FACTORS AFFECTING CONSUMER BEHAVIOUR IN CASE OF MEAT WITH AN EMPHASIS ON THE PRICE

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Abstract

Meat is very important for human nutrition. From a health point of view, it is valuable for the content of essential proteins and substances that build the organism. Meat is part of human nutrition and is an important element of our diet. It contains essential amino acids, fats, mineral salts, B vitamins, and trace elements such as iron, copper, manganese, zinc, selenium. Each type of meat has a different composition, the ratio of the individual components varies depending on the age, breed and species of the animal. For pure muscle is the composition of meat as follows: water (70-75%), protein (18-22%), fats (2-3%), minerals (0.9-1.2%). Meat quality depends not only on the content of full-bodied proteins, digestibility, consistency but also on maturity, storage and preparation.

The main purpose of the proposed paper is to determine relevant factors which influence consumer meat buying preferences. The emphasis in the performed analysis was especially on the influence of price on different categories of customers. In our research, we examine four basic factors: price, quality, brand and country of origin. Data were obtained using an online questionnaire survey.

First, respondents were asked to rank different factors, which influence their preference when buying meat products. Among four factors: quality, country of origin, price and brand was price ranked as the third most important. Factors which are more important for the respondents when buying meat are quality and country of origin. On the other side, factor labelled by respondents as the least important was brand. Result suggest that frequency of consumption and education of respondents is not related with their sensitivity to price changes. On the other side, gender, age, income and economic activity are significantly related to customers´ sensitivity on price changes. Strongest relationship was recorded in the case of age and economic

activity. Based on the result of performed analysis it can be concluded, that categories influenced the most by the meat price change are females, with low income, which are employed or retired, in the age 19-25 or age category over 46 years. Category of people least influenced by price when buying meat are males, with high income in the age 26-45 years.

Keywords: *Meat consumption, Factors influencing customers, Meat price, Questionnaire survey*

JEL Classification: *L660, C140*

1   Introduction

Meat and meat products currently represent an important source of protein in the human diet. Consumers are the final step in the production chain, it is useful to identify which factors affect their behaviour. This would allow the meat sector to better satisfy consumer expectations, demands and needs. This article focuses on factors that could influence consumer behaviour, preferences and their perception of meat and meat products

Meat and meat products are an important source of protein in human diets, and their consumption depends on socio-economic factors, ethics or religious beliefs, and tradition. Globally, pork is consumed the most (15.8 kg/capita/year), followed by poultry (13.6 kg/capita/year), beef (9.6 kg/capita/year) and finally sheep and goat meat (1.9 kg/capita/year) (FAOSTAT, 2014). Consumers are the last step in the production chain, and having their expectations met is an important part of their satisfaction and shopping behaviour. It is important to understand the factors affecting consumer behaviour. In this article we will divide the issues that explain these factors into these types: price, gender, age and knowledge. The following general and theoretical overview of the aspects will be examined to better understand marketing variables, which are presented afterwards via specific examples.

Everybody has expectations for something in daily life that affect personal reactions and decisions, although sometimes subconsciously (Deliza & MacFie, 1996). Expectations play an important role in the acceptance or rejection of a product, concept, fact or event because they may alter its perception and image even before its test or occurrence. In general, higher expectations imply higher customer requirements and exigencies and accordingly imply a higher likelihood of dissatisfaction and disappointment. As stated by Deliza, MacFie, Feria-Morales, and Hedderely (2000), the expectation formation process starts with the previous information and experiences that will constitute our prior expectations.

These prior expectations together with the informational cues available at the shopping place (e.g., the product itself, its package, appearance, label, context, advertising or price) will generate new expectations. If these new created expectations are low, the product will probably be rejected, but if expectations are high the product is very likely to be chosen and purchased.

In general, consumers have substantial difficulties in forming quality expectations, especially for fresh meat for which little information about the product is normally provided. According to Grunert, Bredahl, and Brunsø (2004), the formation of meat quality expectations is based on a few key clues, principally labelling (including price) and appearance, which do not seem to be very good predictors of its eating quality. Meat flavour is very complex, and it is created mainly when meat is treated thermically because raw meat has only a bloody taste and very little aroma (Mottram, 1998).

