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DOKTORAL (PhD) THESIS

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CONSUMERS' PERCEPTION OF THE FACTORS RISKING HEALTH AND THEIR RISK-REDUCING BEHAVIOUR

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1 Introduction

1.1 *The importance of the topic*

I have written my PhD thesis on the topic of food marketing. The approach of the thesis is defined by the values of macro-marketing or social marketing¹. The findings of the thesis are aimed to serve as guidelines to how marketing tools can be used in the field of effective risk management and health development. Based on the results of the research I will formulate recommendations to the players of the food industry, about how they can create a strategy which is in accordance to developing the health of customers.

The importance of the topic can be justified as in developed countries and also in Hungary the burden related to illnesses has to be decreased both because of economic and social reasons. A great part of illness related burden could be prevented by changing the approach of citizens and the habits of consumers. Nutrition is one of the main areas of inappropriate lifestyle.

Businesses cannot deny their responsibility in food supply and creating demand. Besides this, producing and selling food products, which guarantee a high level of food as well as health and nutrition safety can provide a step stone for Hungarian businesses. The process could also promote the need of consumers to squeeze out those businesses from the market which cannot meet modern requirements of food quality and safety.

In accordance with the marketing approach, the dissertation offers an insight to consumer behaviour which can act as a starting point to marketing activities. The Marketing Institute of the University Szent István has a great tradition of researching food consumer behaviour. In the 1990s comprehensive works were created to explore the context of food consumption. After that, the main task of scientific work has become researching partial areas of consumer behaviour and studying special marketing problems. According to this approach the research started on the various aspects of health awareness in food consumption.

I am analysing health awareness in food consumption from a new point of view. I have highlighted a way of healthy consumption, which originates from recognising dangers related to food consumption and risk management. I retained this necessary because even experts recognised the importance of the topic by seeing an increased amount of chronic non-infectious illnesses related to nutrition. I am convinced that recognising the threat will prove to be successful in the case of consumers too.

Health risks related to food products¹ can be divided into two groups of factors: health safety risks and health-nutrition risks². Both are especially important in the burden of illness and the increase of costs related to illnesses. At the same time it is an important social problem that

¹ The basic risk analysis document related to food products was created by the Codex Alimentarius of FAO/WHO. Based on this, risk is the possibility and the seriousness of a harmful effect on health, which can be traced back to dangers in food products.

² We can identify as nutrition health risks the following: inappropriate diet, insufficient quantity of food, or inappropriate circumstances of eating. Food safety risk is defined as the possibility and the seriousness of a harmful effect on health, which can be traced back to dangers in food products. These can be chemical, physical, microbiological or other (e.g.: technological) risks.

consumers face an increasing danger of food safety and health-nutrition risks, as the development of science and the work of authorities provide more and more results that confirm the dangers of traditional nutrition. Consumers are informed about an increasing number of food scandals, lifestyle induced illnesses, or zoonotic illnesses through the media and also other social channels.

Consumers' increasing sensitivity to risks means a threat and an opportunity at the same time for the players of the food industry, as the perception of risks has an effect on the behaviour of food consumers. It is an important issue to be clarified how and in what direction businesses can influence the risk perception of consumers and their behaviour to reduce risks by using various marketing activities.

1.2 The objectives of the PhD thesis

My PhD thesis is focusing on a form of health awareness created through the recognition of dangers caused by nutrition and lifestyle. The main objective of the thesis is the analysis of the relationship between health awareness and subjective risks.

I had three scopes when analysing reference literature for the topic:

- 1.) I attempted to overview the process leading to an increased value of health. I have identified the most important factors influencing health awareness. I have sought an answer to the question which consumer groups show an interest for healthy lifestyle and nutrition and why. I have assessed the factors which become more and more important after the need for a healthier life arises in consumers. I have also showed the factors which prevent or make it more difficult for consumers to choose healthy nutrition.
- 2.) I have attempted to identify the role of risk in consumer behaviour. I have considered subjective risk both as a dependent and independent variable of the decision process of consumers.
- 3.) Further aims of the PhD thesis include the examination of the role of subjective risk in food consumer behaviour. I have identified the factors that influence the risks consumers perceive and to what extent they retain them dangerous. I have showed how risk perception influences consumers' preferences when choosing products and stores.

Based on the of the analysis of referential literature I have described the results of five primary researches, which examine the role of subjective risk as a dependent an independent variable in the area of food consumer behaviour.

The primary researches had the aim of clarifying the following issues:

1. Evaluation and ranking of risks perceived in relation to food among Hungarian consumers.
2. The effect assessing health awareness as well as consumers' health status on risk behaviour.
3. Exploring risk reduction strategies used by Hungarian consumers.
 1. The influence of subjective risk on consumers' preferences in food and store choices
 2. The characteristics of the behaviour to seek information.

4. The assessment of credibility of various market players, identifying their possibilities to take part in risk management, with special regard on trading.

