

## Marketing aspects of functional canned food industrial products

**In our research we have surveyed the consumers' preferences and attitudes toward canned foods as well as expectations of possible new products. Moreover, we have determined the target groups of possible new products with the help of factor- and cluster-analysis.**

**Hungarian consumers have a demand for canned foods with beneficial health effects, that is the reason why we recommend to develop so-called health protective products. We have surveyed the consumers' acceptance of possible functional ingredients and the importance of their effects on health in order to help the possible innovation of these products. Our research shows that Hungarian canned food industrial enterprises would be able to step forward to reach a strong position by producing functional canned foods.**

*Keywords: canning industry, consumer needs, functional food, product-innovation, marketing research*

### INTRODUCTION

In the past decades the Hungarian canned-food industry, as an important sector of the Hungarian food industry, has achieved great successes on the export markets. However, during the teetering of In the past few years as nowadays too the Hungarian canned food industry had to face several difficulties. Several problems had to be solved from raw material production through processing to selling. Probably in recent market competition the biggest challenge is to keep up consumers' interest in these products (Lakner és tsai, 2007).

Canned food producers have started an effectiveness competition in the whole world to keep export markets. This competition is a big challenge for all canned food industrial companies. A solution could be for them to satisfy the consumers' needs at the possible highest level, if they are able to increase innovation according to consumers' needs.

Several innovation trends have been formed in food industry and in the development of food products; functional food conception is one of them. Producers of functional foods try to persuade their consumers by ensuring favourable health effects of these foods. The definition which is accepted in the European Union declares that "a food can be regarded as functional if it is satisfactorily demonstrated to affect beneficially one or more target functions in the body, beyond adequate nutritional effects in a way which is relevant to either the state of well-being and health or the

reduction of the risk of a disease” (Diplock et al, 1999). However, functional foods still do not possess a definition which is accepted in all concerned countries, so we can only estimate the size of the market and its increase. Moreover, experts state that the growth of the functional food market is 2-3% higher than the increase of the whole food market (Verbeke 2005). This means that the growth of this market is two-times bigger than that of the food market which increases with 2% a year. According to analysts’ expectations, the functional food market is going to increase in the future and it could reach a 5% share in European food market. They are not expected to come mass-products, but they are going to create a kind of “multi-niche” market with a big variety of products, but in a limited volume and only with few food products produced in a big amount (Menrad 2003).

So the market of functional foods represents a very attractive market segment for all the food industrial producers. The market is ruled by big companies because these enterprises are able to finance the cost of the necessary significant marketing activity. However, small and medium sized enterprises can be found on the market – although their number is small – which produce for niche markets of functional foods, or they sell “me-too” products following the big companies’ product innovation (Hüsing et al. 1999).

It is important to know for food-innovators that the rate of unsuccessful products is very high in the case of functional foods. According to experts’ estimations, producers need to withdraw three of four newly launched products within two years (Mehler 1998). Hence, in such an underfunded sector, which is struggling with serious problems, it is particularly important to develop products judiciously with significant preparation. Companies should know the consumers of their products, their needs and the market opportunities, etc. Some consumer needs are already well-known due to earlier researches:

„Several innovation trends have been formed in food industry and in the development of food products; functional food conception is one of them.”

1. *Functional development is more favourable if the developed basic foods are judged more beneficial for health than if they are judged as “unhealthy”.*

Several researchers and researcher teams have proved that the judgement of those functional foods is better, the basic products of which are judged as “healthy” foods (van Kleef et al, 2005; Urala 2005; Ares és Gámbaro 2007; Siegrist et al, 2008).

2. *Nowadays for the consumers taste of the product still seems more important than its healthiness.*

Several researches have stated (Jonas és Beckmann 1998; Urala 2005) that sensory attributes of foods, especially the taste of the product is one of the most important point of view during purchasing. Verbeke (2006) asserts that it is “a highly speculative and risky strategic option” to expect that consumers will make sacrifices in product’s taste for its beneficial effect on health. The product with beneficial effect on health could be successful if it has a good taste and its consumption is convenient (Bleiel 2010). According to Szakály and associates (2008) Hungarian consumers put a bigger emphasis on the products’ taste: 86% of them are not willing to compromise on the products’ taste for its beneficial effect on health.

