

**Thesis of University Ph.D. Dissertation**

**Consumer perception and market position of pork meat in  
Hungary**

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## **1. RESEARCH BACKGROUND AND OBJECTIVES, INTRODUCTION OF THE RESEARCH HYPOTHESIS**

The topicality and importance of the chosen subject is justified by the trends observed in recent years, showing that questions concerning nutrition, food and food safety are gaining more and more significance. One of the biggest challenges of the 21st century is to ensure a stable, sustainable and safe food production for the continuously growing population of the world. The problems of food production and supply are highly complex, as nowadays, almost 13% of the world's population is starving (FAO, 2011) and cannot have access to a sufficient quantity and quality of food; meanwhile in other parts of the world obesity is causing socio-economical problems.

Determining factors of food production and the change in consumer trends can also influence the demand for and consumption of food. The change in consumer habits and the decisions of consumers cannot be calculated, but they can be observed and analysed. Consumers can choose and select from a wide range of products, from the cheaper to the premium category products and it often happens, that even the consumer does not know for sure why he or she selected or preferred a product. Today's modern customers make their decisions according to taste, health, food quality and safety, as a consequence of the recent international and national food scandals. In my research work, the focus is on the consumption of animal based food products; more precisely my thesis will conduct its research on pork meat consumption.

I have chosen this subject for my research work, as I wanted to deal with an issue that influences our everyday life, our lifestyle and welfare and our health. For this reason, my thesis focuses on analysing consumer habits, preferences and attitudes related to pork consumption, namely on the area of nutrition marketing. Hungary's population traditionally consumes pork meat and it is the second most popular meat, so I have chosen pork meat to be the focal point of my thesis.

The selected subject has been analysed with primary and secondary research work. In the beginning of my secondary research the related objectives of the work were formulated. My first objective (1) was to determine the factors which most influence pork consumption, based on national and international scientific literature; the second (2) was the evaluation of the market position of pork meat on the Hungarian and on the international markets.

In order to meet the first objective, I examined the subject through different influential factors, such as (production, trade, market price, subsidies, marketing, culture and religion,

socio-demographic environment, ecological environment, quality and nutrition physiology), I could thus draw up the structure of the most important factors affecting pork consumption.

In order to complete this work, I have collected, assessed and analysed the relevant national and international scientific literature, which helped as well in the judgement of the market position of pork meat. Following this, based on the data deriving from different sources, I conducted my secondary research work. In order to determine the market position of pork meat I formulated new, more informative data lines with different statistical and other methodologies (basis and chain coefficient, indexes, means and price elasticity indicators). My hypothesis related to the secondary research work is the following:

1. The demand for pork meat is decreasing in some consumer segments with the growth of the income.

The main objective of my primary research was to formulate my conclusions on pork meat consumption in Hungary with the help of the data of the sample (1201 questionnaires). I will separately analyse the buying habits of Hungarian consumers, the quantity consumed, and the differences in consumer attitudes. I will examine as well to what extent the results of my questionnaire are in line with the conclusions of other scientific author's on the subject. My objectives related to my primary research are (1) to reveal the attitudes and preferences of consumers towards pork meat consumption in Hungary; (2) to find breakout points from the current situation in order to ameliorate the perception of pork meat and to scientifically support my recommendations.

4 hypotheses were formulated related to the primary research work:

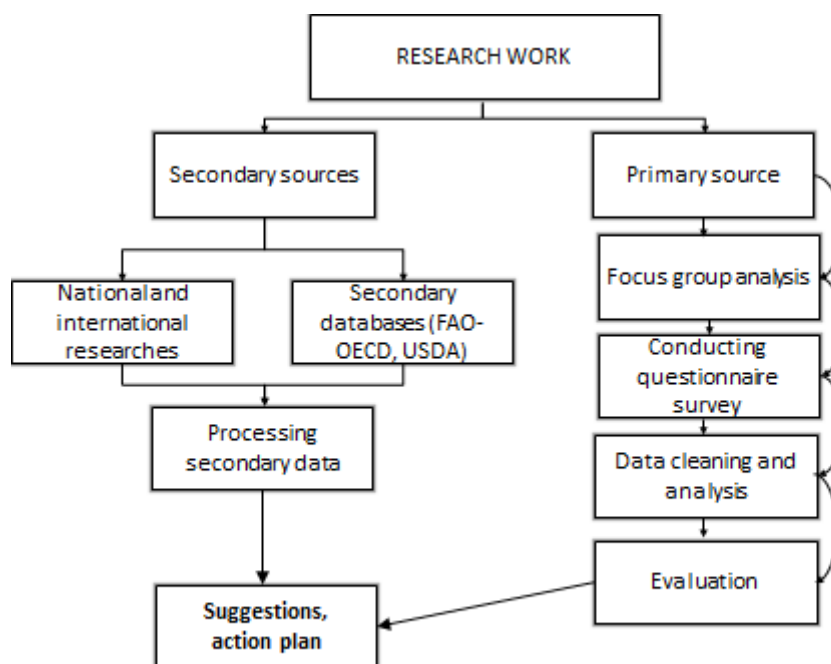
1. Most Hungarian consumers believe that chicken meat is healthier than pork meat.
2. There is a significant difference between genders regarding the frequency of pork consumption.
3. For most domestic consumers, the most important factor during pork purchasing – in comparison with its competitor products – is the relative value of the retail price.
4. Late in life, a higher portion of elderly domestic consumers prefer pork meat and pork based products.

## 2. REVIEW OF THE DATA BASE AND THE APPLIED METHODOLOGY

During the composition of my thesis, I have divided my research work into two parts: on analysing the framework, on research question and on hypothesis, focusing on the information required for my research. In we wish to group the information into a structure, the most general criteria is. Wether we are talking about finding, harmonising, grouping and synthesising an already existing database or wether we have to conduct totally new market research. Basically, this constitutes the difference between primary and secondary market research.

In this chapter, I would like to demonstrate the buyer and consumer models related to my methodology and the methodological approach of my primary research.

*Graph 1.* shows how the structure of my research work was set up.

