondents report an active attitude to this particular demographic variable. When asked to substantiate their stance it appears to be a considerable consistency among the respondents about the importance of the factor. In France, like in most other Western economies, there is a drive toward single and single parents households, and smaller core families (OECD, 1998). In 1999, the average number of persons by household was estimated to 2,43 compared to 3,06 in 1970. Last year, the country counted 7,13 million households of one person and 7,68 millions households of 2 persons (which constitute approximately 40% of the population in France), and 5,30 million households with 4 persons and more (Insee, 2000). This is one explanation for the increasing demand for single portion packs. The interviews revealed that the emphasis on single portions applies across product categories (smoked fresh, frozen, and ready meals). In example a typical single portion pack of smoked salmon is a vacuum packed item with 80g of sliced smoked salmon.

Another example several respondents referred to is the recent success of IQF (individually quick-frozen) products sold in portion controlled packs (600g and above). The packs contain one or more single portions of a product (in example a ready-meal or fish fillets). These products prove to be perceived as very convenient due to their offer of individual portions.

It should be noted that no respondents see specific advantages/discouraging attributes of salmon relative to other species for elaborating items to match to the aging population and to smaller size household's requirements.

7.2 Psycographic issues

The psycographic factors may be seen as variables pertaining to values and lifestyle (Sheth et al, 1998), or a bit more academically expressed: an understanding of how people relates to the environment through participation in activities, expression of interests and opinions (Boote, 1980). The rather wide understanding of the construct can intuitively seem to call for a wide

range of potential factors that influence on human behaviour and product use. The literature review and preliminary research draw the attention to the phenomena that women are increasingly seeking non-house work employment, time is increasingly seen as scarce, and people are increasingly working from an at-home-office. Although the three factors can suggest various adaptations, the main common denominator related to foodstuffs and future trends is the time factor. Another but perhaps more modestly interacting psycographic factor is the increasing demand for diversity.

Both factors were however emphasised by the respondent as important variables to take into account for the future development of the salmon market. When measuring the importance of the variables the respondents were confronted with two statements. One pertain to the question of how important the time required for making it ready for consumption, as an attribute, is when developing new products. The other statement calls for the respondent to report on to what extent future products based on farmed salmon will be available in a significantly wider spectrum of products than today, both as fresh, as frozen ready-meals, and in the catering and home-delivery (fast food) sectors.

In both cases the majority of the respondents reported that the time factor is important, and agree to the statement of increased demand for a wider spectrum of products as compared with today. The reported responses on the factors are summarised in table 6.

Table 12 The importance of the time required for making it ready for consumption, and increased product diversity of farmed salmon products as important product attributes in the future

	Time-saving	*Diversity*
Not important/ disagree	1	3
Important/ agree	*17*	*15*
Missing	3	3
Total	*21*	*21*

The two factors cover different aspects of the psycographics related to the future market trends for farmed salmon. The time saving issue is pointing at an important core value that in all probability will be increasingly important for the success of food products in the future. This is also one of the aspects that the contemporary and future consumers increasingly seems to value according to the trend literature. The basic convenience factor of the food products is the short time of preparation and easy-to-prepare values (Stefanidu, 1998; James, 1996; Sloan, 1994).

The diversity issue indicates the drive among future consumers toward increased interest in and willingness to try new recipes and combinations when preparing and eating food.

These two factors; quick to prepare, and demand for diversity represent two powerful drivers in the future food product market. It is also worth mentioning that the demand for these two product attributes is increasingly present in the catering sector as well as in the consumer (end-user) markets. One of the bases for this statement is the emphasis the industrial actors have placed on the factors. As an example we can present a few quotes from the respondents:

"…It is unthinkable to produce a product that is not "microwavable"…"

" …in restaurants –especially where the chefs are less skilled (especially in public restaurants) – there is a demand for ready cooked products…

"…yes, this is important, as quickly as possible…"

The demand for quick to prepare food is related to a wider concept: convenience. Not only should the product require little time, but also it must be designed as to not generate inconvenience - in example the packs must be easy to open.

Some of the respondents found it important to balance the picture of the future demand by pointing at that the time constraint is more pronounced during the week as opposed to the week ends when time often is allocated to purchasing, preparation and consumption of good food:

"…time required is an important variable for daily consumption – but not as much for the week end consumption or when inviting friends..".

The sociologists interviewed evidenced that time spend for making food during week-ends (36 minutes for dinners in 1997) is slightly higher than during the week (44 minutes), but both periods have decreased (42 minutes in 1988 for the first and 60 minutes for the second) (Volatier 1999).

The respondents have all initiated responses to what is believed to be important buyers requirements; they all supply today, and even more so in the future, quick to make and diversified products.