3. *Psychological health claims are less attractive for consumers than physiological health claims.*

Several researches stated that consumers are less likely to buy a food with psychological effect like “reduces stress” or “reduces lack of concentration” than with physiological effect like “strengthens the body’s natural defence system” (van Kleef et al, 2005; Siegrist et al, 2008).

4. *The most promising consumer group of functional foods can be found among women, higher educated and older consumers.*

According to Urala (2005) the most promising consumer group of functional foods can be found among women. De Jong and associates (2004) stated that consumers of functional foods are usually from higher educated groups. Moreover, Siegrist and associates (2008) declared that older consumers are more open-minded for functional foods than youngsters.

In our research we wanted to get information about the possible use of these widely proved statements in case of functional development of canned foods and to get knowledge about their possible use in product-innovation.

## MATERIALS AND METHODS

Because of the feature of the topic we have judged it necessary to use both secondary and primary data collection. During secondary data collection, we have reviewed domestic and international journals to analyse development opportunities of functional foods according to consumers' expectations.

The primary consumer group of functional foods comes from people who put great emphasis on their health. To meet "health-conscious" consumers' approach we have conducted *focus group interviews* in two places using qualitative research. We have invited *consumers who put big emphasis on healthy nutrition by their own admission*. In both places 8 persons participated in the focus groups. According to the moderator guide an association game and several creative exercises (using canned food industrial products) have been used beside concrete researcher questions to get more information and to maintain consumers' interest (Malhotra 2005).

Quantitative research was made to analyse consumers' judgement of canned foods and to analyse industrial innovation

opportunities of these products. We have carried out a *country-wide consumer survey* in six Hungarian cities, including the capital, with 500 consumers. The selection of examined areas in cities has been drawn. In order to ensure random sampling within settlements questioners have visited every third house in drawn streets. In blocks of flats only one flat per floor was allowed to be surveyed and questioners had to exclude the following floor. Only five households were allowed to be questioned in one street. The actual data recording happened through face-to-face interviews. The questionnaires were filled in by consumers who do the shopping (primary and secondary food-purchasers) in the visited families; moreover, the questionnaires were filled in only by consumers who purchase canned food industrial products at any time. The method of the sampling is *systematic random*. During the data-analysis mathematical-statistical methods were used, with the help of the SPSS for Windows 13.0 programme.

Choosing 15 questions from the questionnaire, *factor- and cluster-analyses* have been made. The obtained clusters have been compared with the main question-groups of the questionnaire, and significant correspondences have been calculated with 95% reliability level.

## RESULTS AND DISCUSSION

### *Consumers' judgement of some canned food industrial products on health*

Consumers who put big emphasis on keeping healthy in their way of life, and particularly in their nutrition were invited to our focus groups. It came to the light in the course of our research that respondents do not judge canned food industrial products uniformly from the point of view of their effect on health. We have stated that the judgement of canned foods is not uniformly unfavourable, several products are judged to be very favourable on health. Our results are shown in Table 1.

Table 1: Judgement of the effects of canned food products on health among "health-conscious" consumer

Judgement	Product-categories		
Beneficial on Health ↑	Baby Foods		Canned Fish
	Sourness	Canned vegetables	Condensed tomato
Neutral on health ↓	Canned fruit		
	Mayonnaise	Mustard	Jams
Hazardous on health	Canned ready made dishes	Liver pastes	Canned meat products

Source: Own edition

Table 2: Consumer judgement of product attributes in case of canned vegetable and fruit products

	The canned vegetable and fruit...	N	Average	Standard deviation
1.	...has domestic taste	500	4,41	0,93
2.	...has a good effect on health	499	4,32	0,91
3.	...has only few additives with "E-number"	500	4,31	1,03
4.	...is easy to open	495	4,27	1,10
5.	...is easily available	500	4,24	0,87
6.	...has a low price	499	4,19	0,95
7.	...is from Hungary	497	4,19	0,99
8.	...is free of preservatives	499	4,16	1,05
9.	...is free of genetically modified (GMO) components	498	4,10	1,15
10.	...is reclosable	499	4,04	1,18
11.	...has a trade mark on its label that verifies the origin and quality (e.g. Quality Food from Hungary)	497	3,89	1,18
12.	...has a well-known brand	499	3,45	1,12
13.	...is organic	494	3,24	1,30
14.	...has nice packaging	498	3,19	1,22
15.	...has unusual taste	499	2,83	1,32

Source: Own edition

According to our results the most accepted products are baby foods and canned fishes. However, the judgement of sourness, canned vegetables and condensed tomato is also basically favourable. The judgement of canned fruits on health is neither favourable nor unfavourable.

