

Fish consumption within the Finnish catering market

Asmo Honkanen

Finnish Game and Fisheries Research Institute
P.O.Box 202
SF-00151 Helsinki, Finland

Abstract

Catering establishments in Finland are very heterogeneous (restaurants, hotels, personnel canteens, hospitals, schools etc.). These kitchens annually prepare over 600 million meals with the total number of kitchens at over 20,000.

The objective of this study was to estimate quantity and frequency of fish consumption within the Finnish catering market. The main purpose was to estimate total consumption of fish while concurrently estimating consumption by fish species and product. A further objective was to analyze fish purchasing behavior and thereby increase the knowledge base regarding the structure of the Finnish catering market.

This study was started in 1988 and the latest data concerns the year 1995. The sample size of kitchens has been varied from 1,750 to 2,000. Kitchens were randomly selected from the Directory of Catering Kitchens. A mail survey was used to collect the data. A mail survey, which was used to collect data, comprised of questions regarding fish consumption habits and attitudes towards for example its quality and price.

The total consumption of fish and fish products in the Finnish catering market is approximately 10,000 tons per year. Only one third of total consumption is fresh fish. Sixty per cent of the total consumption is domestic fish of which almost three fourth is Baltic herring (*Clupea harengus membras*) and rainbow trout (*Oncorhynchus mykiss*). Of the imported fish and fish products used by the catering sector, some 70 per cent is frozen fillets and other frozen products. The results of this study indicate that catering kitchens are willing to increase their fish consumption provided that deliveries are regular and quality is high. Of the domestic fish species, rainbow trout and Baltic herring currently best meet these requirements.

Keywords: Fish consumption- catering, market, mail survey.

1. Introduction

The basic knowledge of consumption habits within the Finnish catering sector particularly in regards to fish consumption is quite limited. Fish farmers, fishermen, fishmongers, and the fish processing industry need information on how fish consumption is divided between different species and product groups in order to better plan their activities. They also need to know where catering sector enterprises purchase their products and which facts affect their purchasing behavior.

Catering markets in Finland are very heterogeneous (restaurants, hotels, personnel canteens, hospitals, schools etc.). In Finland there are about 15,000 catering kitchens which prepare meals regularly. Catering kitchens served over 630 million food-portions in 1995, which breaks down 124 meals per inhabitant. The total value of the Finnish catering sector is about 22 billion FM (Finnish marks) (A.C. Nielsen 1995).

Knowledge about the health giving properties (e.g. Kromhau et al. 1985, Phillipson et al. 1985, and Bönaa et al. 1990) and dietary lightness (e.g. Gallaway 1985) offish has been improved the appreciation offish products. While this has created an advantageous atmosphere in which to raise the consumption of fish, the basic requirements and desires of consumers are still essential for the purposes of research, development and marketing.

There have been remarkable changes in Finnish fish markets during the period of this study. Imported fresh fish and unprocessed fish for the smoking purposes required until recently, permission and fees. Restrictions for fresh fish species other than salmon and Baltic herring were removed in 1990. When Finland joined the EU in 1995, the restrictions were released. Commercial fishing of Baltic herring decreased in the beginning of the 90's after fishing other than human consumption diminished. The occasional export problems of Rainbow trout have resulted in serious pressure to find new domestic markets. As a result, large promotional campaigns have been carried out for both rainbow trout and Baltic herring.

2. Material and methods

This study was started in 1988 and the latest data concerns the year 1995. The sample of kitchens has varied from 1,750 to 2,000. Kitchens were randomly selected from the Directory of Catering Kitchens (A.C Nielsen Finland). Catering kitchens were arranged in the directory according to location, size and category of use. Those units, which do not prepare their own food, were not selected. A mail survey was used to collect the data. The survey comprised questions regarding fish consumption habits and attitudes towards for instance its quality and price. The questions, which were concerned with consumption of fish, relate to the previous year, but the questions based on opinion relate to the present time.