During the analysis I clarified relevant relations between various factors with mathematic-statistic procedures; I segmented consumers, and the players of the examined trading channels, and, I also explore the differences shown along basic and descriptive segment variables.

The aim of the PhD thesis is on the one hand to clarify theoretical relations within the topic, to classify its models and to define its main research directions, and on the basis of this, to create logical models and comprehensive tables. On the other hand, the practical aim is to formulate recommendations based on the outcomes of the thesis for the players of the food sector. I have attempted to define marketing activities that can be effectively used in the areas of health development and risk management.

2 Materials and methods

In the first part of the dissertation I have completed a summary of Hungarian and international referential literature, along with their comparative analysis, and I also defined research directions. To my questions formulated on the basis of the referential literature, I have sought the answer through primary research. I will present the results of primary research in the second part of the PhD thesis.

In the analysis of referential literature, I have approached the same problem from two sides: on the one hand, I summarised health conscious consumer behaviour, including the factors and marketing activities influencing healthy nutrition. On the other hand, I have explored the context of risk management of consumers. I connected the two topics in the last part of the analysis of referential literature, where I was examining how the perception of health risks affects food consumption habits. I have summarised the main relations in the form of logical models.

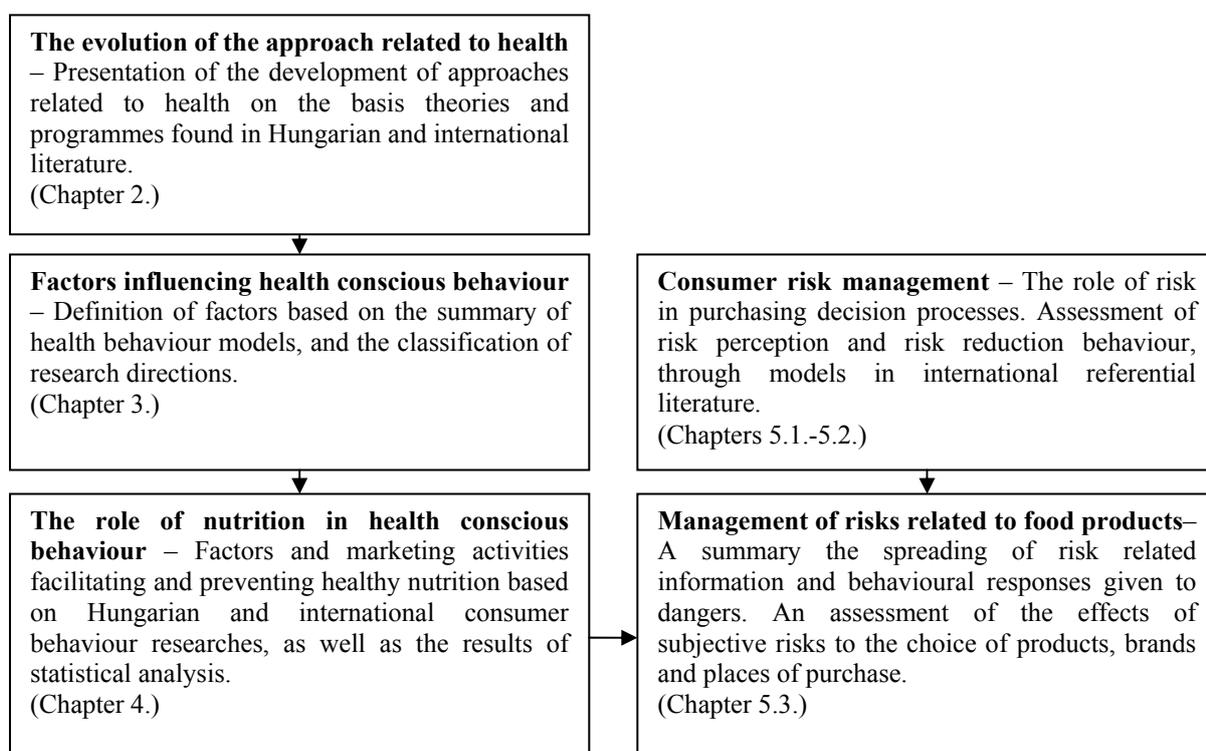


Figure 1.: The process of the analysis of referential literature source: Own editing 2008.

The PhD thesis includes the summary of some results of a representative survey of 1062 consumers carried out by the Szent István University. I have analysed and presented the results that identify the risk factors perceived by consumers and show in what ways consumers try to reduce risks related to food products. By using the analysis, I would like to call the attention to the differences between various segments of consumers.³

I have carried out four primary researches of my own. All of them are about the perception and management of health risks related to food products. The research aspects however, are

³ I have prepared the analyses of the thesis on my own.

different. Two surveys were made in organic food stores. I have contacted 77 organic food stores and carried out a survey by questionnaire among customers. At the same time, I made an interview with store managers. The other two researches have assessed the appearing and the management of a subjective risk in the case of bird flu. I made a survey among college students about consumer behaviour and I assessed risk reduction strategies of meat store managers.