#### *The importance of health protecting attribute among other product attributes*

The importance of product attributes of several canned vegetable and fruit products was analysed in the survey with questionnaires. We have asked the respondents to rate named product attributes in a 5-degree Likert-scale, where '1' means 'not important', '5' means 'very important'. Our results are shown in Table 2 in decreasing order.

According to our results the most important product attribute for Hungarian consumers with canned vegetables and fruits is the *taste of the product*. It can be seen from the answers that the consumers do not expect new tastes; they would like canned foods' usual domestic taste to be made more perfect. This could be seen from the fact that the unusual taste is the least important among the asked product attributes for the respondents.

It is valuable information for our research that the second most important product attribute with canned vegetables and fruits for consumers is the products' *'good effect on health'*. We think that the fear from additives can be connected to this product attribute. So the third in the order is

the consumers' need for products that contain only few "E-numbers". So consumers want the canned foods to have good effect on their health, too. Respondents do not accept that canned foods are just an obligatory choice for them and that they take up its unfavourable effect on health in exchange for other attributes of the product such as low price.

#### *Examining of product innovation opportunities*

According to our former expectations *consumers demand canned food industrial products with beneficial effects on health*. However, the product's beneficial effect on health can be reached by several ways. Developing functional foods is an opportunity for the industry.

The scientific judgement in case of each ingredient's effects on health is dealt with in the European Union nowadays. However, the Union has not produced an officially accepted list yet. That is why we used the list given by OÉTI (National Institute for Food and Nutrition Science) as a proper source to be the basis of possible canned food industrial products that have beneficial effects on health.

We are quite sure that *enrichment/fortification* (in due proportion) *with ingredients* that have particularly beneficial effects on health gives an opportunity for canned food industry producing healthy canned food industrial products. If the enterprises provide these products with health claims then we can say these products are certainly functional canned food industrial products. With regard to the above mentioned considerations, we believe that canned food industry should develop products that are judged to be good to our health or at least not bad to it.

Before the beginning of the research the greatest challenge was to find possible ingredients that can be found on the mentioned OÉTI list and with which the enrichment/fortification of the already mentioned canned food industrial products

is possible. After checking them up with experts the following ingredients have been chosen: *vitamins, garlic, garden thyme, mint-leaf, camomile-flower and horseradish-root*. These ingredients possess several – scientifically justified – favourable effects on health.

It should be noted that these effects are going to be reached only in case these enriched/fortificated products contain the ingredients mentioned in due proportion. Furthermore, it is a particularly important aspect in case of canned food industrial products that ingredients beneficial to health should stay in due proportion and adequate form after processing. However, carrying out this aim is a problem of technology. We tried to choose ingredients that are – according to experts – not unusable in canned food industrial products.

Table 2 shows clearly that a functional (health-protecting) canned food industrial product can not be successful in Hungary if it is not able to perform the most important product-attribute mentioned by consumers which is excellent (domestic) taste. This is why in the questionnaire it was examined with which ingredients consumers would try or would consume canned food industrial products with pleasure.

Our results show that the most popular possible product groups are in order the following: *vitamin added canned fruits, sourness with horseradish-root or with garlic, canned fish with garlic* as well as *vitamin added canned vegetables*.

„According to our results the most important product attribute for Hungarian consumers with canned vegetables and fruits is the taste of the product.”

### *Opportunities to sell products at a higher price*

Innovation of canned food industrial products that are enriched / fortified with some kind of ingredients obviously means financial charges. Respondents were asked in our questionnaire, to mark the three products for which they would pay a 10% higher price at least.

Our results show that consumers would pay more for the products that were received in the former question group. However, the order has been changed among products. *Vitamin added canned fruits* stand first and *canned fish with garlic* stand second. After these two come sournesses with garlic and they are followed by sournesses with horse-radish and vegetables enriched/fortified with vitamins.

### *Health claims on canned foods*

Our results show that those new product groups will be the most successful which have, on the one hand, favoured taste and, on the other hand, have such good effects on health that are kept important by the consumers to contain by canned food industrial products as well. Thus, it is important to know what health effects canned foods should have in order to gain the best acceptance by the consumers. It is known that favourable physiological effects are better accepted than psychological benefits by the consumers. Accordingly, six effects have been chosen to test. The statements have been measured on a 5-degree Likert-scale, where '1' means 'not important', '5' means 'very important'. The results of the question-group are shown in Table 3.