7.3 Economic/structural factors

The economic-structural factors represent the more fundamental factors that influence on consumption and consumer behaviour. Among these macro-level factors is the general economic situation in the country, the consumer spending, and the general technological development. Notwithstanding, there are some factors that gain distinction in respect to consumption in general and consumer spending on food products in particular. These have been identified as the structural concentration on the retail level, increased availability for consumption, and increased electronic communication.

The future development related to increased or decreased concentration on the retail level is not easy to measure. However the trend is toward increased concentration. Due to this fact, the beliefs, visions and adaptation to future consumer needs and wants of the retail chains will inevitably be of interest for the seafood industry. At the other hand the impact and importance of the two other factors mentioned above will also be interesting to consider for the future development in the market.

In order to capture some indication of the potential significance of the E-commerce and alternative distribution of salmon based products we asked the respondents to respond to statements on home-delivery of food in general and salmon based products in particular.

The two statements on the relevance of the home delivery was as follows:

- The use of home-delivery services will strongly increase during the nest 10 years.
- Farmed salmon will be an important part of the seafood product range in the home-delivery services during the next 10 years.

Regarding the impact of E-commerce on future sales development, only 11 respondents expressed an opinion whereof six reported that they believed that the e-commerce would play no or little influence for the future development of consumption of salmon products. The rest (10) did not know. It is worth mentioning that one respondent said that E-commerce offers a very attractive alternative channel to sell chilled salmon. Others emphasised the potential problems with the logistics (organisation and costs) which would constitute a major constraint and hence hamper the E-trade for all chilled food items for the years to come.

In the eighties, the concomitant expansions of seafood sales in supermarkets and salmon performances were not coincidental, but directly linked. At that time, salmon was perceived by supermarket buyers as ideal (large volume, luxury image, and low price) to participate to the development of this new activity in contributing to spread the proficiency image of these retailers (Monfort, 1995).For the ten years to come, respondents do not foresee changes in the distribution channels that will affect the development of salmon sales significantly. Yet, some large-scale operators noted that the possibility for supplies of high volumes is an important and favourable attribute with farmed salmon, and that few species are expected to beat salmon on this point.

7.4 Ethics, food safety and hygiene issues

The increased attention to food safety issues related to breeding and production has been increasingly pronounced during the last 20-30 years. Results from a survey carried out by the American Food Marketing Institute during 1994, show that approximately 70% of the respondents reported that food safety is a very important factor to consider when buying foodstuffs. (Henneberry et. al, 1998). Some of the explanation for this phenomenon can probably be explained by the increased attention to problems with food safety due to animal diseases (BSE, hog cholera etc.), and bacteriological contamination incidences. Although a similar investigation has not been carried out in Europe, there are strong indications of a somewhat identical consumer reaction to the problem of food scares. As an example the sharp fall in sales of frozen beef burgers during the BSE scandal in 1996 indicate the negative reaction from consumers (Smith et. al, 1998).

Results from a survey carried out in France for Le Monde daily newspaper and Elle weekly magazine in October 1999[9], show that 44% of the consumers are worried about safety for at least one food product. Further, 75% said they would feel secure by a quality label monitored by public authorities.

Another problem that also seems to have caught attention during the last years is the question of genetically modification of animals and plants (GMO), and hence as an ingredient in the fodder. Although bacteriological diseases are quite objective measures of food safety issues, the increasing focus on the problems related to intensive farming has also proved to give rise to the question of "animal welfare" issues and the question of ecological farming.

Drawn from this we confronted the respondents with questions related to both welfare concerns related to fish farming, ecological production of salmon, and use of genetically modified salmon and also in GM products in the fish fodder. The problem is raised along the following three dimensions.

7.4.1 Welfare issue

First, the respondent's is asked to what extent they believe that the concern about the "welfare" of the farmed salmon in the fish farm is an important factor for whether or not consumers will use farmed salmon products in the future. The majority of the respondents reported that the question of farmed salmon "welfare» is not very important for the future development of the market.

There are many explanations for the limited or nil impact of this variable. Most respondents said that French consumers are primarily concerned with the taste, the healthiness and the price of food and less with animal welfare issues. Another frequently mentioned example is the case of chicken: The living conditions of industrially produced chicken have been heavily advertised in the media and the French can not ignore the reality, but at the same time chicken sales do rise. Several (5) respondents also said that French consumers know little about the living conditions of farmed salmon[10]. During the discussions with the respondents it was made clear several times that the French consumers do not regard the farmed salmon that buy in the shop, at the local market of in a restaurant actually is farmed. This, even though they objectively know, deep down, that the fish is not "wild caught" but actually is farmed.

At the other end, three respondents stated that they see this as a potential problem[11], while other three was indifferent to the question. Holding the quantitative results against the open statements given on the subject, the clear impression is that the "welfare" issue is not considered as a potential threat to the market development in France in the near future.