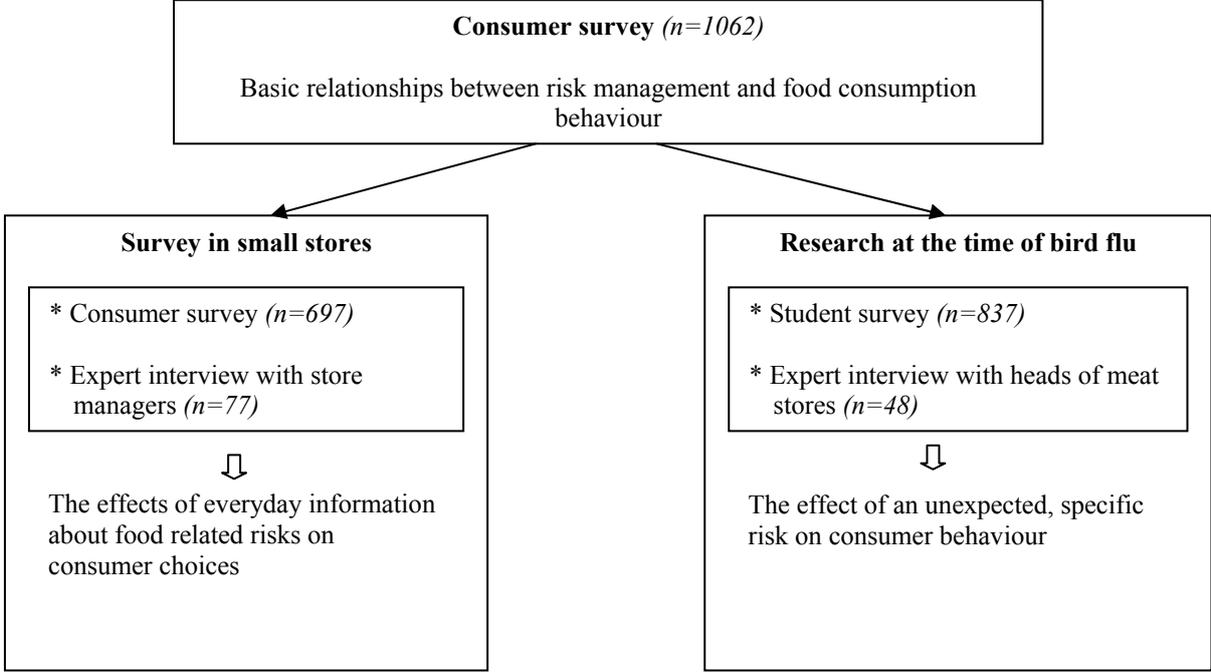


Figure 2. : Classification of primary researches, source: Own editing 2008.

As it can be seen from figure 2., two of the researches are surveys on consumer behaviour and two are expert interviews with store managers. I assumed that I could gather additional information to understand the topic if I analyse the players of the supply chain who are in close contact with the consumer.

Two surveys have been carried out in organic food stores⁴, where I conducted the survey among consumers and store managers. I chose this special sales channel because I attempted to assess a segment in which consumers express their commitment to, healthy lifestyle and nutrition with their behaviour (choice of the store)⁵. I assessed what kind of risk management strategy consumers and store managers choose after meeting safety risks on an "everyday" basis⁶. Previous research on consumer behaviour in Hungary has been directed on understanding consumer choices. I retained new and important to assess these factors of the choice of store as well. (The choice of the target group was justified because of this reason.) When interviewing store managers I assessed how they perceive their customers and their behaviour. I handled questions regarding the choice of product with a special emphasis. I

⁴ Under the expression "organic food store" I mean stores that offer a special portfolio for healthy nutrition. The expression includes besides stores specialised on organic food products natural pharmacies and reform stores.

⁵ Segmenting on the basis of descriptive variables has an increasing importance according to referential literature. The sample is made of customers using organic stores.

⁶ By "everyday" encounter I mean that, as previously expressed, that nutrition and health risks as well as food safety risks are present in both the media and social channels and consumers face these problems regularly, during everyday information seeking.

analysed expectations and risks related to the three relevant characteristics of products, quality, health and safety.

The other two surveys were aimed to explore how consumers and store managers react in a case when they meet a specific danger "suddenly". The bird flu epidemic proved to be an appropriate opportunity for the research purposes. Bird flu belongs to the group of increasingly significant zoonotic food safety risks and it entered public awareness in 2005. The topic is appropriate for the assessment of how risk information and the related risk management behaviour are transmitted. The basic model of the research was the social arena model of Ortwin Renn. The model examines the role of market players in spreading risk information. I compiled the surveys in a way that they made attitudes and expectations of consumers and managers comparable with each other in terms of judging and managing the problem. I conducted the survey of students in higher education shortly after the outbreak of the epidemic, (in autumn-winter of 2005). When selecting the target group I was trying to include about 50 % of students with previous education related to animal health problems and 50 % without. Thanks to this I was able to track the effects of training as well. The survey with store managers was carried out in meat stores and it included professional interviews in the summer of 2006.