Since the group of sampled kitchens was so diverse, a stratified sampling method was used. A food portion served daily was the basis for stratified sampling. Results were expanded to comprise all catering establishments in Finland. In 1995, the response was about 50 per cent, which was slightly lower than the previous time. One of the major reasons for the rather low response was the time of the survey; because of technical reasons the most recent mail survey was done in the summer.

2.1 Background variables

The total number of catering establishments has been quite constant during the period of this study. More than half of the Finnish catering establishments are in the private sector but public sector provide around 60 per cent of the total number of food portions served. The number units, which serve over 500 food-portions daily, is below seven per cent. However, they provide over 40 per cent of the total number of food portions. The biggest separate category is made up of the kitchens in schools of various kinds. Background variables are shown in tables 1-2. (A.C. Nielsen 1995).

Table 1. Total number of catering establishments and food portions (million portions) per size category in the years 1988, 1991 and 1994 (Source: A.C, Nielsen Finland).

SIZE CATEGORY (portions/day)	TOTAL NUMBER			FOOD PORTIONS (million portions)		
	1988	1991	1994	1988	1991	1994
Over 2,000	64	64	57	75.0	73.0	55.4
1,000 – 2,000	221	239	222	79.9	185.0	74.4
500 - 999	706	716	697	113.5	116.7	114.2
200 - 499	2314	2286	2080	183.9	179.5	163.9
100 - 199	3052	3200	2979	114.4	120.0	107.9
50 - 99	3 302	3485	3545	60.5	64.1	63.7
1- 49	5 535	5593	5683	36.6	37.8	40.5
No portions	2585	2763	3465	-	-	-
Total	17779	18 346	18728	663.8	676.1	619.9

Table 2. Total number of catering establishments and food portions (million portions) per category of use in the years 1988, 1991 and 1994 (Source: A.C. Nielsen Finland).

DIVISION CATEGORY	TOTAL NUMBER			FOOD PORTIONS (million portions)		
	1988	1991	1994	1988	1992	1994
Bar, cafe	5 198	5391	6211	72 5	71.5	71.7
Schools	3917	3783	3359	150.6	149,7	139.0
Restaurant. hold	2618	3078	3497	100.7	100.7	88.3
Personnel canteen	2396	2181	1 867	82.9	77.8	65.5
Day nursery	1593	1 808	1 668	38.9	44.0	40.6
Old-age/children's home	915	987	1 033	60.6	68.9	64,2
Trade colleague	710	694	693	52.0	56.0	55.3
Hospital	340	337	314	77.2	76.3	65.5
Other establishments	92	87	86	28.4	31.7	29.8
Total	17779	18346	18728	663.8	676.1	619.9

3. Results

Seafood meals were served in almost every catering establishment. In 1994, only six per cent of the catering establishments made no fish portions available. The total number of those units which served fish portions were over 14,000 (table 3).

Table 3. Seafood meals served by the catering establishments in the years 1988, 1991 and 1994.

FISH PORTIONS	1988	1991	1994
Fish portions served Number of units	97.3 % 14792	98.4 % 15329	94.1 % 14369
No fish portions Number of unity	2.7% 402	1.6% 254	5.9% 894
Total Number of units	100.0 % 15,194	100.0 % 15,583	100.0 % 15,263

Total amount of fish and fish products consumed within Finnish catering kitchens was approximately 11 million kilograms in the year 1994. The share of fresh fish was around 35 per cent from which the biggest part was fresh fillet. The share of frozen fish was over 40 per cent from which around 12 per cent were partially prepared. The share of prepared fish was about 7 per cent (table 4).