[9] Survey carried out on a 1003 persons sample aged 15 and more, in October 1999.
[10] Furthermore, two respondents claimed that information on salmon living conditions would have no impact on consumption, as those conditions are "acceptable".
[11] of which one mentioned that density (20kg/m3) is one of its required buying conditions

7.4.2 Ecologically produced salmon

To the questions of to what extent the issue of "ecologically produced" food in general and salmon in particular will be an important factor for future use of farmed salmon products, the respondents reported a clear opinion that the "eco- feature" related to farmed salmon is not very important.

As shown in table 7, the majority of the respondents believe the issue of "ecologically produced" salmon is not very important for the future use and consume of farmed salmon

Table 13 The extent to which the issue of "ecologically produced" food in general and salmon in particular will be an important factor for the use of farmed salmon in the future

	Food in general	*Salmon*
Not important	*9*	*11*
Neither/nor	*2*	*2*
Important	*7*	3
Missing	3	5
Total	*21*	*21*

It is noteworthy, though, that the respondents are split in their opinion on the effect regarding food in general. There is no simple explanation for this phenomenon, but a plausible explanation may be the increasingly strong focus on the "food scandals" during the past few years. Commenting on the question pertaining to farmed salmon, the respondents report a more unambiguous attitude toward the question of whether ecologically produced salmon is not a "big issue" for the future market development or not. The majorities (11 out of 16 respondents) believe that ecologically produced salmon is not an important factor for whether consumers will use farmed salmon in the future.

A plausible explanation for this may be that salmon and ecologically produced food in general are conceived as contradictory concepts. This was explicitly stated by several respondents, who are in the opinion that "ecologically produced" food might have a future, while salmon as an "eco-product" has no future. Their opinion is based on the belief that many consumers don't know that salmon is intensively farmed. The same respondents believe that focusing on "ecologically produced" salmon in advertisements salmon would have no or little impact on sales. Several respondents consider that consumers require above all sanitary guaranties and that the label "ecologically produced" adds nothing in this field.

It should, however, be kept in mind that there is a potential niche on the market for these products. No respondents expressed an interest in developing "ecologically produced" salmon, but several said to be working on the concept of "Fully and carefully monitored production[12]".

[12] The concept of "fully and carefully monitored production" was first utilised in agriculture under expression "agriculture raisonnée".

7.4.3 The GMO issue

The third dimension of food safety as regarded from the consumer perspective, is the GMO issue. From a strictly technical/technological perspective the GMO's may be seen as a means of enhancing the productivity of food production. The main concern related to commercial utilisation of the potential is attached to two closely connected problems: the emotional and uncertainty related to extensive use of GMO, and the potential for irrevocable large-scale damages on living species as a result unsuccessful manipulation with the genetic coding. Various aspects of the issue has been raised and extensively discussed in media. Drawn from this one could expect that the consumers and the industry alike have an active opinion about the effect on future use of farmed salmon.

In the questionnaire the respondents is asked to report their opinion on two dimensions of this problem:

To what extent do you believe that the genetic modification issues of the fish and genetic modified ingredients in the fish fodder will affect the future consumption of farmed salmon products in the future?

The responses to the questions are quite clear. The vast majority of the respondents (17 and 13 respectively) believe that these issues will be an important factor for whether the consumers will use farmed salmon or not in the future.

Table 14 The importance of Genetic modification issues for the consumers future use of farmed salmon

	GM of the fish	*Use of GM ingredients in the fish fodder*
Not important	0	0
Neither/nor	1	1
Important	*17*	*13*
Missing	3	7
Total	*21*	*21*

The beliefs about a lack of consumer acceptance of products manufactured from farmed GMO salmon is widely spread among French salmon actors, and starts to be integrated in their purchasing attitudes. The retail/wholesalers said unanimously that they will not introduced GMO animals in their range of products as long as they perceive the strong reluctance of consumers. The manufacturers said that they will not process GMO animals as long as retailers/consumers don't want it.

It appears that the reasons for the lack of acceptance of consumers in GMO products (ethical/emotional aspects pertaining to genetic engineering and the tampering with nature, potential risks on human health, etc.) is basically demands derived from from the end-user.

Moreover, several respondents said that trading GMO animals would inevitably alter their corporate image, and hence affect their sales negatively.

With regards to the use of GMO in fish fodder, a larger number of respondents' (7) had no definite opinions. This issue was considered by some respondents as more difficult to handle and impact on consumers' choices more tricky to appraise than the straightforward issue of GMO salmon. More difficult to handle because today operators have no choice but to buy fish that has most likely been fed by genetically modified soy meal. The issue is more tricky, because the link, as seen by the consumer, between fish feed through the salmon (product) bought in the shop is very loose; some consumers don't even know that salmon is farmed, said some respondents.