For the consumer behaviour surveys I used a standardised questionnaire, which mainly included closed questions. I carried out the interviews with the help of previously compiled partially structured questionnaires. These also included mainly closed questions. I applied lists of statements in several places where the interviewees had to assess the answers on a Likert scale. In order to be able to compare answers of both consumers and store managers, some statement lists were included in both questionnaires.

I analysed the results with the SPSS statistical programme package. I conducted single and multivariate analysis. Out of multivariate analysis, I used factor analysis, cluster analysis, variance analysis, chi-square test, correlation calculations and the independent two-sample t-test.

3 Results, recommendations

3.1 *The most important statements of the PhD thesis*

Health awareness and risk sensitivity of Hungarian consumers

In the PhD thesis I have identified the factors that help and those that prevent the development of health awareness of Hungarian consumers and thus create the condition for market players to be involved in health development.

On the basis of referential literature I have pointed out that the modern health-approach emphasises the active role-taking of individuals and the motivation of the community in health preservation, which is conducting health conscious lifestyle and forming healthy eating habits. On the basis of the referential literature, I have managed to point out favourable processes. I managed to draw the conclusion that health conscious lifestyle appears more typically in the case of always younger age groups. The prevention approach, which makes healthy eating and lifestyle popular and attractive, is getting stronger. As a consequence of these changes, a new segment of consumers, the LOHAS segment is defined in Hungarian and international literature. The members of this segment include young people who retain health awareness, the preventive approach, conscious lifestyle and a continuous development of their personality important.

I have examined on the basis of primary research results to what extent these favourable tendencies can be detected in relation to food purchase. Thus, I examined how the primary preventive approach and the LOHAS concept can be detected.

1.) It has become obvious on the basis of the surveys that health is the primary concern of Hungarian customers and this is also connected to other factors offering safety.⁷ Consumer preferences that create the basis for healthy nutrition however do not reflect such a strong commitment of consumers towards health. In relation to specific product choices, I cannot verify the strengthening of either the LOHAS concept or the preventive approach.

- When analysing the food consumer profile, it could be seen that 58 % of Hungarians think it is worthwhile to spend more on healthy food products but at the same time they put a bigger emphasis on forms of behaviour that decrease time and money-related risks.

- The results of surveys of both consumers and customers of organic food stores have shown that middle aged or older people overvalued technological and functional quality characteristics of products as their attention is already directed towards some existing health problem.

- According to the survey made among students in higher education, only about half of the students pay attention to the effects of food products on their health when making choices. 60 % of students look for products free of artificial ingredients, 36 % prefer organic foods and 25% prefer reform food products.

Young consumers do not put enough emphasis on product qualities able to reduce health risks when making product choices.

⁷ 97% of the population thinks health is an important value. During factor-analysis health belonged to the same category as traditional factors ensuring stability along with the following factors: happy family life, safety, good human and friendly relationships, financial wellbeing.

2.) Besides, in the light of the results, I have drawn the conclusion that Hungarians do not value risks endangering their health appropriately.⁸ The rank of subjective risks is different from that of objective risks. First of all, it is because they undervalue their own potential and responsibility in preserving their health.

- On the one hand, they undervalue risks related to inappropriate eating habits and lifestyle when evaluating subjective health risks related to their own responsibility. They feel that they can be threatened by dangers coming from an external source.

- On the other hand, when assessing the subjective perception of risks of illnesses, I experienced that people over 50 felt more concerned than young people about all non infectious diseases. Young people do not feel endangered by even illnesses originating from inappropriate lifestyle and eating habits. The lack of realistic perception of risk prevents active health awareness.

3.) I have also been able to point out that the perception of subjective risk does not necessarily belong to health preserving behaviour.

- The feeling of being vulnerable to illness does not drive consumers to consume products that protect their health or that could have a protective effect on their health against illness.

- Even consumers who are sensitive to risks endangering their health do not consume products that protect their health regularly.

The recognition of risk factors endangering health is not a sufficient condition of health-conscious behaviour.

The results of the primary research verify only partially the appearance of favourable processes related to health awareness of Hungarian consumers, which I described earlier on the basis of the literature. Based on the relationship revealed during the studies, I have identified which are the most important areas to be developed in both corporate and authority health development:

1. synchronising the awareness of the value of health and purchase preferences,
2. raising awareness on vulnerability to illnesses and revealing objective risks,
3. increasing personal responsibility in health ,
4. presenting tools able to reduce risk perceived and motivating their use.