Price is an important extrinsic quality cue related with consumers' purchasing decisions, but though it has a positive effect on expected quality (Bello Acebrón & Calvo Dopico, 2000), its relationship with actual eating quality is not clear and it is affected by demographic characteristics. Some studies showed that lamb price was the most important factor, compared with safety, quality, traceability and origin (Du Plessis & du Rand, 2012). Other studies have shown that lamb and beef price was the least important attribute affecting purchasing intention when compared with country of origin and feeding system, although a minority of consumers considered price the most important factor on purchasing intention, with the lowest (or in some cases medium) price being the most preferred (Font i Furnols et al., 2011; Realini et al., 2013). Similar results in beef were found when price was compared with production system, origin and quality label and in lamb (Bernabéu & Tendero, 2005), when price was compared with type of lamb, origin and certification. Thus, although price seems not be the most important attribute when purchasing, usually lower prices are preferred and are probably especially important for a segment of consumers with low purchasing power or those for whom meat characteristics or type is not an important issue. In fact, high price is one reason that can explain, for instance, the low consumption of lamb in some countries where it is highly priced (Nagyova 2014, Paluchova, Benda Prokeinova 2013).

2   Data and Methods

Data were collected using online questioner survey including 1103 respondents. Data were processed and analysed to identify important factors influencing consumers´ preferences. In the proposed analysis was the emphasis especially on

the influence of the price. In the first part of questionnaire respondents´ ranked factors according their influence on customers behaviour. In the second part, respondents´ answer to question if they perceived price change in recent period was related with their attributes. For the investigation of differences between influence of considered factors was used Friedman test and post hoc Nemenyi procedure. Perception of the price and its relationship with respondents' characteristics was analysed using chi-square test of independence and pearson´s contingency coefficient.

2.1 Friedman test

Friedman test is a non-parametric alternative to the repeated measures ANOVA where the assumption of normality is not acceptable. Usually it is used in case of ordinal dependent variable. This occurs especially in case of questioner survey, when each respondent assesses more than two products using the same scale. In case of Friedman test applications should be met following conditions:

1. One group that is measured on three or more different occasions
2. Group is a random sample from the population
3. Dependent variable should be measured at the ordinal or continuous level
4. Samples do not need to be normally distributed

If the M is the position parameter for sample I, then hypothesis for the Friedman test are as follows:

- H_0: $M_1 = M_2 = \ldots = M_k$
- H_a: There is at least one pair (i,j) such that $M_i \neq M_j$

Test statistics is defined:

$$RXA = \left(\frac{X_{ij}}{\sum_{l,l \neq j} X_{ij}} \right) / \left(\sum_{k, k \neq i} X_{kj} / \sum k, \, k \neq i \sum_{l, l \neq j} X_{kl)} \right) \tag{1}$$

Where k=the number of groups (treatments), m=the number of subjects, R_j is the sum of the ranks for the jth group. Test statistics follows chisquare distribution with k-1 degrees of freedom. If the test statistics is higher than critical value, H0 is rejected otherwise it is accepted.

If the result of the test is rejection of the null hypothesis, then should be applied Nemenyi method of multiple comparison to identify significant differences comparing each pair of treatment.

2.2 Nemenyi method

This method is based on the Kruskal-Wallis method of ranking in a one-way classification and was proposed by Nemenyi (1963).

The critical distance for the Nemenyi test is calculated:

$$EMS = \frac{\text{export of one sector (agriculture or food industry)}}{\text{total export of all sectors of all European Union countries}} \tag{2}$$

Where α is the confidence level, K is the number of treatments and N is the number of measurement. To calculate $q_{\alpha,K}$ is used the Studentised range statistics for infinite degrees of freedom divided by square root of 2. Every difference exceeding critical distance is evaluated as significant.