Information, communication, and image have been cited recurrently by respondents as key variable for the future demand for salmon. They believe that the negative impact of a negatively biased media focused crisis, i.e. uncontrolled negative information spread to public attention, is much worse for the industry than a true sanitary incidence. Consumers are eager to get information in order to limit the risk attached to their buying decision. Because of the past events, they seem to pay great heed to all messages related to food safety. Two respondents reported that demand for smoked salmon declined in February 2000[13] after the media echoed the theoretical risk of listeria contamination in smoked salmon.

As indicated above the beliefs about a lack of consumer acceptance of products manufactured from farmed GMO salmon may stem from two sources. At the one hand, it is the ethical/-emotional aspect issues who are pertaining to genetic engineering and the tampering with nature. At the other hand there seem to be a pronounced potential for problems related to the credibility of food produced from genetically modified fish, or fish that are raised and fed with fodder containing genetically modified ingredients.

Looking at the complex matter of food safety in general it is interesting to note that the respondents are very engaged with the topic of sanitary risks in particular. To the questions "*which are the most discouraging attributes of salmon*", and "*what attribute do you consider as the main obstacles of meeting the future market needs*", 70% of all respondents mentioned spontaneously "the high potential of a sanitary accident to occur due to salmon consumption". Direct references were made on high content of listeria and dioxin.

This non-ambiguous answer given by French industrialists, wholesalers and retailers must be interpreted knowing that:

1. The study was carried out in January and February 2000, a period during which food safety questions were ranked very high in public opinion. Under the pressure of their buyers and public authorities, a majority of respondents had reinforced their sanitary controls (on input and output), placing these questions at the heart of their concerns,

2. The distance between consumers and food has never been as great as it is today. They don't know where the food come from neither how they have been produced. The brutal intrusion of industrialised agro-foods has deeply affected habits and loosens the traditional

[13] The period is too recent. Sales statistics were not available at the end of the project.

links with food, uprising perplexity especially on sanitary aspects (Montanari). This industrialised country phenomenon might have had a more profound effect on French consumers, to whom "you are what you eat". The media reports that suspicion is today higher then ever. The demand for re-insurance is also reflected in the high performances of quality labelled products.

3. Respondents who expect the results of this study to be made available to the Norwegian industry might have put special emphasis on the safety issues. This project is perceived as an additional vector for passing on the message to Norwegian operators, that more attention needs to be placed on these issues.

7.5 February 2000: specific context

Since 1996, after it was made public that BSE disease was transmissible to human being, the successive sanitary alerts and accidents that occurred in France have received, more than in the past, strong media and public attention. Year 1999 has seen an exceptional repetition of highly advertised food alerts, which have proved to be more or less dangerous for human health. In January 1999, two people died after the consumption of "Epoisses" cheese in which high levels of listeria were identified. In June 1999, imports of chicken and eggs originating in Belgium have been banned after high levels of dioxin had been detected in feed they had been given. A few days later, after tens of people complained about digestive troubles, 50 million cans of Coca-Cola, Sprite and Fanta drinks have been withdrawn from the market. In January 2000, two people died and four got severely intoxicated after a listeria contamination in pork "rillettes[14]". All farmed-on-earth-animal sectors (beef, pork, and poultry) have experienced sanitary alerts and received many echoes in the media, generating some confusion and irrational claims. Drawn from this one might raise the question; what next?

All respondents reported that they have strengthened their internal controls and expect their suppliers to do the same. Not that mandatory sanitary regulations have changed, but the "new approach" introduced in a recent EU directive[15] has reached its full tempo: industrialists and retailers[16] do act responsibly.

[14] Sort of pâté, including solid pieces of meat.
[15] EU Council Directive 91/493 laying down the health conditions for the production and placing on the market of fishery products.
[16] When listeria content is concerned, at production level, the regulation requires zero listeria in 25g of product. Yet, at consumers' level, for raw products including smoked salmon (since 1998) a maximum level of 100 listeria in one gram at the end of the product shelf-life is recommended (Source : Conseil supérieur d'hygiène publique de France, note de service May 1998). The first regulation is applied all over the European Union, the second is specific to France.

8 PERSPECTIVES ON THE FUTURE MARKET DEVELOPMENT

So far some critical factors bearing on the future market development is identified. Drawn from this, the question of how the future market might develop will be addressed. The results presented are based on interviews with industrial actors. In order to set the scene for the following discussion, a pinch of the main pattern of the French consumer's food consumption and buying behaviour in the are added.