Risks perceived by consumers in relation to food products

One of the starting points of risk management for both businesses and authorities is to identify what kind of risks consumers perceive in relation to food products on the market. This is important because the range of risks perceived by consumers and the assessment of their dangers do not correspond to objective risks identified by experts. Studies to measure objective risks are necessary for successful risk management. This is why the PhD thesis includes some measurements to find out about risks related to food products. .

When identifying risks related to food product, both answers given to open questions and answers on the Likert scale showed that Hungarians retain mainly food safety risks dangerous to their health.

- 65-83 % of Hungarians think infections related to food, modern chemical and food industry technologies and environmental pollution resulting from industrial production are

- Consumers of organic food stores think that mainly shortcomings of processing and chemicals used during production are dangerous. At the same time they identified the

⁸ When interpreting results, we can turn back to the statement of Faragó-Englander, 1987, Englander et al., 1987 in Zoltayné, 2002 who state that the level of risks perceived in Hungary is low, which can originate from the general illusion of safety.

shortfalls of logistic processes as a danger, which is an incentive to develop a practical approach to organise trading.

On the basis of the answers I have drawn the conclusion that consumers have a sense of safety when businesses reduce food safety risks and they only retain reducing nutrition and health risks secondary. Minimising food safety risks is thus a fundamental condition of accepting products while reducing nutrition and health related risks is only a tool of differentiating between products.

Identifying the differences of risks perceived by consumers and players of the food industry could be an interesting issue for the topic. During the "Organic profile" research, I was able to examine to what extent the assessment of risks related to food by consumers and store managers differs from each other and I had the experience that there is no significant difference between the two groups. Thus, during the risk management of these stores subjective risks perceived by store managers could be a starting point for risk reduction that can calm down customers.

In case of a responsible business practice supporting market values, the attempt to reduce subjective and objective risks have to be in line with each other.

A condition of responsible business activity is that solutions have to be found for the reduction of objective risks. In case of food safety risks, various quality control procedures (HACCP, BRC, IFS) serve these purposes. In case of nutrition and health risks the results of dietetics are used during product development and recommendations of dietetic experts are considered when forming supplies. Market interests drive businesses to take steps in order to reduce risks so that they can calm customers and increase their trust. They have to do so, even if the fears of the consumers are not real or are the result of really serious dangers.

Authorities can play an important role in creating balance. On the one hand they have to regulate and support activities that can minimise objective risks. On the other hand, by providing appropriate information they can help consumers to manage risks appropriately and they can be informed about the dangers of health risks.

Risk reduction strategies of consumers

During the analysis of referential literature I identified three forms of consumer behaviour directed to the reduction of risks. Consumers can reduce risks perceived when making product choices, choosing stores and when they seek information.

In the PhD thesis I analysed risk reduction behaviour from three points of view:

1. During the nationwide representative survey, I assessed to what extent Hungarians use behavioural patterns able to reduce risks.
2. Among the customers of organic food stores I assessed how much seeking safety is obvious during product and store choices in the case of a health-conscious segment.
3. At the time of the bird flu, a specific health risk, I assessed which forms of risk reduction behaviours are used.

On the basis of the representative survey and the student sample, I realised that active behaviour patterns, such as conscious changes in behaviour or seeking information are not typical of most consumers wanting to reduce risks. Most consumers typically use time and money saving risk reduction techniques. This raises the issue of responsibility from the side of businesses and authorities, as consumers are vulnerable to risks.

Risk reduction through choice of store

According to the representative consumer survey, one of the most important risk reduction behaviours for Hungarians is avoiding stores that they have found suspicious. Consumers try to minimise risks by avoiding black markets and illegal vendors. About three quarters of the population do not make purchases from illegal vendors and 70 % of them make purchases in the store they regularly go to.

In relation to the role of store choice in risk reduction, we have to see that the assessment of the players of the distribution system is not uniform, and the popularity of store types is not in relation to what extent customers consider them safe.⁹

On the one side there are organic food stores and grocery stores, which are considered safe by customers.

- 60 % of the population considers these stores reliable and accept information coming from these stores in relation to food safety issues.

- Customers of organic food stores have assessed organic food stores more favourable than larger stores based on all criteria of the safety factor determining store choices. Thus, visiting these stores can be considered as a form of risk reduction behaviour.

On the other side there are larger, modern stores. Results have reflected a great extent of distrust towards these stores.

- Only 26-29 % of Hungary's population considers hypermarkets, supermarkets or discount food stores reliable. The assessment of these modern store types was the worst among all store types.

- Students had the smallest amount of trust in traders compared to any other market players and they do not consider information coming from traders or about traders creditable at all. About 72 % of them doubt the communication of traders.