According to our results the most important health effect (which is mentioned in our questionnaire) for consumers that could be offered by canned foods is that the products strengthen the immune system. This is followed by their good effect on defence system of organism and their good effect on digesting system. These three effects are almost the same important to consumers.

### *The possible target market of functional canned food products*

15 variables, examining the connection between caned food and health were chosen from the questions of the questionnaire. These variables were used for factor- and cluster-analysis (K-Means Cluster). While analysing our results, we have determined four clusters which cover 100% of the sample. To examine the four clusters' attributes, the groups have been compared background variables, then the significant results have been analysed.

It has been found that two of the four clusters show serious interest in purchasing functional canned food industrial products. These clusters could be described as 'women who put big emphasis on health', as well as 'well-off workers who want to have a strong organism'.

It has been judged that it is very important to know how important low prices are for consumers because of the high costs of functional food producers. Our results show that one of the most important *target groups* of functional foods is the group of 'women who put big emphasis on health', but within this group only those *who are able to pay the higher price* of products. Unfortunately,

Table 3: Consumers' judgement on health claims of canned food industrial products (N=499)

	Effect	Average	Standard deviation
1.	Strengthens the immune system	4,35	0,96
2.	Has good effect on defence system of organism	4,34	0,94
3.	Has good effect on digesting capability	4,33	0,96
4.	Helps keeping cholesterol level low	4,13	1,12
5.	Effective in curing respiratory illnesses	4,04	1,14
6.	Protects upper respiratory tracts	4,00	1,15

Source: Own edition

there is a limit because women who belong to this group usually have a lower than average income and they admittedly consider the low price of the product particularly important during purchasing. So, we think that only a small part of this target group can be regarded as important buyers. Because a big part of this group is consisted of retired women who generally have lower income, enterprises that target this group should put bigger emphasis on the other consumer group of this cluster: young mothers who are on child benefit. However, it is also important to note that this group is very small.

According to our results the group of 'well-off workers who want to have a strong organism' can also be reached with products that have good effect on the defence system of the organism, with products that strengthen the immune system and with products that have good effects on digestion. They can probably pay the higher prices of functional canned food industrial products.

It is important that innovators should keep in mind in case of both groups that only those health-protecting canned food industrial products can be successful which are able to assure excellent, domestic taste beside beneficial effect on health.

## CONCLUSIONS

The market of functional foods develops dynamically in the world and in our country, too. However, developing functional canned food industrial products nowadays is just an opportunity. The aim of our research was to contribute to canned food industrial product innovation based on consumers' needs.

1. According to our results, respondents do not judge canned food industrial products uniformly negatively, several products of them are considered to have good effects on health.
2. For the consumers one of the most important product attributes is the taste of the canned food. This information should be kept in mind during developing canned food industrial products with health protecting effects by the

companies because according to the results of our research the domestic taste of canned food (among examined product attributes) is the most important product attribute during shopping.

3. Our results show that important effects of canned vegetables and fruits relating to health for Hungarian consumers are as follows: they strengthen the immune system, have a good effect on the defence system of organism, have a good effect on digesting system, as well as help keep cholesterol level low.
4. By analysing our results, it has been proved that the most important *target groups* of functional foods are the group of 'women who put big emphasis on health', and within this group those who are able to pay the higher price of products. Moreover, 'better-off workers who want to have a strong organism' can also be reached with products that have good effect on defence system of organism, with products that strengthen the immune system and with products that have good effect on digestion.

As a result of our research it can be stated that the following two products can be successful among consumers: *sourness and canned fish with garlic as products that have good effect on the defending system of the organism and help keeping cholesterol level low*. Anyway, only the *beneficial effect on the defending abilities of the body* is an important value among 'well-off workers who want to have a strong organism'.

Producing health protecting canned foods is an opportunity for canned food industrial companies if they are able to make their supply special with these kinds of products instead of taking part in efficiency competition. The hindrance could be found in the costs of product development and marketing activity. However, we think that enrichment/fortification of *basic foods that are judged 'favourable on health'* with *ingredients that offer health protecting effect* can result in success among the

two target groups because one of the most important product attributes of canned food industrial products is exactly their *good effect on health*.

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