The basis for this brief presentation is a combination of a review of selected literature, and interviews with experts on French food habits and consumption[17]. Behind the large diversity of behaviour related to food consumption and purchase there has been identified a set of common feature that explains, or at least, can be used for characterisation and prediction of consumer behaviour. One pertains to an aspect of inherited culture that might be termed tradition. At the other side there are product attributes, such as price and perceived quality. While tradition mainly denotes learned social behaviour and often is related to enduring, relatively strong attitudes toward purchase and use of products, perceived product attributes can to a much larger extent explain situational choice when the consumer is exposed to a range of products offering the same (functional) value. Some sociologists claim, according to Warde (1997), that lifestyle increasingly has become a basis for social identity – displacing class as a central organising principle. The significance of this contention is related to the items identified earlier that characterise the consumers and the major factors that shape future trends. These factors also constitute the framework for the discussion. To assist the memory the factors are repeated below:

Psycographic factors:
- Demographic factors
- Economic-structural factors
- Food safety and environment and ethics issues

8.1.1 Main patterns of food consumption in France

Tradition proves to rank quite highly amongst all decision criteria (Wisner-Bourgeois, 2000). For example, the permanency of higher consumption of fish on Fridays compared to the rest of the week illustrates the attachment to the traditional Christian rule. Traditions are also reflected in the geographical pattern of chilled finfish consumption, being 85% higher along the west coast compared to Eastern provinces (along the German border).

Price is another highly ranked purchase decision criteria, and few purchases will be made if the price level does not give the perception of a good or at least satisfactory deal. The success of supermarkets and more recently the success of hard-discount retailers illustrate this point.

[17] The following remarks are based on their comments and reported works. Unfortunately, there are no sociological works available focusing solely on the specific consumption of seafood in France. A plausible explanation for this may relate to the fact that French consumers are not seafood oriented per se, but they tend on the contrary to prefer meat (Grignon, Wisner-Bourgeois).

Long term analysis of specific food performances often roots changes in relative price alteration[18]. But what is considered as "a good deal" varies greatly from one consumer to another, and also from one period to another.

In this field, a large number of immaterial values attributed to food enter into the picture and influence the final choice. Above all comes the social dimension of the actual consumption of the meal (the eating action) (Credoc, 1998). Eating carries an intense symbolic value. One aspect is that it evokes the connotation of the gathering in a protective group, with family, with friends, for sharing a pleasant moment, in a generous and careful atmosphere. Another aspect is the health issue, which according to the Credoc, is as a highly ranked intangible value in France.

The health issue pertains to a wide set of factors such as the hygiene of the point of sale, good icing of fish desk, information on packaging, etc. In this respect the recent BSE crisis has by no doubt been unfavourable to beef meat image and consumption. The strong reluctance of the French towards GMO does also illustrate the demand for guaranties in this field. A majority of consumers in France believe that product should not be authorized for sale if there is any doubt that it not has been subject to GMO[19].

8.1.2 Availability

Both availability and the diversity of food products have increased significantly. As an example it can be mentioned that hypermarkets today offers about 30.000 food items. When it comes to seafood, the assortment in large hypermarkets of wet fish, sold at the wet fish counter, can reach 120 items. But profusion generates confusion. A survey reported in 1998 revealed that, 35% consumers reported that they had problems with choosing between the different items. In 1990 the response to this question was that 25% of the consumer had problems with choosing between the offerings. Further the same survey revealed that the proportion of consumers who do not find what they want has increased from 32% to 38% (Cofremca, 1998).

8.1.3 Seafood in the French diet

The consumption of seafood is estimated to 28 kg per inhabitant per annum[20], compared to 100 kg of meat (Beef, pork and poultry) in the same period.

> *Finfish consumption is still deeply, consciously or unconsciously, linked to religious rules. Consumption is still higher on Fridays and during the Easter period. Although, the symbolic value of penitence has vanished, fish still carries the idea of should-be-eaten-at-least-once-a-week. Today, the main explanation for this is by and large related to nutritional reasons rather than religious. Fish is*

[18] This is the case for the decline of beef consumption in the early eighties, or the decline of chilled finfish in the early nineties.
[19] In a survey run on internet (no random sample !), 72% of respondents said to be unfavourable to the introduction of GMO in food. Source : planete.org.
[20] 1997 data in FAO food balance sheet

considered by many as the "reason-food" when red meat is referred to as the "sensual-food" (Wisner-Bourgeois, 2000). We are not far from the Middle Age fasten-carnival dichotomy. "Everyone" agrees that fish is more healthy than meat, but it is perceived as having less nutritious value since it is not filling in as much as meat.

An aspect that brings another "burden" to fish as compared to meat is that the price of finfish is perceived to be high in general, and in particular higher than meat prices. This constitutes one of the mains discouraging attributes for further consumption (Ofimer-G3, 1997).

The difficulties to appraise finfish freshness, the lack of indication of origin, and the lack of quality label are mentioned as discouraging attributes. The risk for an unpleasant buy might be high, yet the health risk is perceived as marginal. In a pool run in October 1999, 87% of consumers said to not worry when eating fish, compared to 70% when eating meat[21]. Fish is considered as a "natural" product and as such captures very positive values.

In many respects farmed salmon has a remarkable performance in France. One reason for this is that, salmon belong to French food tradition, not as an ordinary food, but clearly as a high society favourite[22]. As such the product carried, both in the past and still today, a universal image of product dedicated to the rich. In the French conception, the most frequent expression used to qualify the success of salmon is "democratisation": It is now accessible to the "people" and represents today the number one finfish species consumed by the French.