At the same time, the biggest part of food purchases are made in hyper or supermarkets. Even when questioning customers of organic food stores, consumers said that they made supplementary purchases in organic stores and the basic source of their everyday products are hyper or supermarkets¹⁰. This fact can originate from consumer choices aimed to reduce financial and time risks. Based on traditional choice factors, the assessment of larger stores is better than that of small stores.

During the study made among costumers of organic stores I was able to identify a safety factor within store preferences, which includes the following elements: the possibility of getting advice and information, the traceability of food products and quality control system. These criteria belong to the determining elements of preferences related to store choices. For the stores these criteria could be the basic pillars of risk management.

During the comparative study of organic food stores and hyper- and supermarkets (measurement of semantic differential), it was an interesting result that even the presence of a quality control system was assessed as typical of organic stores, despite the fact that multinational chains made the first steps to introduce quality control systems and they place a bigger emphasis on operations that meet certificates up to this day, rather than small stores. This, on the one hand calls the attention to the phenomenon of image transfer, on the other

⁹ This corresponds to the phenomenon pointed out by Schaer in his survey made with German customers in 2001.

¹⁰ According to Fischbein's attitude indices only 11% of customers in organic food stores show a negative attitude towards hyper- and supermarkets.

hand it points out that without appropriate communication the quality control system does not provide a sense of safety for customers.

Risk reduction through choice of product

In relation to the role of product choice in risk reduction, I assessed which factors influence choice of food products and I analysed how many percentage of people questioned considered important to product properties that are able to reduce risks.

- When choosing food products, Hungarian consumers place the emphasis on traditional product choice criteria. Good taste, smell and freshness are the most important factors for them. Besides this, there are a high proportion of people who considered equally important when choosing products the following factors: technological quality (68 %) and functional quality (70%).

- For students, the most important factors at product choices were good quality, favourable price-value ratio, and the effect the product has on health. Ethical factors were more important for them than outside factors of quality (design of the packaging, brand, modern, foreign product).

- Among the customers of organic food stores I had the experience that food choices are mainly aimed at the reduction of risks. First of all, customers reject artificial additives and technologies used in food processing in case of conventional products. Compared to statistics about the population of Hungary, it could be seen that this group of consumers is more sensitive than the average and pays more attention to technological and functional qualities of products than the average consumer.

This shows that safe products have to meet traditional criteria related to product choices, such as good taste, smell and good price-value ratio, and consumers will accept them only this way.

I assessed in the case of all three surveys how important Hungarians find tools that are defined in international literature as means of reducing risks.

According to the representative survey, only about half of the population pays attention to the producer, the brand or the country of origin of the product.

In relation to the country of origin, I found that in all three surveys, people preferred Hungarian products but the origin of the product did not belong to the important factors influencing choices.

- Products of protected origin meet the demand of only a small group the market.

- Among the customers of organic stores, it turned out that consumers who are willing to build their diet on organic food (members of the "Organic oriented" segment) considered the technological purity of products more important than the Hungarian origin and if it is more favourable, they will choose a foreign product.

- On the contrary, in case of the bird flu, I had the experience that the primary form of risk reduction became choosing products of Hungarian origin. The reason for this was the positive campaign of the Hungarian Poultry Council. They convinced consumers that Hungarian products are guaranteed to be safer than imported products. .

The risk reduction role of the brand is less important. On the basis of the representative survey, we can assume that consumers are not aware of the terms of producer brand and generic brand. On western European markets it is a widely used strategy to introduce own brands to highlight products that are favourable for health. On the Hungarian market generic brands were positioned in the category of medium price/medium quality segment. Examples from Western Europe however show that own brands can carry values. In Hungary, "Tesco fitt" brand was the first house brand that offered a step forward in the area of functional quality by

introducing light products aimed to help health development. Another good example is the Naturpur product group of Spar Magyarország Kft., which offers a new perspective in technological quality by offering products from ecological farming.

The results of the survey made during the bird flu epidemic pointed out the guarantees offered by producers. Consumers decreased their consumption of raw or home made products rather than that of processed ones.

Risk reduction through information seeking behaviour

The referential literature pays special attention to information when assessing the role of risk. On the one hand, the access to information influences risk perception on the other hand, information seeking is risk reduction behaviour itself.

It is an unfavourable result that a big part of consumers fears that risk information is hidden but they do not expect that they should get appropriate information in order to make their product choices easier.

In relation to bird flu, I was able to show more relevance between risk sensitivity and management of information:

- I was able to verify that there was a statistically proven relation between decreasing consumption and lack of information. As a result of the epidemic, which did not have an effect on human health, mainly those consumed less poultry who did not know how the illness can affect humans.

- I was able to show that as the students did not feel affected by the bird flu epidemic, they did not actively seek information. They received information from cost-effective information sources, even if they thought that traditional media was not creditable enough.

- Managers of meat stores thought that the decreasing demand for poultry products was due to the unfavourable effects of the media. They blamed the change of consumers' behaviour on the media, which made the problem seem bigger and caused panic.