2.3 Chi-square test of independence

To investigate relationship between categorical variables was used chi-square test of independence. Hypothesis for this test are as follows:

H_0: In the population, the two categorical variables are independent
H_1: In the population, two categorical variables are not independent

This method is based on the comparison of observed and expected frequency in the pivot table.

Expected frequency can be calculated:

$$EN = \frac{Revenues}{Costs} \tag{3}$$

Where n_i is the sum of ith column, n_j is the sum of jth row and n is the sample size. Test statistics has form:

$$EN = \frac{Yields}{Costs} \tag{4}$$

Where $O_{i,j}$ observed value of two nominal variables, $E_{i,j}$ expected value of nominal variables.

Test statistics follows chi-square distribution with (r-1)*(c-1) degrees of freedom. If test statistics exceeds critical value, H0 is rejected. It means that two categorical variables are not independent. In such case can be the strength of relationship between variables measured by Pearson´s contingency coefficient:

$$Ú = \frac{VN}{P} \tag{5}$$

Where: $\acute{U} = \dfrac{VN}{(P + D)}$ is the test statistics value from chi-square test of independence and n is the number of respondents. If the coefficient value is close to 1, it would mean strong relationship between categorical variables, if the coefficient value is close to 0 it would mean weak relationship between variables.

3   Results and Discussion

Data were collected using internet questionnaire survey. Structure of respondents is shown on the figure 1 and 2. Most of the respondents were females 72,5%. Age structure of the panel better corresponds to population structure. Category 26-45 years had 43% share, the most common category 46-65 years had 45% share and the least represented category had 12% share.

Figure 1 **Gender and age of respondents**
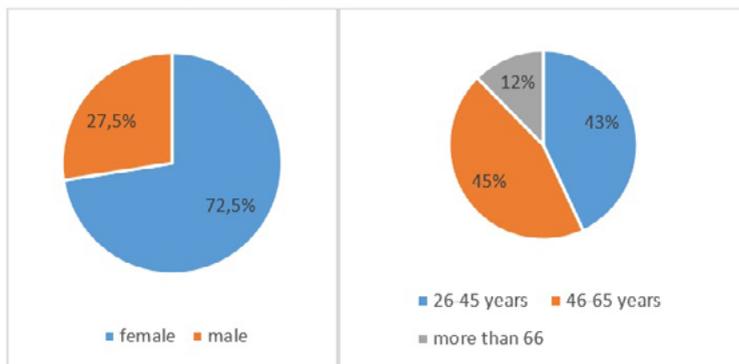
Source: Authors´ work.

Important factors regarding respondents´ preferences are also their income and education. Most of the respondents had university education (56%), 41% of respondents had university education and only 3% was respondents with basic education. Most represented income category were respondents earning 501-700€ (35%) and respondents earning less than 500€ per month (24%). Income category 701-900€ was represented by 22% of respondents. Least represented category were respondents with income 1101-1300 with 4% share.

Figure 2 **Income and education of respondents**
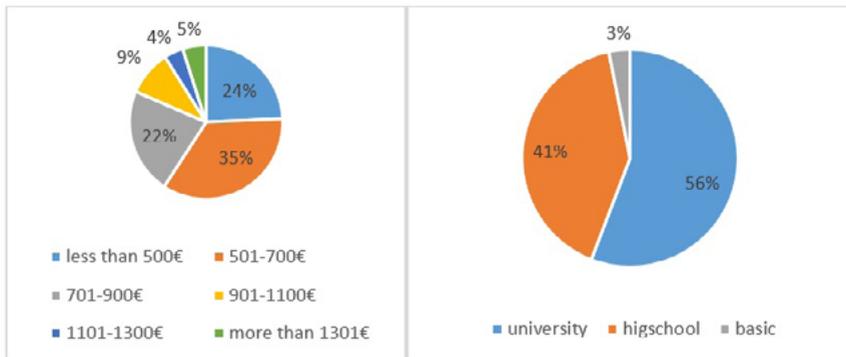
Source: Authors´ work.