Table 4. Total amount of fish and fish products consumed within Finnish catering kitchen in the years 1988, 1991 and 1994

FISH MATERIAL	1988	1991	1994
Fish/uncleaned	8,1 %	5.4 %	6.0 %
Fish /cleaned	0.3 %	8.0 %	7.8 %
Fresh/fillet	18.4 %	20.7 %	21.4%
Frozen/cleaned/fillet	28,6 %	32.8 %	31,0 %
Frozen/cleaned/fillet	14.3 %	11.5 %	12.4 %
Canned	5.1 %	4.9 %	5,7 %
Prepared fish	7.5 %	8.8 %	12.4 %
Salted/seasoned	3,4 %	3,1 %	3.4 %
Smoked	3,6 %	3,7 %	3.5 %
Other	0,7 %	1.1 %	1.9 %
Total	10.9 mill. kg	10.0 mill. kg	11.0 mill. kg

Total consumption of domestic species was around 6.4 million kilograms in 1994. In the Finnish catering sector, the amount of domestic fish consumption was

around 60 per cent of the total, of which almost three fourth was rainbow trout and Baltic herring (table 5),

Table 5. Domestic fish consumption within catering sector in the years 1988, 1991 and 1994.

Fish Species	1988	1991	1994
Baltic herring	35.4 %	34,4 %	29.8%
Rainbow trout	30.7 %	44,3 %	43.3 %
Vendace	9.0 %	3.3 %	3.3 %
Whitefish	8.2 %	7.2 %	6,5°.%
Salmon and trout	5.1 %	2.7 %	6,1 %
Pike	4.1 %	2.4 %	2.7 %
Pike-perch	2.4 %	1.1 %	3.0 %
Burbot	1.7 %	1.2 %	1.0 %
Perch	1.1 %	1.3 %	2.9 %
Other fish species	2.4 %	2.1 %	1.4 %
Total	6.5 mill. kg	5.8 mill. kg	6.4 mill. kg

Total consumption of the imported fish and fish products was around 4.4 million kilograms in 1994. In the Finnish catering sector, over two thirds of imported fish consumption was frozen and only 10 per cent was fresh (table 6).

Table 6: Consumption of imported fish within the catering sector in the years 1988, 1991 and 1994.

Imported fish	1988	1991	1994
Frozen	76.0 %	74.6 %	68.1 %
Canned	11.3 %	11.7 %	15.4 %
Other processed products	9.2 %	8.6 %	7.1 %
Fresh	3.5 %	5.1 %	9.4 %
Total	4.4 mill kg	4.i mill kg	4.4 mill. kg

In 1995, the most important sources for domestic fresh fish were wholesale suppliers. There were around 12 per cent of those catering establishments, which preferred fresh fish bought directly from fishermen or fish farmers. The number of units, which did not use fresh fish at all, was around 7 per cent (table 7).

Table 7. The most important purchasing place for the domestic fresh fish in the years 1992 and 1995.

Purchasing Place	1992	1995
Fish wholesalers	37%	34%
Chain store	19%	19%
Fish market or fishmonger's	7%	8%
Retail store	21%	22%
Fish farmer	6%	6%
Fisherman	6%	6%
Other purchasing place	4%	5%
Total	100 %	100 %

Freshness of fish, reliability of the deliveries, and constant quality were the most important matters which affected the final purchasing decision. The location where the fish were caught was less relevant to the buyer (figure 1.)