In case of the bird flu epidemic both providing and seeking information were equally important. The role of easily accessible information seemed determining¹¹. This kind of information had an effect on how consumers assess risks, and this information formed the basis of risk management strategies.

One of the most important theoretical bases of the research was the "social arena model" of how risk information is distributed. I assessed the creditability of market players in the area of information related to food products. I included an examination of this in both the representative survey and that of students. The results of the two surveys were in line with each other. I had the experience that the population considers telecommunication channels and profit oriented businesses decreasingly creditable. Among all players of the market they consider traders the least creditable. At the same time, they consider non profit organisations (consumer protection, health, or environmental organisations) the most creditable.

The guarantee of "third parties" is an increasingly important social demand. As a result of this, it could be a useful tool for profit oriented businesses in building up creditability if they cooperate with organisations or authorities that the population considers creditable. There have been steps to cooperate with non-profit organisations. The players of the food sector created several forums and organisations in the last few years, which help the development of healthy lifestyle, including healthy nutrition with their tools and through cooperation with

¹¹ This corresponds to the experience of Laker-Szabó-Hajdú (2005) in case of the paprika scandal in 2004.

professional and non-profit organisations. Such international organisations are CIAA¹² and ETP (European Technology Platform) „Food for Life”¹³. Besides this, various guarantees of authorities or organisations can be seen on labels of products (e.g.: "controlled by veterinary authority", recommended by the Organisation of Hungarian Nutritionists")

Another result of the research is in relation to this, namely, that in case of the bird flu epidemic consumers and traders said trademarks were the most important tools in creating confidence. They also expressed a demand to have clear marking on safe products controlled by independent organisations.

3.2 Main results of the PhD thesis and their application in practice

1. An overview and classification of the process of risk management of consumers and the factors influencing it (creating a logical model and partial verification) provides a professional basis for risk management of authorities and businesses.
2. Identifying the role of risk management in the context of health-conscious consumer behaviour – provides a modern and well founded approach for national health programmes and business health programmes.
3. Describing the context and hierarchy of subjective risks – provides information for food industry strategies as consumers try to minimise risks instead of maximising usefulness.
4. Showing the effect of subjective risks on preferences – this can help to draw the conclusions on which factors become increasingly important in product and store choices of consumers.
5. Creating and describing consumer segments based on the various characteristics of health consciousness and risk sensitivity (Cluster analysis based on the results of market research) – Food sector strategies can be successful only when differentiated marketing is used. A condition of this is defining and describing well separated target groups according to behavioural variables.
6. Identifying the effects and ways of meeting risk information. Assessing the creditability and the role of various information sources as well as examining the creditability and responsibility of various market players – This is the only tool to create consumer confidence and in some cases to avoid panic.
7. Identifying the differences between preferences and attitudes of buyers and traders – can provide guidelines to think over business policies of traders and also to create trader motivation systems (Push strategy).

¹² CIAA was founded under UNICE (the Union of Industrial and Employers Confederations of Europe) and it operates as a separate organisation in order to develop food industry. Its members include 30 organisations of the sector and 20 companies.

¹³ Hungary's Nutrition Lifestyle Platform (TÉT) was founded after the same platform of the EU, (ETP) on September 28, 2006. It comprises the activities of players (non profit sector, government, scientific world and industry) which have the aim of finding a long term solution for problems caused by unhealthy nutrition.

8. Identifying the tools appropriate for risk management – creates a basis for working out the tools of risk management of businesses and authorities.

3.3 Main directions of the research process

1. Examining food consumer behaviour through risk behaviour models.
2. Examination carried out in large hyper- and supermarkets in order to assess health consciousness and risk management strategies of customers.
3. Validating a model summarising the context of risk perception and risk management of consumers.

4 New scientific results and findings

1. Based on the summary of theoretical relations of the topic I have created an integrated model of risk perception and risk management.

In related referential literature there is not a comprehensive, whole model. My model, in which I summarised and classified internal and external factors influencing risk perception and defined their effect mechanisms, can be considered novel. At the same time, I connected the processes of risk perception and risk management.

2. Based on descriptive and basic variables, I have characterised risk sensitive consumer groups.

I have established that out of basic variables, the role of place of residence was the most important from the point of view of risk sensitivity. Consumers in cities and the capital were more risk sensitive than consumers in smaller towns and villages. The effect of other socio-demographic characteristics in case of various risk factors was different.

Middle aged women with a secondary education from the capital can be considered the more risk sensitive group among Hungary's population.

Out of descriptive variables the role of information proved to be important. I experienced the strongest risk sensitivity in case of uninformed consumers.

Besides this, I also pointed out the unfavourable phenomenon, that risk sensitive groups did not show bigger, or over average interest or activity in risk reduction behaviour.

3. I have explored the possibilities of risk management related to product and store choice and information seeking behaviour, and explored the popularity of these possibilities.