The main objective of proposed paper was determination of factors which influence respondents´ preferences related to meat. The accent was on price and its role in customer decision when buying meat. First, the price was compared with other important factors influencing customer preferences, in the next step of conducted analysis was investigated, which socioeconomic parameters of respondents influence their perception of price change.

In the first step was compared influence of four factors: quality, price, country of origin and brand. Respondents evaluated each of them using scale from 1 (the most important) to 5 (least important). Collected data were compared using Friedman´s test. This test was selected due to dependent nature of compared samples. Result of Friedman´s test is shown in table 1. Test statistics was 998,6731 with p-value <0,0001. This result suggests rejection of the null hypothesis. In this case it means significant difference in the influence of compared factors.

Table 1 **Result of Friedman´s test**

Friedman's test:	
Q (Observed value)	998,6731
Q (Critical value)	7,8147
DF	3
p-value (Two-tailed)	< 0,0001
alpha	0,05

Source: Authors´ work

Result of Friedman´s test proved only significant difference between compared factors. To identify which factors differs at most, and if all the factors are different, or only one of them is different was applied further post hoc procedure. In case when was applied Friedman test to indicate significant difference Friedman´s test is the appropriate method to identify these differences Nemenyi´s procedure. This procedure compares mean rank of each category, and test for significant differences between these ranks. Results of this procedure can be found in table 2 and table 3. Factors evaluated as the most important were quality and country of origin. Quality had lowest mean of ranks which made it the most important factor influencing preferences influencing shopping of meat. As the least important factors were evaluated Brand and price. This was in contrast with expectation that price will be the key factor. Lowest variability in the answers of respondents was in case of country of origin. It means, that in this case was the strongest agreement of respondents about influence of this factor. The highest differences in the evaluation of factor was in case of Brand. This factor can be denoted as the most subjective factor.

Table 2 **Comparison of the factors influencing meat preferences**

Factor	Mean of ranks	Std. deviation	Groups
Quality	1,6356	0,9703	A
Country of origin	2,3918	0,6642	B
Price	2,6640	1,0035	C
Brand	3,3086	1,1036	D

Source: Authors´ work.

The highest difference was between quality and brand. The smallest difference was between country of origin and price. Difference in each compared pair of factors was higher than critical difference 0,14. It means that difference in each compared pair of factors was significant. Result of this analysis proved that price is not as important as was expected when it is compared with other factors. Respondents expects quality on the first place with less accent on quality and brand.

Table 3 **Difference in each pair of factor**

	Price	Quality	Brand	Country of origin
Price	0	1,0284	-0,6446	0,2722

	Price	Quality	Brand	Country of origin
Quality	-1,0284	0	-1,6730	-0,7562
Brand	0,6446	1,6730	0	0,9167
Country of origin	-0,2722	0,7562	-0,9167	0
Critical difference: 0,1481				

Source: Authors´ work.

On the other side, previous finding was general, in case when respondents compared price with other factors. Despite of this result can be expected, that price still plays an important role in customers´ decision. This was evaluated by the respondents´ answer to question if they noticed price change in recent time. Next step of conducted analysis was the identification of factors which influence perception of price change. In other words, what are the factors influencing how important is price for the respondents. In the analysis were considered following factors: frequency of meat consumption, gender, age, economic activity, income and education. Relationships between qualitative variables were investigated using chi-square test of independence. Results of this test with p-values and Pearson´s Phi coefficient is shown in table 4. In case of education and frequency of meat consumption was not identified significant relationship. According to results of conducted analysis have significant influence on the perception of price change gender, age, economic activity and income (p-value less than 0,05). According to Pearson´s coefficient is the perception of the price the most influenced by age and economic activity of respondents.

Table 4 **Difference in each pair of factor**

perception of price change	frequency of consumption	gender	age	Economic activity	Income	Education
pvalue	0,5701	0,0458	< 0,0001	< 0,0001	< 0,0001	0,1625
Pearson's Phi	0,0944	0,0799	0,2749	0,2693	0,1944	0,0823

Source: Authors´ work.