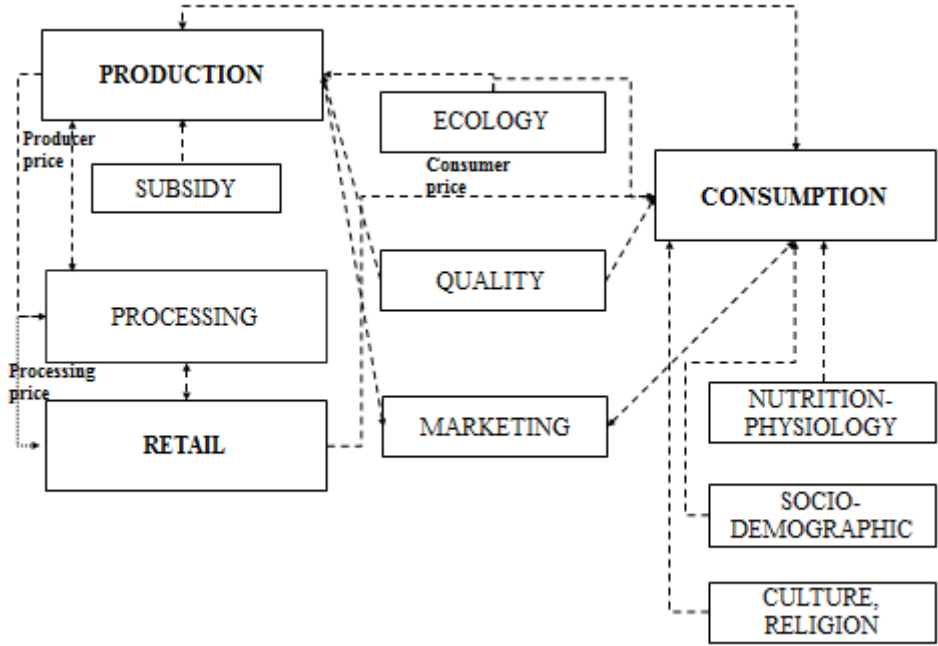


*Graph 1.*

### Synthesis of my research work

Source: Own editing, 2011

In *Graph 1.*, secondary sources means the scientific literature, publications, research and reports discussing the subject including both domestic and international sources. Where it was possible, I also represented research and publications on the current situation in Hungary, in the European Union and in the world. The complex structure of the scientific literature is shown on *Graph 2.*



*Graph 2.*

**Complex structure of the domestic and international scientific literature**

Source: Own editing, 2011

I elaborated several purchase and food consumption models related to the subject and I concluded, that from these models the most suitable one for my work is the one established by HAJDUNÉ-LAKNER, 1999 had set up, as it uses similar factors as I used during the process of analysing the scientific literature (the model represents the relation between food consumer behaviour, food consumption and nutrition and health).

From the publications and databases consulted, I conducted my secondary research and collected the data of consumer price and average net earnings in Hungary for the period 2000-2009. From these data I determined the elasticity of demand, the cross-elasticity of demand and the income elasticity of demand. I also divided the primary data collection into two parts: namely into qualitative and quantitative research. In the framework of the

qualitative research, before the questionnaire assessment - to help to put together the questionnaire and the determination of the possible answers – I conducted a focus group interview. For the quantitative research I chose the questionnaire survey method. The communication channel of the survey was oral, its subject, was consumer-type, the theme was specific (concentrating on pork consumption) and in terms of frequency it was ad-hoc.

The main objective of my consumer survey was to get to know the attitude of the consumers, the reasons behind these attitudes and to explore the factors influencing them, and by the analysis of the survey I would like to forecast the potential reactions of consumers regarding pork meat consumption. We can become acquainted with customers' reactions if we presume that there is continuity amongst past, present and future attitudes and we draw conclusions about the future from the past and the present; consequently we ask questions about future intentions. The socio-economic criteria of consumers are crucial for the survey, as consumer behaviour and decision making is highly determined by the nature of the consumer.

To conduct my survey, I developed a questionnaire on my own, of which following the issuing of the questionnaire, 1201 proved to be useful for my research. The title of the questionnaire was „Analysis of consumer preferences and attitudes towards pork meat consumption”. I used mostly closed questions, but there was a possibility for open questions and individual opinions as well. The possible answers were formed according to the questions, 0 marked „ I don't know” and x „I do not answer” possibilities. The structure of the questionnaire followed the classic 4Ps, therefore the questionnaire began with the product, namely pork meat or products made from pork (recognition, popularity, frequency of consumption and product differentiation, etc.). The questionnaire continued with the place of procurement (Place), followed with questions regarding Price and finally questions related to Promotion. There were some questions on general knowledge and some filtering, connecting, reminder and control questions as well. At the end of the questionnaire, I formulated 14 statements that could be rated on the Likert-scale from 1 to 5, as this is the most frequently used scale for measuring attitudes. After surveying the consumer habits of pork meat, I phrased questions segmenting the customers, in order to group them by different criteria (gender, age, marital status, education, economic activity, size of settlement and income).

The questionnaire survey<sup>1</sup> took place at national level between 30 November 2010 and 31 January 2011. During the sampling, the structure of the different regions and settlements was adequate for the sample determined by the National Statistical Office, therefore the representativity could be ensured. In the case of 'gender' and 'age', the data of the sample showed a minimal difference from the ratio published by the National Statistical Office, therefore the sample represents the consistency of the basic set in four factors (region, type of settlement, gender and age).

In the regions and settlements the method of 'random walking' was used in order to ensure a total randomness of the selection of respondents. Therefore, all respondents had the same chance to be part of the sample. From the requested households the respondent was selected by the method known as 'birthday key', also ensuring a total randomness (VERES - HOFFMANN – KOZÁK, 2009).

I have found the „annual purchase frequency” SZAKÁLY, 1994 the best indicator to express with one number the frequency of the purchase of pork meat. With its use, we can express the frequency of the purchase of the product category at an annual level. The annual purchase frequency indicator turned out to be an excellent indicator of the purchase frequency and demand for the different products; therefore I used it in the measurement of pork meat consumption.