The specific French pattern of three structured and regular daily meals dates back in the late nineteen century. It stems from workers long lasting struggles concerning the organization of their workday and the reduction of work hours and their claims to have a "familial, private and individual life" (Grignon, 1996). This pattern is still valid, with a large proportion of two or three courses (77%) dinners taken at home. In a recent survey it was found that as much as 90% of the families dine at home 5 times a week[23] at fixed hours (Volatier, 1999) All together 84% of the dinners are taken together with all other family members during the week.

8.1.4 Choice of products

Women predominantly choose food products for domestic consumption. Hence, they still perform the function, amongst others, of a gatekeeper who operate as filters for the whole family (Grignon, 2000). Compared to one or two generations ago, women are now endowed with a higher level of education and enjoy a higher employment rate. The first gives them easier access and a better understanding of a larger spectrum of information (Daily newspapers, women magazines, doctor prescriptions, etc.). The second factor stimulates their demand for timesaving products. These higher educated consumers are also more health oriented. Amongst others they represent the group of consumers that are "responsible for" the

[21] « The French and food-risk » IFOP for Elle and Le Monde. Survey run in October 1999 with 1003 persons.
[22] This refers to the 20th century situation. In a more distant past, salmon which was quite abundant in some rivers, was considered as an ordinary food in some regions.
[23] Volatier J.L. (1999)

high increase in yoghurt and mineral water. This is also consistent with the findings of Bourdieu (1984) where he noted that as the income rise the proportion of the total food spending used on heavy, fattening and cheap food declines while that spent on leaner lighter and non-fattening food increases.

8.1.5 Meals structures

One subject that has been most frequently investigated by sociologists concerns the development of new eating habits (snacking, fast food consumption etc.) versus the traditional meal model. Although the fast food consumption has increased somewhat, the traditional three meals a day rhythm is still not challenged (Grignon, 1999). A study on the conditions of life among French University students confirms the relative stability of the present-day French pattern of meals. Some key findings are; they do not skip meals, they eat only small to moderate amounts of fast food, and don't practice "snacking"[24]. Since the students are both young and destined to belong to the growing upper-middle classes, such a survey casts some light on the future evolution of French food habits". Yet, Poulain (1996) propose a somewhat different perspective indicating that the classical meals are loosing grounds and the food intakes all-day-through are developing, especially in the 30/40 years old, urbanised population. The snacking, outside the traditional meal periods, is still mainly sweets (cereal bars, chocolate, fruits, etc.). However there seems to be some agreement that the "grazing" – or "Americanisation"- of food pattern meets strong resistance in France, yet somehow mainly due to strict social norms[25]. This is further supported by Volatier (1999) who suggest that the resistance of the French model to the American model is mainly explained by important social role of meals in France as the "collective dimension of eating as fundamental".

The social catering sector does also serve three main meals a day, breakfast, midday and evening meals. The meal function is slightly different from the private sphere, though. Not surprisingly, the most important as concern volume is the midday meal. As seen from the perspective of the caterer, the main emphasis is on low price, value and rapidity (Gordon, 1998).

8.1.6 Meal preparation

Time spent for making food decline over time, due to lack of time of many working women, the drop in interest in this activity, considered by some as of minor interest, the increasing supply of time-saving items. From 1995 to 1997, time for making food has decreased from 42 minutes for weekday dinners (with no guest) to 36, and from 60 minutes to 44 during week ends. There are, however, strong regional differences. When in South western France (Aquitaine, Midi-Pyrénées) 42% spend more than 30mn for taking the evening dinner, in

[24] The share of meals skipped to 2,6%, the share of meals taken in fast food was estimated to 1,6%, and meals made of snacks 3,3%. Source: Grignon (1996).
[25] The social norms on meals are quite strong : a real meal is a three courses meal for 62%, snacking or eating outside meal period is an a health point of view negetive for 81% (Poulain 1996).

Northern France only 19%. According to Volatier, these differences are linked to traditions and not to changes in the young generation attitude.

I the traditional French home, the housewife have normally been prepared the meals (Wood, 1995). It is worth noting that men's participation of cooking is a recent trend in France. What used to be the former domain of the women, is now increasingly shared by men and children. In 1997 47% of men said to never cook, compared to 50% in 1995 and 54% in 1988 (Volatier, 1996; Wood, 1995).

Obviously, there has still not been carried any studies of the effect of the reduced work week from 39 hours to 35 hours. Intuitively, this large-scale social scheme may be seen as a means of reducing housewives time constraints on traditional activities such as meals preparation.