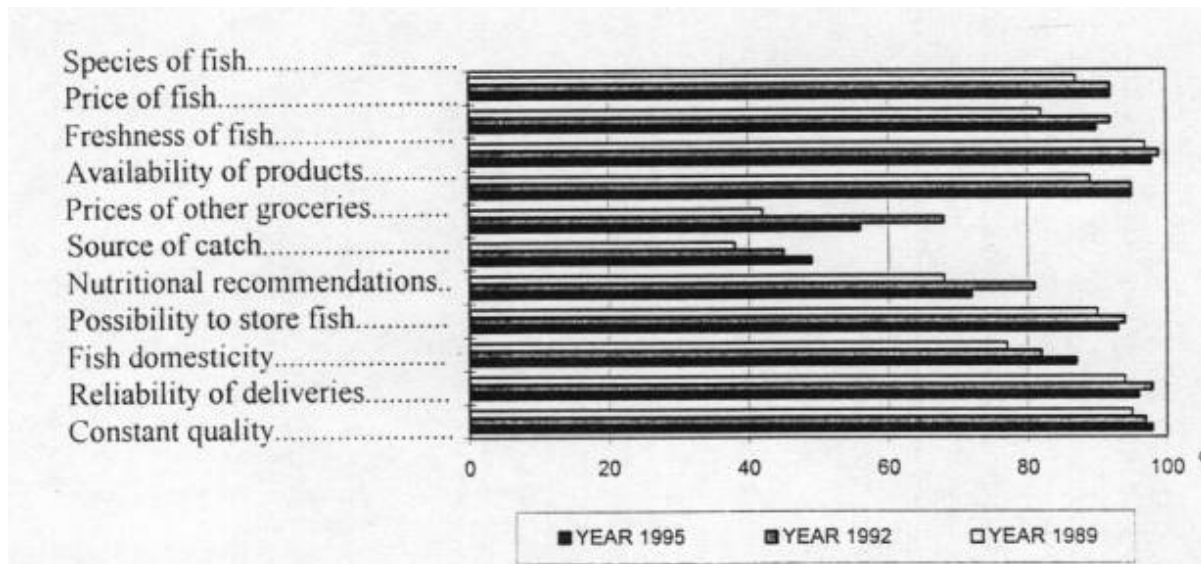


Figure 1. Matters which affect the final purchasing decision (per cent that are of the same opinion of the statement).

"Fish is healthy and customers knows it", "fish is a versatile raw material" and "more seafood meals need to be served" were the most unanimous claims by catering establishments personnel. There were a lot of different attitudes toward claims: "Seafood meals fail often". "Personnel do not want to work with fish" and that "the quality of fish is often poor" (Figure 2)

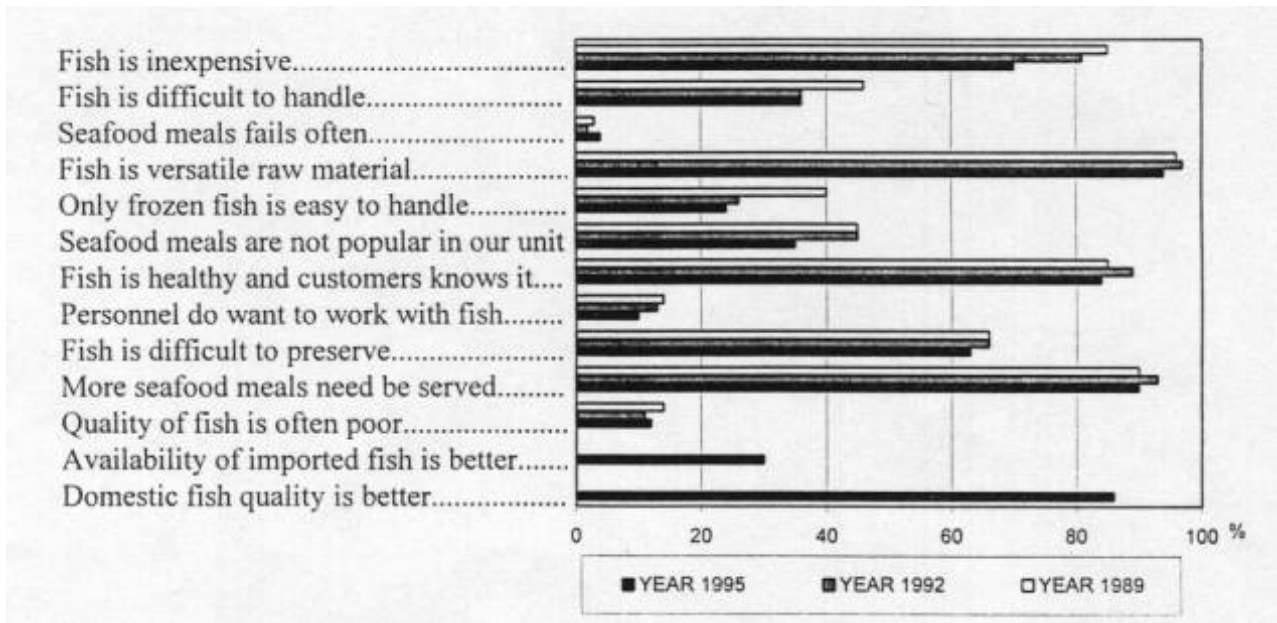


Figure 2. Personnel attitudes towards claims which are connected to fish (per cent that are of the same opinion of the statement).