For the selection of the methodology, I examined similar surveys on food consumption in the domestic scientific literature in order to compare how other authors conducted their surveys and what kind of methodology they used. During the analysis of the questionnaire, I constantly used the „best methodological approach” found in the domestic (SZAKÁLY – SZIGETI – SZENTE, 2009, SZŰCS – TIKÁSZ – KOVÁCS, 2008, SZAKÁLY – FÜLÖP – NÁBRÁDI, 2008) and international (NGAPO, 2003, FORTOMARIS, 2005, VERBEKE, 2009, XING, 2009) scientific literature. I processed the questionnaires with SPSS 19.0 statistical software. As a first step, it was necessary, to encode all the questionnaires, then this step was followed by

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<sup>1</sup> Places of sample collection: Abony, Bagod, Balinka, Békéscsaba, Boldva, Budakalász, Budakeszi, Budaörs, Budapest, Bükkösd, Debrecen, Derecske, Dévaványa, Dombóvár, Dunasziget, Ebes, Eger, Egerszalók, Földeák, Füzesabony, Gödöllő, Gyöngyös, Győr, Gyula, Hajdúböszörmény, Hajdúsámson, Halásztelek, Hódmezővásárhely, Jánossomorja, Kakasd, Kápolnásnyék, Kaposvár, Kazincbarcika, Királyegyháza, Kisbér, Kiskunhalas, Kurityán, Levelek, Mágocs, Magy, Mindszent, Miskolc, Mosonmagyaróvár, Múcsony, Nagykálló, Noszvaj, Nyíregyháza, Orosháza, Páhi, Pécs, Rákóczi falva, Siklós, Szeged, Székesfehérvár, Szentlőrinc, Szolnok, Tapolca, Tardos, Tata, Tatabánya, Teskánd, Tiszatelek, Újszilvás, Varbó, Zalaegerszeg.

data-cleaning and data-filtering to achieve the most accurate results. From the primary data collection with the methodology of descriptive statistics, I calculated means, minimum, maximum, median, mode and deviation and relative frequency. For the evaluation of the statements – those which could be answered on a Likert-scale from 1 to 5 – I calculated different position indicators (mean, median and mode), dispersion indicators (range and dispersion), and indicators of the shape (skewness and kurtosis) and other indicators (sum, number of the set, minimum, maximum). I used two new methods for the analysis of the answers given on scale-type questions. The lowest 2 boxes sum (SZAKÁLY – SZABÓ G., 2009) the most unfavourable opinions (answer number 1 and 2), the top 2 boxes show the most favourable ones (answer 4 and 5). In my opinion, this method is really effective in the case of consumer surveys, as it gives the possibility to compose larger, but homogenous groups from the answers given. This reflects better the opinions of the customers. For the demonstration of the coherence between the questions, in the case of one variable method, I used significance analysis with Pearson-type Chi-square probe. For the multivariate data analysis from the methods based on dependence, I used cross-tables and at the end of the primary research, I made cluster analysis to shape the segments of consumer behaviour. Finally, it is important to mention that I used a 5% error probability during the analysis of the significance and in the end I kept the results or rejected them.

### **3. MAIN CONCLUSIONS OF MY THESIS**

#### **3.1. Conclusions and recommendations related to my secondary research**

In the beginning of the secondary research I determined the objectives connected to the required work. In order to meet the first objective, I used several factors (production, trade, retail price, subsidies, marketing, culture and religion, socio-demographic environment, ecological environment, quality, nutrition-physiological effects). Therefore I touched all factors influencing the consumption of pork meat. In order to complete this work, I have collected, assessed and analysed the relevant national and international scientific literature that helped as well in the judgement of the market position of pork meat. Following this, based on data deriving from different sources, I conducted my secondary research work and in order to determine the market position of pork meat I formulated new, more informative data lines with different statistical and other methodologies (basis and chain coefficient, indexes, means and price flexibility indicators).



My hypothesis related to the secondary research work was formulated as follows: “*The demand for pork meat in some consumer segments is decreasing with the growth of income.*” I proved this statement with economic calculations, so I collected the data of consumer price and average net earnings in Hungary during the period of 2000-2009. From these data I determined the elasticity of demand, the cross-elasticity of demand and the income elasticity of demand. Based on the results, I came to the conclusion that, in terms of the price-elasticity of demand for pork, pork meat behaves inelastically. From the point of cross-elasticity of demand, I examined how much a 1% change in the price of chicken meat influences the demand for pork and the quantity consumed. The results of the cross-elasticity are extremely varied (there were positive and negative numbers as well); therefore we can certainly assume that consumers are not indifferent.

*Table 1.*

**Price-elasticity, cross-elasticity of demand and elasticity of income in relation to  
consumption of pork meat  
(2000-2009)**

*Unit: %*

<b>Years</b>	<b>Price- elasticity of demand</b>	<b>Cross-elasticity of demand</b>	<b>Elasticity of income</b>
<b>2000</b>	-0,05	-0,29	-0,21
<b>2001</b>	-0,21	-0,47	-0,76
<b>2002</b>	-0,17	-0,52	0,26
<b>2003</b>	0,08	0,32	-0,17
<b>2004</b>	-0,38	-0,54	-1,75
<b>2005</b>	1,03	1,55	1,01
<b>2006</b>	0,07	0,18	0,16
<b>2007</b>	0,83	-0,12	-1,24
<b>2008</b>	-0,57	-0,51	-1,84
<b>2009</b>	0,30	0,47	2,16

Source: Own calculation based on the data of Hungarian Central Statistical Office, 2011

From the results of the calculations (*Table 1.*), I am of the opinion, that *hypothesis 1.* related to secondary research could not be totally proved, as I could not show an obvious coherence between pork meat consumption and income (in most of the cases, pork meat behaved as a normal stock).

### **3.2. Conclusions and recommendations related to the primary research**

The main objective of the primary research was to be able to draw conclusions about domestic pork meat consumption by processing the results of the questionnaire developed. As a result,

amongst the objectives of the primary research, one of the most important results was to map the preferences and attitudes of customers towards pork meat and to formulate recommendations based on these attitudes. Based on the primary research I stated four hypotheses, which could be clearly proved or alternatively disproved.

*Hypothesis 1.* of my primary research was that „*Most Hungarian consumers believe that chicken meat is healthier than pork meat*”. From the answers on the 3<sup>rd</sup> question related to the hypothesis, I came to the conclusion that customers really do think that chicken meat is healthier than pork meat, 28,3% of them, so the hypothesis was proved. From the five possible answers the first was the fish with 57% (685 respondents), the second was chicken meat with 31,3% (376 persons), the third was turkey with 5,4% (65 respondents), pork was the fourth only with 3,0% (36 persons) and finally beef with 26 answers. Altogether I concluded that half of the respondents found fish the healthiest and one third found chicken. Regarding gender differences, I stated that in the opinion of women white meat (fish, chicken, and turkey) is healthier, while men find red meat (pork and beef) healthier. The cross-table for gender showed that the younger generation marked white meat and elderly respondents preferred red meat. Therefore my recommendation is to dispel the misconceptions about pork meat being unhealthy (especially amongst youngsters), as the results reflect that the negative perception positions pork meat at the end of the scale and of course this influences consumption as well. In the future, female customers should be concentrated on, as they are the ones who purchase and prepare the food for the family. For the popularisation of pork meat, such strong points should be highlighted, based on research into modern nutrition science and arguments such as ‘it can be easily procured, it is not too expensive, fresh, it can be variously prepared and it is one of the most important sources of protein’.