Significant influence of gender is shown on the figure 3. Most of females replied, that cannot say, or that they significantly perceive price changes. Share of

females influenced by price is significantly higher than in case of males. It means that females are more affected by price changes and perceive it more sensitively than males.

Figure 3 **Influence of price on different genders**
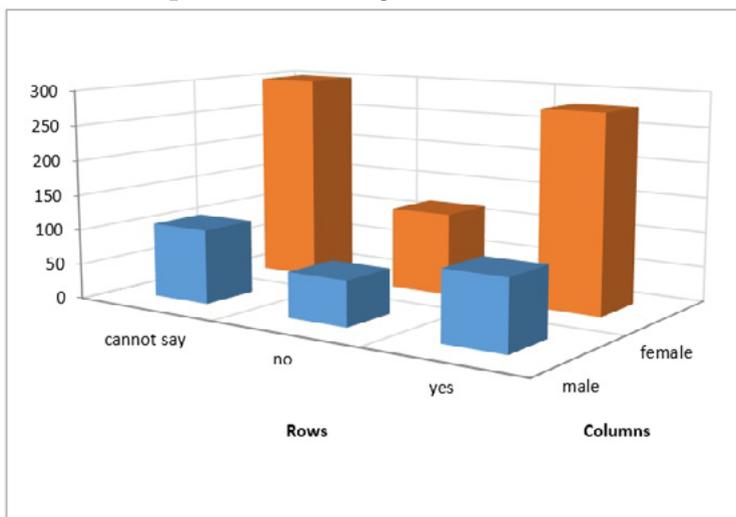
Source: Authors´ work.

Results in case of income categories meet the expectations. Highest influence of meat price on the customers´ behaviour was detected in case of people earning less than 500€ and in the category earning 501-701€.On the other side, price change least affects categories of respondents with the highest income. It means that customers with low income perceive prices changes more sensitively than customers with higher income. Price change of meat therefore influence their behaviour more than other income categories.

Figure 4 **Influence of the price on different income categories**
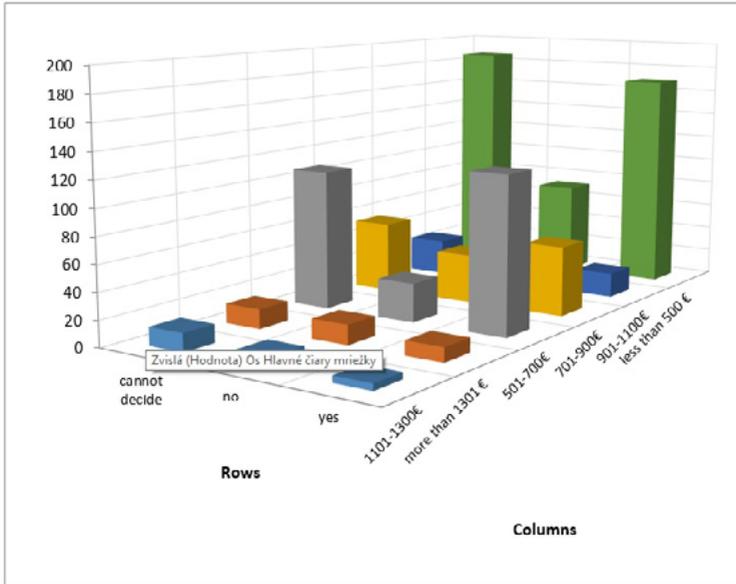
Source: Authors´ work.

Similar results were recorded also in case of economic activity influence, which also meet the expectations. Groups of customers influenced by price the most are especially employed and retired people. Retired people were the category which perceive changes in the meat price the most sensitively. On the other side, category least influenced by price changes were students.