More than half of the catering establishments were of the opinion that availability of domestic fresh fish was good or excellent. Around 13 per cent of kitchens had the opinion that availability was poor (table 8).

A very common opinion was that domestic fresh fish quality was good. Only one per cent of the replies had the opinion that domestic fresh fish quality was poor (table 9).

Table 8. Availability of domestic fresh fish within catering establishments in the years 1992 and 1995.

Fresh Fish Availability	1992	1995
Poor	12.9%	12.8 %
Fair	31.5%	27.9 %
Good	43.9 %	47.3 %
Excellent	6.9 %	7.0 %
No opinion	4.8 %	5.0 %
Total	100.0 %	100.0%

Table 9. Quality of domestic fresh fish within catering establishments in the years 1989, 1992 and 1995.

Fresh fish quality	1989	1992	1995
Poor	2.2 %	1.2 %	0,8 %
Fair	23.2 %	22.7 %	15.1 %
Good	57,7 %	61.1 %	68.4 %
Excellent	8.3 %	8.3 %	9.7 %
No opinion	8,6 %	6.7 %	6.0 %
Total	100.0 %	100.0 %	100.0%

About half of catering had the opinion that favor of fish portions was good or excellent. Around 11 per cent of kitchens had the opinion that favor was poor (table 10).

Table 10. Popularity of the fish portions served by the catering kitchens in the years 1989, 1992 and 1995.

Popularity of fish portions	1989	1992	1995
Poor	116.0%	14.4%	11.4 %
Fair	144.0%	43.0%	37.8 %
Good	132.0%	33.3 %	38.9 %
Excellent	8.0%	8.8 %	10.5 %
No estimate	**	0.5 %	1.4%
Total	100.0%	100.0%	100.0%

** not a alternative in year 1989

4. Discussion

The amount of fish consumption did not changed very much during the period of this study, On the oilier hand there have been changes within the structure of fish consumption. Although most Finnish consumers use self-caught fish, they no longer want to purchase uncleaness fish as much as before. Household fish consumption has an indirect connection to the catering sector and there have been forecasts that household altitudes and habits will direct the catering kitchens activities more and more in the near future.

Around two thirds of the catering sector total consumption is processed fish. About 60 per cent are from a domestic source. Of the domestic fish around three fourth are rainbow trout and Baltic herring. Those domestic species are suitable for the catering kitchen purposes mainly because of good availability but also because there has been a lot of product development. The fact that rainbow trout and Baltic herring are also the most purchased fish species by households, is partly due to the shoppers' habit of buying fish and fish products at the same store where they buy their other food supplies (Honkanen, 1993).

Potential uses of whitefish have been unproved since different kinds of fish products, such as ground fish came to market. Whitefish is suitable for processing purposes and therefore increases profitability (e.g. Setälä, 1995). Usage of vendace could be higher since there is a growing demand that the supply has not met. Salmon and trout are mainly used in restaurants as .1 seasonal product. Use of perch and other non-salmonid (except Baltic herring) is rather small taking into account the entire catering sector fish consumption. To increase this usage, there must also be improvement made in the availability. In last few years, there have been some experiments and studies, that relate to proper gathering and the processing of perch (Setälä et al. 1996).

The personnel of the catering establishments have a remarkable role in influencing, through their customers, the eating habits and diets of virtually the entire nation. There seem to be two different kinds of attitudes amongst the personnel: First, there are the visible attitudes, which usually are very positive and relate to common attitudes. Second, there are the invisible attitudes which are more individual and they can be totally different than the visible ones. Negative attitudes towards fish are usually the invisible ones and can be reflective of the person's own experiences as a private consumer.