*My 2nd hypothesis:* „*There is a significant difference between genders regarding the frequency of pork consumption*” was proved. During the survey I found interesting differences between male and female customers and a significant difference could be shown (Pearson-type Chi-square  $p=0,000$ ). 50% of male customers eat pork meat or food made from pork weekly, 30% of them more than once a month and 20% once a month or less. In the case of female customers this portion was more balanced; 37% of them eat pork once a week, 33% more than once in a month and 30% once in a month or less. As a result, my recommendation is to focus on male customers in the campaigns of pork meat, as the frequency of consumption of male customers was always higher. Meanwhile in the case of the lower frequency rate, the portion of female customers was higher.

The 3rd hypothesis of my primary research is „For most domestic consumers the most important aspect when purchasing pork– in comparison with its competitor products – is the relative value of the retail price”. For the proof of my hypothesis, I asked respondents in a separate question to rank the factors influencing the purchase of pork. The ranking indescending order is: freshness, price, fatness, and domestically produces, healthy nutrition, farming conditions, packaging and advertising, as can be seen in Table 2. So my 3rd hypothesis could not be proved, as most domestic customers choose to buy pork meat firstly for its freshness, and secondly for its price. My recommendation is to motivate buyers of pork not only with low prices, but to highlight features of pork meat that could be important for customers such as reliable quality, domestically produces and freshness. In this case, the customer can rely on these features, while price is continuously changing, quality and reliability is stable.

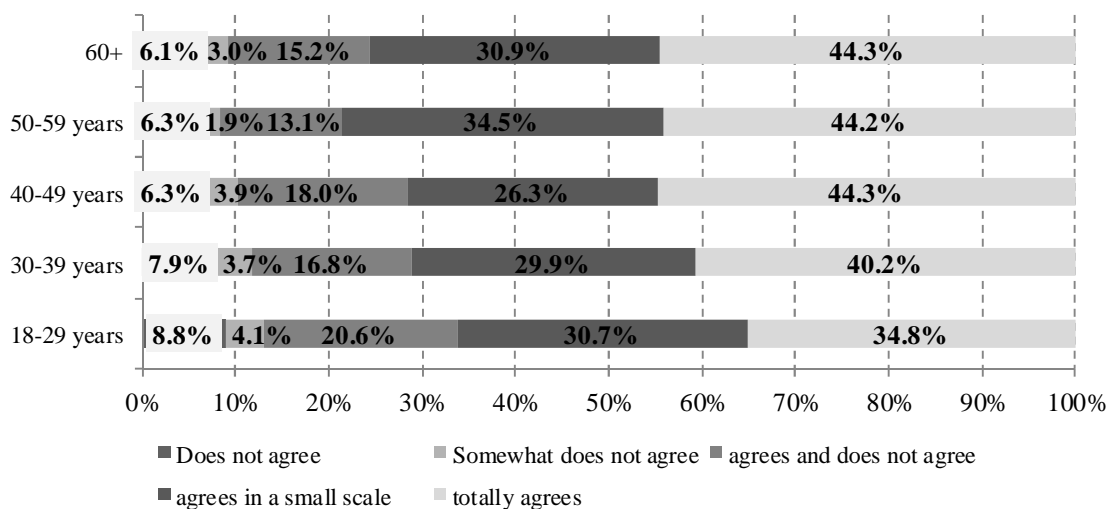
Table 2.

**Pork purchase influencing factors**

	<b>Freshness</b>	<b>Price</b> (Ft/kg)	<b>Fatness</b>	<b>Domestically</b> <b>produces</b>	<b>Healthy</b> <b>nutrition</b>	<b>Farming</b> <b>conditions</b>	<b>Packaging</b>	<b>Advertisi</b> <b>ng</b>
<b>Mean</b>	4,81	4,39	4,17	4,04	3,96	3,83	3,51	2,12
<b>Median</b>	5,00	5,00	5,00	4,00	4,00	4,00	4,00	2,00
<b>Mode</b>	5,00	5,00	5,00	5,00	5,00	5,00	4,00	1,00

Source: Own editing based on primary research, 2011

The 4th hypothesis connected to the results of the survey is „Late in life, a bigger proportion of elderly domestic consumers prefer pork meat and pork based products”. The 7<sup>th</sup> statement was related to my hypothesis (*I am happy to consume food made from pork*) and could be ranked on a scale from 1 to 5. To determine that someone is happy to consume pork meat, I took into consideration ranks 5 (I totally agree) and 4 (I agree to some extent). My survey focused on the question of the proportion of different age groups in these categories and looked for the answer with the method of top 2 boxes (I considered the answers of 4 and 5 together). My hypothesis was not proved by the significance analysis, as a result I could not prove the coherence between the two factors, and therefore my 4th hypothesis was rejected. Even so, I would recommend producing new, modern tasting (e.g. Mexican, barbecue, chilli and pepper-mustard) half-finished and finished products from pork meat or rather the extension of the product range to suit customer needs.



Graph 3.

**Degree of agreement with the 7th statement „I am happy to consume food made from pork by dispersion of age groups**

Source: Own editing based on database, 2011

Based on the answers, it can be stated that the thigh is the most frequently consumed part of the pig, followed by chop and spare rib. The rank of the most frequently consumed products from pork is bologna, salami, Vienna sausage, ham and sausage.

Regarding the place of procurement, I concluded from the data of the sample, that there is a significant difference, with several background factors, the consumer habits of male and female customers. The place of procurement of fresh pork meat is the local butcher, or smaller meat shops, as customers believe that these smaller shops are the most reliable and the safest. Therefore purchase in local stores trusted by customers should be encouraged, aiming to help the purchase and consumption of local products. 73% of the respondents answered yes to my question, if they buy meat from households or from the farmer itself.