9 TOWARD THE FUTURE MARKET

During the period from the introduction of farmed salmon to the French market in the late 1970s and till today there has been a tremendous development. At the one side there has been great changes in the intermediate market, which are the buyers facing the Norwegian and other suppliers of farmed salmon. At the other hand the product itself has seen a grand consumer acceptance in the market. The probably single most influential factor to which the wide use of farmed salmon can be attributed to is the improvements in efficacy and effectiveness in production – which in turn has enabled the suppliers to reduce the price. This has again, moved salmon (salmo salar) from being a (very) expensive product to a relatively affordable and accessible food product for the average French consumer. Some would also claim that there has been a corresponding move for farmed salmon on the downward slope on the "vanity" scale from being an exclusive product for special occasions to a more common item if not an ordinary everyday product today.

9.1 The main factors affecting future use of salmon

The move on the "vanity scale" toward a broader use and a wider potential customer base has opened a whole array of market possibilities for the industry. This is confirmed through the survey as one of the main findings related to the future areas of opportunities for farmed salmon. The development potential should, however, be divided in two main segments;

- The retail sector
- The catering sector

9.1.1 Growth for salmon in the retail sector

Within the retail sector the highest growth potential for farmed salmon appears to be within the ready-meals sector and as a chilled plain product in various forms (fillets, steaks, cutlets etc). It is interesting to note, though, that there are expectations for further growth across all product forms, including smoked salmon and frozen plain salmon. Further, farmed salmon is increasingly used not only as a main ingredient, but also as a minor ingredient or additive to a product (i.e. frozen "stir-fry" meals, patés, quiche etc). This is especially valid for the ready-meal segment. The different uses will also increasingly pave the way for greater differentiation along two dimensions; segmentation of retail markets and product use (requirements) within segments.

From the buyers' perspective, that is supermarket chains and other retail outlets, and the processing industry, the biggest growth potential is related to the changing consumer needs and preferences. The main new demands are for diversity and convenience products. New product development is also a priority area among the industrial actors.

It is worth mentioning that the industry and retailers alike emphasise that the farmed salmon per se has no intrinsic advantage in development of new products in comparison with other

fish species. The main strength of farmed salmon is related to the continuous availability and possibilities for stable deliveries of a consistent quality product. Although this is an important prerequisite for the industry in general, this is especially important for the fresh product segment. The continuation of the growth is further supported by the general positive image of salmon as perceived by the consumers. This appreciation seems to survive despite of the drop on the "vanity" scale. The lower price is, however, seen as a requirement for continuous growth in the market.

9.1.2 Growth for salmon in the catering sector

The catering sector consists of two main segments, that is the commercial catering outlets and the social catering establishments. As for the retail sector, the catering sector does also promise significant growth in the use of farmed salmon during the next ten years. In the commercial catering sector, the main growth potential is expected within new uses of salmon in entrees (other than smoked salmon), but also as main courses, yet to a more limited extent[26].

The social catering stands out as the "unexplored" market segment for farmed salmon, with a high potential for farmed salmon. The main potential for volume consumed is as a main course served in hospitals, schools, prisons, and in the army etc. As a " something between" between the commercial and the social caterers are the company canteens. These establishments also represent a significant potential market, although smaller, than the social catering establishments, with 500 million meals served in 1998.

The main key to open these markets for salmon producers is the drop on the "vanity" scale and a corresponding drop in price "per-dish" level. The potential volume in the social catering sector is large considering the high number of meals served. It is worth noting that the number of meals served is not expected to increase significantly over the years to some. In any case the market represent a big potential. Yet, being so-far unexplored, this market segment represents a huge potential provided that the industry is able to produce cheaper-per-unit salmon based meals. The possibilities seems to exist considering the drop in salmon production of farmed salmon, but also through a more extensive use of salmon meat left unutilised from other processes.

9.1.3 Potential obstacles/inhibitors for market growth

The description of the future market possibilities as outlined above can at first glance seem quite rosy and straightforward. There are, however, some potential problems that can inhibit the expected growth. At the one side there are supplier-related factors. These are primarily "standard" problems of suppliers' ability to deliver products (stable volumes over time and a consistency in quality) that match the positive image of farmed salmon, as perceived by French consumers. At the other side some impeding factors that can be met all through the supply chain have been identified. The single most frequently mentioned factors are the risk

[26] Salmon is already quite well introduced in the average-price commercial catering segment.

for contamination of bacteria, primarily listeria, and/or presence of undesirable substances such as dioxin and antibiotics.. The high media coverage of food scandals during the last years have brought the industrial actors on their toes in order to avoid further negative speak of their products in the media. There is little doubt that any incident of contamination can be subject to a hype-up in the media with subsequent slowdown in growth, or even distrust to the product.

This latter aspect is one other potential problem with that can harm the salmon industry on a long-term basis. The fact that the French consumer, despite knowing, seems to evade the fact the salmon they normally buy in the shop, at the market or in the restaurant is farmed salmon. A strong focus on contamination and food scares related to farmed salmon can potentially create distrust to the production of farmed salmon and subsequently to (farmed) salmon as a generic product.