The price level of fish and fish products seems to be quite reasonable. Personnel attitudes towards a favorable price of fish have been diminishing slightly after Finland joined the EU. This might be a consequence of lower prices of fish substitutes. Another effect of the EU seems to be connected with the pattern of fish imports, as the amount of imported fresh fish has increased after the restrictions were removed in 1995. The other possible effects of the EU which relate to consumption patterns are not clearly visible because the consumption pan of the survey relate to the year 1994.

Since the catering sector consist of very diverse establishment, it is obvious that their requirements and facilities vary greatly. Purchasing sources are basically determined according the location, size and category of use. When large units use only chains of stores and wholesalers as source, smaller units use also retail stores. The price of fish is not the decisive factor when the final purchasing decision is made. Rather the buyer wants to be assured of reliable delivery in order to be able to make long range plans. The final purchasing decision is a complicated event which is strongly influenced by the personnel's own opinion as well as commonly appreciated attitudes. Demand of fish and particularly willingness to pay issues like safely and quality requires more discussion and different kind of methods for analyzing this matter (e.g. Wellman 1990, Wessells and Anderson 1993, Schutz and Judge 1984)

Since almost all catering establishments use fish in one way or another the potential increment must be found by increasing the share of seafood meals in the daily food portions. Personnel canteens and restaurants have a good opportunity to increase fish consumption. This, however, is depended on high quality, regular deliveries, and a versatile supply. Furthermore, the suppliers should take into account that the retailers of food services no longer wish to maintain their own stores but want frequent deliveries of fresh goods.

5. Acknowledgements

The period of this study has been rather long and there have been many co-operative partners to whom I want to give my thanks. Especially I would like to

thank all the members of the entering establishments who took part in this study. Without funding by the Finnish ministry of agriculture and forestry this study would not have been possible to its present extent.

References

A.C. Nielsen Oy 1995. Nielsen Finland Newsletter 2/95, Espoo, 4 p.

Bönaa, K.H., Bjerve, K.S., Straume, B., Gram, L.T. ja Thelle, D. 1990. Effect of docosahexaenoic acids on blood pressure in hypertension. A population-based intervention trial from the Tromsö study, N. Engl. J. Med. 322 (12): 795-801.

Caltaway, W.C. 1985. Nutrition. J. Am. Med. Assoc. 254 (16): 2338-2339

Honkanen, A. 1993, Kotitalouksien kalankäyttö. Hushaans användning av fisk. - Suomen Kalankasvartaja-Fiskodlaren 22(4):4-7.

Kromhaut, D., Bosschieter, E.B. ja Coutander, C- 1985. The inverse relation between fish consumption and 20-year mortality from coronary heart disease. N. Engl. J. Med. 312 (9): 1205-1209.

Phillipson, B. E., Rothrock, D.W., Connor, W.E., Harris, W.S. ja Illingworth, D.R. 1985. Reduction of plasma lipids, lipoproteins and apoproteins by dietary fish oils in patients with hypertriglyceridemia. N. Engl. J. Med. 312 (9): 1210-1216.

Schutz, H. G., and Judge, D. S. 1984. Consumer Perceptions of Food Quality, Food Science and Human Welfare. Proceedings of the Sixth International Congress of Food Science and Technology. Research in Food Science and Nutrition (4). Boole Press Limited, Duplin: 229-242.

Setälä, J. 1995. Profitability of filleting whitefish (*Coregonus lavaretus* L.s.l). Arch. Hydrbiol, Spec. Issues Advanc. Limnol. 46. p.443-451. July 1995 international Symposium on Biology and Management of Coregonid Fishes.

Setälä, J., Salmi, P., Muje, P., and Kayhko, A. 1996. The commercial utilization of small perch (*Perca fluviatis*) in Finnish inland Fisheries, 20 p.(manuscript)

Wellman, K. F., 1990, Chicken of the Seas: The U.S. Consumer Retail Demand for Fish Products. Ph.D thesis. Economics. University of Washington. 225 p.

Wessells, C. R. and Anderson, J. C. 1993. Consumer Willingness to Pay for Seafood Safety Assurances: Implications for Seafood Labeling and Public Policy. The University of Rhode Island and Oregon State University research paper series- 25p.