To my question, if on the packaging information the place of origin should be marked, 70% of the respondents marked the answer 4 (agree to some extent), 25% marked answer 5 (totally agrees) and it was especially active physical workers, unemployed people and housewives who found this information important.

The obligatory nutritional information (GDA<sup>2</sup>) marked on the packaging is really useful and clear information. In my opinion, the place of origin should be marked on the packaging with

<sup>2</sup> Guideline Daily Ammounts

new labelling. There is a lot of unnecessary information influencing the customer, but the place of origin is only one word most of the time and it does not even always reflect the reality. My suggestion is to develop a label for pork meat (which could be used for other products as well), on which place of origin is stated in different manners. As a result, the product could be tracked more efficiently from the farmer to the customer and food scandals could be avoided as well. Country of origin, the country, where it was raised and where it was cut and processed should be stated on the packaging label. It was processed several times, all places should be stated.

In my questionnaire, I was curious to find out if customers believe that domestic products are better quality. I wanted to explore the positive attitude of customers towards Hungarian pork with this question. From the answers, I calculated that 80% of the respondents found that domestic pork is better quality than pork from abroad and 54% would pay more for it. Within these answerers, active physical workers and pensioners represented the highest proportion. The respondents have strong positive attitudes towards pork meat attitudes that have no objective background. This was confirmed by the customers own, subjective opinions, but it could be useful for a marketing campaign.

As a next step with the help of an open question, I determined the ranking of good quality pork meat seen in *Table 3*.

*Table 3.*

**Features of good quality pork meat in descending order**

<b>Title</b>	<b>Frequency (number of respondents)</b>	<b>Distribution (%)</b>	<b>Title</b>	<b>Frequency (number of respondents)</b>	<b>Distribution (%)</b>
Vivid colour	340	30,1	Not wet	16	1,4
I don't know	195	17,2	Not slimy	13	1,1
Nice red	106	9,4	Not dry	8	0,7
No scent	79	7,0	Not in bloody liquid	8	0,7
Not too fat	75	6,6	Does not have liquid	5	0,4
Tasty	58	5,1	Fine to touch	2	0,2
Nice scent	49	4,3	Hungarian	2	0,2
Appetizing	47	4,2	Quality guarantee	2	0,2
Pink	43	3,8	Full of protein	1	0,1
Consistency	36	3,2	Clean	1	0,1
Short	22	1,9	Not frozen	1	0,1
Succulent	22	1,9	<b>Sum</b>	<b>1131</b>	<b>100,0</b>

Source: Own editing based on the database, 2011

My observation is that the most important factor was the colour (43%), than the scent (11%), the taste and the flavour (7%), fatness (6%), whether the meat was appetizing (4%), consistency (4%), and other factors in the remainder of the sample. In my opinion, it is no accident that except for taste and flavour all important factors are visible ones. To sum up, I found that customers buying fresh pork meat judge the quality by empirical features (colour, scent, taste and fatness) and reach their decision with the help of information influencing their senses.

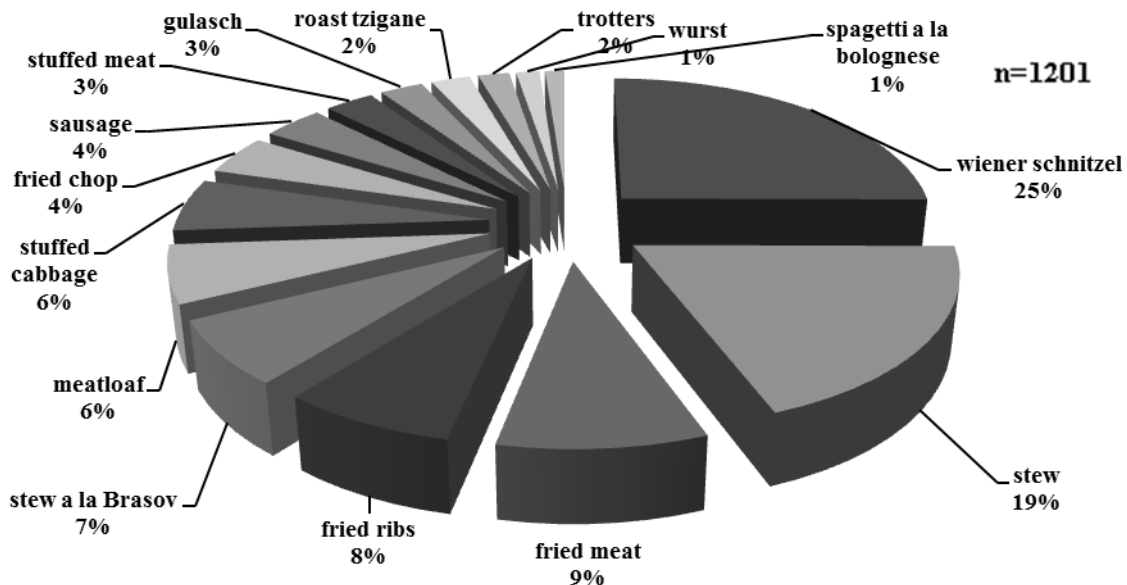
The rest of the questionnaire deals with retail price. 26% of customers said that they would pay more if information on production and farming conditions were available. This information underlines my previously recommendation mentioned regarding labelling and the fact that customers generally require more information during their purchase. The information concerning whether customers would be ready to pay more suggests that the reservation price of pork could only handle 0-10% increase in price. However, to accommodate this increase, they would require more information in order to make their decision. This solution is recommended only for meat sold in hyper and supermarkets, as more information is needed in these cases, as packaging is the mute seller.

When ranking the preferences regarding the strength and weaknesses of pork meat, in the case of strengths, two thirds of the respondents emphasized its diversity, half of the sample found its taste the second most important factor, the third factor was that it is easily obtainable, followed by quality and price. Based on the answers it can be said that in the case of strengths, for the respondents pork meat is varied, tasty, easily, obtainable, of reliable quality and not too expensive. In marketing campaigns targeting Hungarian pork consumption, these features should be emphasized. In the case of weaknesses, I found that the results show high similarity with customers' misconceptions, as the greatest weakness of pork is its „fatness” followed by the fact that it is considered unhealthy. These negative features should be the focus of a nationwide educational campaign.

Furthermore, I recognized that 13,2% of the respondent had seen advertisements promoting pork meat and 76% had seen these on TV. In my opinion, there is a great need for organised marketing activity that would build its strategy on educational campaigns.