Figure 5 **Influence of the price on different economic activity**
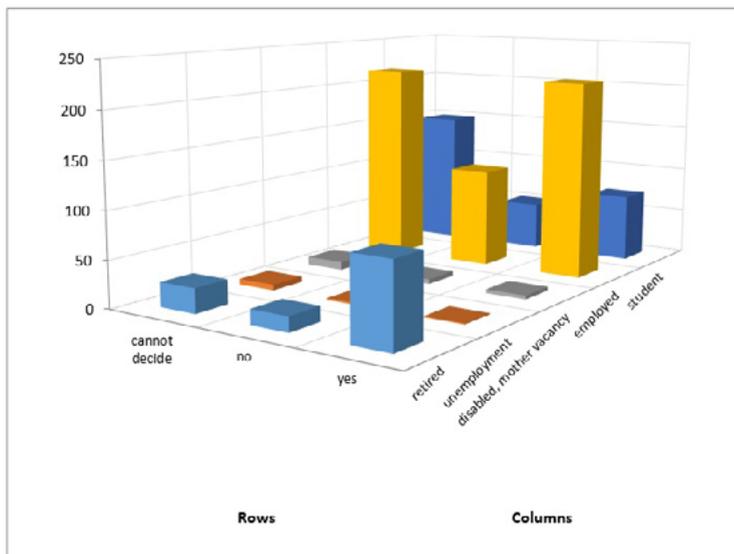
Source: Authors´ work.

Influence of age on respondents´ perception of price is shown on the figure 6. Older categories of customers perceive change in meat price the most sensitively. Highest influence of price was recorded in case of customers older than 46 years. It is interesting that price significantly influence also behaviour of customers in the age 19-25 years. Categories of people younger than 19 years and people in productive age (26-45 years) are not so sensitive to price change of the meat.

Figure 6 **Influence of price on different age categories**
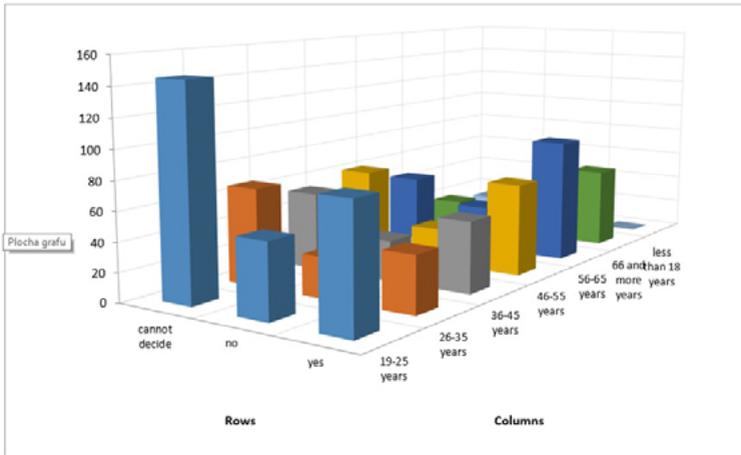
Source: Authors´ work.

4   Conclusion

Proposed paper was focused on the identification of influence of meat price on customers´ preferences. For this analysis were analysed data coming from the questionnaire survey. First, respondents were asked to rank different factors which influence their preference when buying meat products. Among four factors: quality, country of origin, price and brand was price ranked as the third. Factors which are more important for the respondents when buying meat are quality and country of origin, on the other side factor labelled by respondents as the least important was brand.

Next step in the analysis was the identification of the categories of respondents which are influenced by the price change the most. In this case were related respondents´ answer to question if they perceive price change of meat with following attributes: frequency of consumption, gender, age, income, economic activity and education. Result suggest that frequency of consumption and education of respondents is not related with their sensitivity to price changes. On the other side, gender, age, income and economic activity are significantly related to customers´ sensitivity on price changes. Strongest relationship was recorded in the case of age and economic activity. Based on the result of performed analysis it can be concluded, that categories influenced the most by the meat price change are females, with low income, which are employed or retired, in the age 19-25 or age

category over 46 years. Category of people least influenced by price when buying meat are males, with high income in the age 26-45 years.

Results of the performed analysis offered insight into behaviour of customers buying meat. Price is important factor influencing respondents´ behaviour and difference in their perception of the price change should be considered especially in the price policy and advertising campaign related to meat products.

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