On the basis of my results, it can be seen that among Hungary's population, cost saving risk reduction strategies are used. I was able to show some ambivalent phenomena. In order to decrease financial and time related risks consumers choose solutions that they consider unreliable. Tools to reduce risks are only used by some smaller groups of the market. At the same time, in case of a specific danger, certain tools of risk management can be activated with targeted communication and appropriate persuasion.

4. I have identified the relations between health consciousness and risk sensitivity in the area of food consumer behaviour.

I identified as a fundamental problem for Hungarians that they misjudge dangers coming from outside and this prevents them from recognising their own responsibility in the protection of their health. Perceiving health risks or realising subjective vulnerability to illnesses does not necessarily lead to health protective behaviour.

I was able to verify that in case of a consumer group with over average health consciousness, preferences to risk reduction behaviour are more widespread.

5 Summary

In my PhD thesis I have assessed the role of risk management of consumers in relation to health awareness. The analysis of related literature can be divided into two big parts based on their content: on the one hand I have clarified the context of health awareness; on the other hand, I have identified the role of risk taking in consumer behaviour. I have connected the two topics in relation to the problem of risk management related to food products. During the primary research I assessed how the perception of risks influences the behaviour of consumers when buying food products and how the same perception appears as a factor developing health awareness. My PhD thesis includes the results of five primary research processes, which clarify the role of subjective risk in food consumption from various aspects. A representative research carried out among Hungarians identifies the general relations between food consumption and risk management. The research made in organic stores assesses the characteristics of health conscious consumers from the point of view of everyday health risks. Besides this I examined the role of subjective risk in the case of an unexpected health safety risk, namely, bird flu. Three of the researches are consumer questionnaires while the other two are professional interviews with store managers.

The importance of the topic can be justified as the increase of health risks and the need for a better quality of life have increased the value of health. According to the modern approach, people do not passively take in illnesses anymore but they can influence their own health actively. The modern approach prefers the preventive approach, a method to prevent illness. This approach includes creating the appropriate lifestyle and eating habits before illnesses appear, in order to protect health. Recognising risk factors endangering our health, as well as promoting behaviour that reduces risks are the basis of prevention.

So far there has not been any comprehensive work available in relation to recognising and management of risks. Risk theory has been a neglected area both in Hungarian and international research of consumer behaviour. The roots of the topic can be dated back to the 1960s, when R. A. Bauer stated that consumers who are unable to maximise their usefulness, will attempt to minimise risks in their consumer decisions. I have approached the role of subjective risk in my PhD thesis from two sides. On the one hand, I analysed it as a dependent variable. In this case I was looking for the answer to what kind of factors influence risk perception of consumers. On the other hand, I analysed it as an independent variable. On this case I assessed in what ways consumers try to reduce risks they recognised. I classified the obtained results in a logical model, which includes factors that influence the perception of risk as well as behaviours used to reduce recognised risks.

When perceiving risks related to food products, the circumstances of meeting risk related information are crucially important. Previously embedded attitudes, emotions as well as players from both the individual's close and far environment have a strong influence. The players of the individual's microenvironment have an interest in influencing the attitude of consumers in a direction appropriate to their needs. This is why it was an important aspect to be examined how big a responsibility various market players have when distributing risk related information. Renn's social arena model (1992) provides the appropriate theoretical basis for this.

In relation to the behaviour of food consumers, I have regarded the subjective assessment of the danger of illnesses and the subjective evaluation of health risks related to lifestyle and nutrition important areas of risk perception. Primary research on the area showed unfavourable results. One third of Hungarians and a half of young people do not feel endangered by the given illnesses until they perceive the symptoms on themselves. They feel threatened by outside dangers, instead of recognising their own responsibility. They first of all identify food safety risks and undervalue the importance of health risks related to nutrition.

In relation to risk perception and health related behaviour, it is important to ask which tools consumers find useful to reduce recognised risks, and how much these tools are widespread among consumers. The reference literature on the topic identifies three basic forms of risk management in relation to consumer behaviour, which are: choice of product, choice of store and obtaining information. During the assessment of consumer behaviour of Hungarians I have managed to reveal several controversial issues.

Decisions of the choice of a product are mainly influenced by the attempt to reduce technological risks directed to avoid artificial additives and chemicals. At the same time traditional tools to reduce risks (brands, place of origin or guarantee of the producer) are typically preferred by only about half of the population. Functional food products can only fill gaps of the market. .

Although consumers are aware of the role of their decision to choose a store, they still make decisions on the place of their food purchases on the basis of traditional factors, (such as comfort, price, and time) and they keep buying most of the products in stores that they retain unreliable.

In case of the behaviour to seek information, I have managed to reveal a similar paradox. Consumers show a significant degree of unfaithfulness towards traditional media, or profit oriented market players, they still gather information on health related risks from the above because of their easy availability.

6 Publications in the field of the thesis

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