The 27th question of the survey (*Please indicate your 3 favourite pork based foods*) was asked out of curiosity as an open question. The answers were genuinely heterogeneous, so food registering less than 1% was ignores. The most popular food was Wiener schnitzel, as

25% of the consumers chose this. The second was pork stew (19%), than fried meat (9%), fried rib (8%), stew a la Brasov (7%), meat loaf and stuffed cabbage (6-6%), but sausage and liverwurst, goulash and etc, could also be found on the list. The heterogeneous nature of the answers underlines the diversity of pork meat, as people love to make different foods from the same basic ingredient.



Graph 4.

### Respondents' favourite food

Source: Own editing based on the database, 2011

From the results of the questionnaire and from the *Graph 36.*, I can state that the favourite pork based foods of Hungarian consumers are Wiener schnitzel, pork stew and fried meat. The three most frequently mentioned foods are part of the traditional Hungarian cuisine; therefore I believe that there is a need for innovative, modern recipes of pork meat and for new taste and product portfolio and to introduce these new products to a wider public. Currently, chicken serves as a basis for modern new recipes. In the gastronomy connected to pork meat, traditional Hungarian food can be found. In order to reposition pork meat, there is a need to renew pork meat and to eliminate negative attitudes and to strengthen positive ones.

The aim of the cluster analysis was to group my respondents into a homogenous group by various selected indicators. I formulated these clusters, with elements which were similar to each other, but which differed from elements in other clusters. I differentiated 3 clusters from each other, into which 1131 respondents could be assigned. The features of the clusters were

determined with the help of cross-table analysis. The result of the cluster analysis is shown in *Table 4*.

*Table 4.*

**Results of cluster analysis**

	<b>„A” cluster</b>	<b>„B” cluster</b>	<b>„C” cluster</b>	<b>Value of Chi-square</b>
<b>Number of elements (person)</b>	749	365	17	
<b>Cluster features</b>				
<b>Gender</b>	Balanced, but higher male ratio	Balanced, but higher female ratio	More than 80% male	p=0,020
<b>Age</b>	Mixed age groups, mostly over 40 years old	70% between 18-49	Between 18-39	p=0,000
<b>Education</b>	Lower education	Mostly graduates	65% graduates, 23% skilled workers	p=0,000
<b>Marital Status</b>	Half of them married or living with partner	Married or living with partner	60% single	p=0,001
<b>Main activity</b>	Active physical workers or pensioners	Active physical and intellectual workers	Students and active physical workers	p=0,000
<b>Type of settlement</b>	Live in smaller settlements	Live in a bigger city	Mixed settlements	p=0,002

Source: Own editing based on primary research, 2012

With the help of the cluster analysis, I could prove that pork consumers can be divided into three clusters and in order to enhance pork consumption the different consumer groups should be targeted with different marketing tools.

**4. NEW RESULTS OF THE DISSERTATION**

My main objective with the scientific literature was to determine the main factors influencing pork consumption, therefore I examined the domestic and international scientific literature and my further objective was to judge the current position of pork meat on Hungarian markets by consulting the available publications and data, in the case of my primary research my objective was to explore consumer preferences and attitudes towards pork consumption and to make suggestions for the improvement of the perception of pork meat. The necessary activities in connection with the objectives were conducted; I analysed and assessed the scientific literature from the different databases; I developed new data lines or used them for further calculations. For my secondary research I framed one hypothesis (H1), while for the primary research I formulated four hypotheses (H2-5).



**H1. “The demand for pork meat in some consumer segments is decreasing with the growth of income.”**

My hypothesis related to the secondary research work was calculated with economic calculations, so I collected the available data for consumer price and average net earnings in Hungary. After the collection of the data, I calculated the elasticity of demand, the cross-elasticity of demand and the income elasticity of demand. Based on the results, I came to the conclusion regarding the price-elasticity of demand for pork meat, that pork meat behaves inelastically. From the point of view of cross-elasticity of demand, I concluded that pork and chicken meat behave as competitors of each other. According to the results of the calculations on elasticity of income, my *hypothesis could not be proved, as obvious coherence could not be shown between the growth of income and the decrease in pork meat consumption*. Therefore pork meat behaves as a normal stock.

**H2. Most Hungarian consumers believe that chicken meat is healthier than pork meat.**

From the results of the primary research the conclusion in my analysis is that the half the respondents found fish the healthiest meat and one third chicken. Respondents found chicken meat a lot healthier, as they marked pork meat as the fourth healthiest from five possibilities; as a result, *it was proved that domestic customers believe that chicken meat is lot healthier than pork meat*.

**H3. There is a significant difference between genders regarding the frequency of pork consumption**

My second hypothesis of the primary research *was proved, as a significant difference could be seen between male and female customers' pork consumption* (Pearson-type Chi-square  $p=0,000$ ). 50% of male customers eat pork meat or food made from pork weekly, 30% of them more than once a month and 20% once a month or less. In the case of female customers this portion was more balanced; 37% of them eat pork once a week, 33% more than once a month and 30% once a month.

**H4. For most domestic consumers the most important aspect when purchasing pork– in comparison with its competitor products – is relative value of retail price.**

For the proof of my hypothesis I asked respondents in a separate question to rank the factors influencing the purchase of pork. Their rank in descending order is: freshness, price, fatness, and domestic product, healthy nutrition, farming conditions, packaging and advertisement, as a result *my hypothesis could not be proved, as most domestic customers choose to buy pork meat for its freshness and not for its price.*

**H5. Late in life, a higher proportion of elderly domestic consumers prefer pork meat and pork based products**

In order to prove my hypothesis I used the top 2 boxes method. *My hypothesis has not been proved by significance analysis, as a result I couldn't prove the coherence between the two factors, and therefore my 4th hypothesis was rejected.* However I observed that the older generation prefers pork meat more than the younger generations.

In my opinion, in my dissertation, I made new or novel statements based on the analysis of the primary and secondary research. These are the following:

1. I demonstrated by the calculated elasticity indicators, that pork meat is inelastic; accordingly an increase in the price generates a decrease in the quantity consumed. I proved that currently in our country, pork meat does not behave as an inferior stock, the consumed quantity does not depend on the income, but on the change in the price of fresh and processed product, as customers refer to it as a normal stock
2. I showed by significance analysis, that there is a significant difference between male and female consumers regarding pork consumption.
3. I determined with the help of mathematical - statistical calculations which parts of the pig are the most frequently consumed and where consumers purchase the product. Furthermore after running a cluster analysis, I determined with the help of the background indicators which customers prefer and consume pork.
4. I determined which features represent good quality for customers and which is the most favourite food prepared from pork and what are the most popular products for grilling during summer time. This information could be useful for producers and distributors.
5. It was proved, that when shopping, retail price is not the only important factor for respondents, but freshness was considered the most important influencing factor.