This latter aspect leads us to the other side of food safety and hygiene issues and ethics in production (farming). The survey reveal that welfare issues related to farming of salmon is not considered to have significant impact on the future market development for farmed salmon in France. The same opinion albeit with somewhat less unity, was revealed on the question of ecologically produced salmon. Although the relatively clear response on these issues most likely will prove to hold good over the next ten-year period, the two factors represent labile structures in people's minds both touching on the notion of consumer's emotions. There are many examples of how the emotional appraisal of a case (i.e. intensive breeding of pork) has discouraged consumers to purchase these products. As the consumers increasingly are getting a distant apprehension of how breed food is brought up and produced, one might well foresee a reluctance to accept intensive farming. Again the question of ethics, sustainable breeding, and ecologically produced food might gain momentum among the consumers.

One of the means of meeting the demand for food safety and information in France is the introduction of various quality labels. In some respects the second half of the twentieth century is characterised by deep changes in the food supply chain, decline of rituals (fasting and carnival periods), loss of cultural dimension, and standardisation. While the origin of food products were rather obvious in the past, the production processed was known and quality easily appraised, the consumers seems to know less today about the origin and quality of the products. This lack of basic knowledge leaves room for uncertainty, loss of confidence and even scares, and creates a sheer need for information.

In order to try to comply with the needs and expectations of the consumers the quality labels has been introduced. Son far, the labels, according to the industrial actors themselves, has been a success. Below are examples of these labels and their relative growth in the market (volume).

Table 15 Performances of Quality labelled products in 1997 and 1998

Quality Label	*Definition*	*Sector*	*Production development 1998/1997*
	The Label Rouge logo guarantees that the product is of superior quality. All along the production and processing steps severe quality and taste controls have been undertaken. This is one of the most known and appreciated quality label by French consumers. When seafood is concerned, one find this label on chilled Scottish salmon, smoked salmon, oysters, farmed seabass, canned sardines.	Fruits and vegetables All seafood Of which salmon All meat Beef Chicken Pork	+10,5% +18,2% +23,8% +2,2% +0,7% +1,6% +1,6%
	AOC identify a close link between the product, a region and the traditional local know-how. It qualifies wines, diary products, olive oil, fruits and vegetables.	Dairy products Fruits and vegetables	+4,5% +67,2%
	The logo Atout Certifié Qualité guaranties a regular quality distinct to standard products quality (superior).	Fruits and vegetables Meat Chicken Eggs	+13 (number of units in 1998 compared to 1997) +2 +8 +2
	The AB logo « organic logo » guaranties that the production process used is environment friendly. Producers must follow strict terms of references.	Number agricultural farms Surface exploited Milk Eggs Chicken Pork	+12,2% (98/97) +35,8% (98/97) +19% (97/96) +50% (97/96) +135% (97/96) +39% (97/96)

The growing concern about food safety, increasing demand for quality guaranties, and high consumer awareness on these issues make demands for the industry to develop a consistent production and processing strategy that meet future consumer demands on this topic. Through the survey it appeared clear that in professionals' mind, to do and as importantly to let know what is done, will play a true role in the sector competitiveness.

9.1.4 A question-mark for the future market development

The main "joker" in the development of the future market for farmed salmon is presumably the problem of genetic engineering. The contemporary French consumer does in all likelihood not have any suspicion of farmed salmon being raised on fodder containing genetically modified ingredients, such as GM soybeans. Notwithstanding, there is a strong negative opinion about the use of GM ingredients in the salmon fodder among the trade and industry in the French seafood business. Further, the respondents in this survey report an unambiguous

opinion about the negative effect that any genetically modification of the farmed salmon will have on the future acceptance of farmed salmon.

Nevertheless, several scientists in salmon producing countries, amongst other Norway, are eagerly promoting the advantages of genetic modification (GM) of for instance farmed salmon. The obvious mismatch between the general opinion of the consumers and the trade and industry calls for attention and caution. The issue of GM is at present far from clarified, and doubts about the “naturalness” of the farmed salmon that is offered to the customers may therefore severely harm the development of the future consumption.

Although most salmon farmers claim to not use any fodder containing GM ingredients, the trade and industry are asking for better labelling of the product along with a system for traceability. All-in-all one impression is that there will be an increasing demand for increased communication attached to the tangible product (the fish). In other words, the relative significance of the communication part of the product will in all likelihood need to be improved.

The potential for growth and the obstacles and uncertainties are closely related. The positive development hinted at in the two first paragraphs may well be discontinued if one or more of the obstacles mentioned are brought up. Provided that the actors at all levels in the industry are taking the potential hindrances seriously, one would be inclined to adhere to the view that the industry will see a continuation of the market penetration and growth in new segments rather than a stagnation or shortfall in the French market.

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