6. By the significance analysis, it could not be demonstrated that the older generation consumes pork meat more happily than the younger generation.

## **5. THEORETICAL AND PRACTICAL EXPLOITATION OF THE RESULTS**

In my opinion, there is a great need for a marketing communication campaign at sectorial, community level that would build its strategy on educational campaigns aiming to dispel the misconceptions of customers. Only 13% of the respondents have seen or heard advertisements for pork and pork consumption, therefore it would be important to launch a targeted communication campaign whose aim would be the popularisation of pork meat and pork based products. With this we could begin to inform customers about pork meat (place of origin) and to dispel the misconceptions (fatness, unhealthiness) in order to increase customers' trust.

From the point of view of the communicative aim, informative advertisements could be successful, and they should focus on the advantages of domestic pork consumption. Rational and emotional arguments should be used. From the point of view of the message simple, clean, easily understandable, strictly informative content should be emphasized.

We should exploit the diversity of pork meat and a novel, modern image of pork meat suiting the 21st century should be created. The children of the present are the customers of the future; therefore healthy nutrition should be developed in nursery and elementary schools.

*Table 5.* summarises the main results and the theoretical and practical exploitation of the research.

Table 5.

### Main results of the research, theoretical and practical exploitation and potential users

Main results	Theoretical and practical capitalisation	Potential users
There is a significant difference between genders in terms of meat considered healthy by the respondents ( $p=0,000$ ).	The method of analysis. Knowledge relating to weaknesses and customer misconceptions. Prejudices about the health value of meat.	Researchers working in the field of food marketing. Sectorial and professional organizations, which can be part of a marketing communication campaign about pork consumption.
Fatness (675 persons) and „unhealthy” (306 persons) were mentioned most frequently as the main weaknesses of pork meat.		
There is a significant difference between male's and female's pork consumption ( $p=0,000$ ).	The method of analysis. During the product promotion male customers should be concentrated on, as they consume pork more frequently than women	Researchers working in the field of food marketing.
The most important factor in the purchase of pork meat was freshness (mean=4,81) and price was only the second factor (mean=4,39).	The method of analysis. We should not try to reach customers only with the message of „cheapness”, but rather with the message of reliable and stable quality.	Producers, sellers, and distributors who deal with pork meat sales.
In the 7th statement of the questionnaire (I am happy to consume food made from pork meat) there is a significant difference in terms of the ratio of genders ( $p=0,000$ ), main activities ( $p=0,000$ ), education ( $p=0,000$ ).	The method of analysis. Knowledge of the strengths of pork meat Relative frequency of consumption of pork and pork based products.	Researchers working in the field of food marketing.
A significant difference could not be shown in pork consumption and in terms of groups ( $p=0,951$ ).		
The most frequently consumed pork meat is the thigh (19,1%), chop (14,1%) and spare rib (10,4%) and the most frequently consumed product is bologna (38,9%), and salami (34,4%).	Different structure of consumption by age groups. Extension of product portfolio to align with customers' needs with the emphasizing of the strengths of pork meat.	Researchers working in the field of food marketing. Producers, sellers, distributors who deal with pork meat sales.
The two features mentioned most of the time were diversity (795 persons) and taste (579 persons).		Sectorial and professional organizations which can be part of a marketing communication campaign about pork consumption.
Significant differences can be shown in places of procurement of fresh meat in terms of age group ( $p=0,000$ ), education ( $p=0,000$ ), and main activity.	The method of analysis. The most frequent places of purchase of fresh and processed pork. Motivation of the purchase of local products.	Sectorial and professional organizations which are part of the supply chain.
Significant differences could be shown in places of procurement of processed pork products, and age, type of settlement ( $p=0,000$ ), gender ( $p=0,000$ ), education ( $p=0,000$ ) and main activity ( $p=0,000$ ).		

There is a significant difference in the importance of place of origin and age group ( $p=0,026$ ) and type of settlement ( $p=0,010$ ).	The method of analysis. The importance of marking the place of origin. Modifying the labelling of packaged pork meat for customers' needs.	Researchers working in the field of food marketing. Producers, sellers, distributors who deal with pork meat sales. Sectorial and professional organizations which can be part of the development of the labelling.
Respondents found that domestic pork meat is better quality than meat from abroad and there is a significant difference in answers and age groups ( $p=0,029$ ), and type of settlement ( $p=0,000$ ).	The method of analysis. Strong positive attitudes towards Hungarian pork meat. Further strengthening of this connection.	Researchers working in the field of food marketing. Sectorial and professional organizations which can be part of a marketing communication campaign about pork consumption.
Significant differences can be seen between statement I. of the questionnaire (Pork consumption is part of healthy nutrition) in terms of type of settlement ( $p=0,000$ ), main activities ( $p=0,003$ ), education ( $p=0,000$ ) and the income of the customer ( $p=0,000$ ).	The method of analysis. In my sample, people who live in smaller settlements, and are active workers, agreed with this statement.	Researchers working in the field of food marketing. Sectorial and professional organizations which can be part of a marketing communication campaign about pork consumption. Producers, working on the processing of fresh pork meat.
Significant differences can be observed in the 3rd statement of the questionnaire (Pork meat is tastier, than other meat) in terms of gender ( $p=0,007$ ), main activities ( $p=0,002$ ), education ( $p=0,001$ ), and type of settlement ( $p=0,000$ ).	The method of analysis. Respondents have a positive attitude towards the taste of pork.	
A significant difference can be shown in the 4th statement (Pork meat can be prepared very diversely) in terms of type of settlement ( $p=0,001$ ), gender ( $p=0,003$ ), education ( $p=0,030$ ) situation of income of the customer ( $p=0,000$ ).	The method of analysis. Emphasizing the diversity of pork meat, development of a new taste and product portfolio (grill, barbecue, and Mexican).	
There are significant differences in the 9th statement of the questionnaire (The quality of Hungarian pork meat is reliable) in terms of main activities ( $p=0,021$ ), type of settlement ( $p=0,000$ ), and income ( $p=0,000$ ).	The method of analysis. Respondents have a positive attitude towards the good quality of domestic pork.	
A complex consumer questionnaire on consumer preferences and behaviour related to pork consumption.	The questionnaire could be used with different product categories to analyse other animal based products.	

Source: Own editing, 2012

## 6. PUBLICATIONS IN THE SUBJECT OF THE DISSERTATION

### Foreign language scientific journal:

A. NÁBRÁDI – K. PETŐ – V. BALOGH – E. SZABÓ – A. BARTHA – K. KOVÁCS (2009): „*Efficiency indicators in different dimension*”. In: Applied Studies In Agribusiness And Commerce (APSTRACT) (szerk.: Prof. Dr. Wim Heijman) Agroinform Publishing House, Vol. 3. Nr. 1-2. ISSN: 1789-221X. 7-23 p.

### Hungarian language scientific journal with foreign language summary:

TIKÁSZ I. – BÁRÁNY L. - BALOGH V. – SZÚCS I. (2008): „*A szabadtartásos baromfitermékek fogyasztói értékítélete*”. In: Élelmiszer, Táplálkozás és Marketing (szerk.: Dr. Szakály Zoltán), V. évfolyam, 2008/2-3. szám. ISSN: 1786-3422. 81-87 p.

BALOGH V. (2010): „*Sertéshúsfogyasztással kapcsolatos fogyasztói preferenciák, attitűdök elemzése az Észak-alföldi régióban*”. In: Élelmiszer, Táplálkozás és Marketing (szerk.: Dr. Szakály Zoltán), VII. évfolyam, 2010/1. szám. ISSN: 1786-3422. 27-31 p.

BALOGH V. (2008): „*Az élelmiszerfogyasztás tendenciáinak vizsgálata Magyarországon*” In.: Animal welfare, ethology and housing systems (AWETH) (szerk.: Dr. Tózsér János), Vol. 4, Issue 2, ISSN 1786-8440, 2008. 494-506 p.

### Foreign language lecture published abroad (international publications):

V. BALOGH (2008): „*The Greek and the Hungarian dietetic habits and health status*” International Conference on Applied Economics 2008, Technological Education Institute of Western Macedonia, 15-17. May 2008, Kastoria, Greece. 73-79 p.

V. BALOGH (2008): „*The Czech and The Hungarian dietetic habits and health status*”, Agrarian Perspectives XVII. „Challenges for the 21st Century 2008”. ISBN: 978-80-213-1813-7. Univerzita Praze (Prága). 245-253 p.

V. BALOGH (2009): „*Consumption situation the food market of animal origin*” International Congress on the Aspects and Visions of applied Economics and Informatics, AVA Congress 4, 26-27 March 2009, Debrecen.

A. BARTHA – V. BALOGH (2009): „*EU enlargement of Hungarian meat market*” International Congress on the Aspects and Visions of applied Economics and Informatics, AVA Congress 4, 26-27 March 2009, Debrecen.

A. BARTHA – V. BALOGH – A. NÁBRÁDI (2009): „*The current situation of EU's food chain*”. 113th EAAE Seminar: „A resilient European food industry and food chain in a challenging world”, 03-06 September 2009, Chania, Crete, Greece.

Hungarian language book:

NÁBRÁDI A. - PETŐ K. - BALOGH V. - SZABÓ E. (2008): „*A hatékonyság mérésének módszertana*”. Agroiinform Kiadó és Nyomda, ISBN: 978-963-502-889-4, Budapest, 2008. 23-48 p.

Foreign language book:

A NÁBRÁDI. - K. PETŐ - V. BALOGH - E. SZABÓ (2008): „*Efficiency indicators of various levels (partial, complex, social, corporate, regional and macro-economical)*”, Agroiinform Publisher, ISBN: 978-963-502-889-3, Budapest, 2008. 23-48 p.

Hungarian language lecture with foreign language summary

BALOGH V. (2008): „*Funkcionális élelmiszerek – a jövő élelmiszerei*” XI. Nemzetközi Tudományos Napok, Károly Róbert Főiskola, 2008. március 27-28. Gyöngyös.

BALOGH V. (2008): „*Az állati eredetű élelmiszerek fogyasztásának alakulása Magyarországon*” A jövő tudósai, a vidék jövője” doktoranduszok konferenciája, 2008. november 20. Debrecen.

SZÚCS I. - BALOGH V. (2008): „*Az állati eredetű élelmiszerek fogyasztásának főbb tendenciái az elmúlt 20 évben*”, In: HODÚR C. (szerk.) International Conference on Science and Technique in the Agri-food business, Szegedi Tudományegyetem - Mérnöki Kar, 2008. november. 296-299. o.

BALOGH V. (2008): „*A tej és tejtermékfogyasztás tendenciáinak vizsgálata Magyarországon*” XIV. Ifjúsági Tudományos Fórum, Pannon Egyetem, 2008. április 3. Keszthely.

BALOGH V. (2009): „*Új kihívások és kitörési pontok az állati eredetű élelmiszerek piacán*”. VIII. Wellmann Oszkár nemzetközi tudományos konferencia, „Mezőgazdaság és vidék a változó világban”, ISSN: 1788-5345. 2009. április 23. Hódmezővásárhely.

BALOGH V. (2009): „*Helyzetelemzés és megoldási lehetőségek az állati eredetű élelmiszerek piacán*” II. Gödöllői Állattenyésztési Tudományos Napok, Szent István Egyetem, 2009. október 16-17. Gödöllő.

Foreign language conference lecture:

V. BALOGH – A. BARTHA – A. NÁBRÁDI (2009): „*The effect of EU enlargement to the Hungarian agricultural trade*”, 3rd Green Week Scientific Conference 2009, „Multi-level Processes of Integration and Disintegration, 14-15 January 2009, Berlin – Germany.

Other scientific publication:

SZÚCS I., BITTNER B., BALOGH V., BÁRSONY P., APÁTI F., SZÖLLŐSI L., BOZÁN CS. (2007): „*A mezőgazdasági vízhasználatok felmérése és a vízhasználatok költségelemzése*” Tanulmány. SZÚCS I (szerk.). Készült a FVM Természeti Erőforrások Főosztályának megbízásából, DE-AMTC-AVK, HAKI, Debrecen – Szarvas (2007) 1-82p.