APPLICATION OF CONJOINT ANALYSIS TO DETERMINE CONSUMERS' RED MEAT PREFERENCES IN SIIRT PROVINCE

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Abstract

The aim of this paper is defining consumers' preferences for the red meat in Siirt Province. This paper illustrates the conjoint analysis application in determining consumers' preferences for the attributes of red meat according to the amount of consumption. Multiple regression analysis used for determination most valued attributes and their levels. A random sample of 160 red meat consumers was interviewed in Siirt Province. They were asked to provide demographic information and responses to several survey questions, as well as to participate in a conjoint analysis study. For the survey portion of the interview, respondents were asked to assess the importance of the following attributes: meat type, purchasing sources and price.
As a result of the study, it was found that relative importance of attributes for the regular consumers were 48.8% price, 30.7% purchasing source, 20.5% meat type, and for non-regular consumers were 37.3% meat type, 34.3% price and 28.4% purchasing source. Determination coefficients of the models for regular and non-regular consumers were found as 99.3% and 99.2%, respectively.

Key words: conjoint analysis, red meat, preferences, attributes, consumer.

INTRODUCTION

Meat has an important food for the people as long as human history (Aritasi, 2009). Consumer's culture level, revenue, social situation and improvement processes affect the meat consumption properties of consumers. (Arısoy and Bayramoglu, 2015). Because of importance of animal proteins such as meat, milk and egg in human nourishment, level of meat consumption is an important indicator of developed countries. Therefore, meat consumption increases as developing countries' social and economic improvements increases (Kan and Direk, 2004; Arısoy and Bayramoglu, 2015).

Income of the individuals is the most important factor determines the meat purchasing power of humans. In our country meat consumption per capita is 12 kg annually and this is very low within the other countries such as Russia (58.7 kg) and Brazil (95.1 kg). Meat prices are more expensive compared to other food items, which is reported as the reason low meat consumption in Turkey (Tomek, 1989; Onurlubaş et al., 2015). It was done some studies for determining preferences of meat consumers by

means of conjoint analysis (Bernabeu and Tendero, 2005; Bernabeu et al., 2018).

The aim of this study was to determine the consumers' red meat preferences and factors affecting in Siirt Province by means of conjoint analysis.

MATERIALS AND METHODS

The questionnaire forms were personally applied to a representative sample of residents in Siirt (Figure 1) by the researchers themselves.

Figure 1. Siirt Province (Turkey)

The survey was released during the June 2017, on a random sample of residents in

the centre of Siirt. 161 questionnaires were obtained. Data analysis was performed by means of Traditional Conjoint Analysis technique (Orme, 2010). The scores given by respondents to the product characteristics (cards) was dependent variable.

The characteristics of the product (cards) or attribute levels were independent or predictor variables. The estimated regression coefficients associated with the independent variables are the part-worth utilities or preference scores for the levels. The R^2 for the regression characterizes the internal consistency of the respondent (Orme, 2010).

The attributes and their levels defining the meat preference were: price (cheap, medium, expensive), meat type (MT) (beef, sheep, goat), purchasing sources (PS) (butcher, supermarket with butcher, supermarket without butcher). A full-factorial experimental design included all possible combinations of the attributes (Orme, 2010). Cards created in this study were:

$$3 \text{ MT} \times 3 \text{ price} \times 3 \text{ PS} = 27 \text{ cards}$$

Depending on red meat consumption amount per capita the observations were divided to two groups. First group was regular consumers, who consume meat more than 2 kg in a month (27.3%), second group was non-regular consumers (72.7%), who consume less than 2 kg red meat in a month. The model was expressed as the following equation:

$$Y = \beta_0 + \beta_1 \times \text{sheep} + \beta_2 \times \text{goat} + \beta_3 \times \text{medium} + \beta_4 \times \text{expensive} + \beta_5 \times \text{SB} + \beta_6 \times \text{SOB} + \varepsilon$$

Where, β_i: coefficients of regression; SB: dummy variable for the supermarket with butcher; SOB: dummy variable for the supermarket without butcher; ε: term of error.

Statistical analysis was performed with the SPSS Statistical Package for Windows version 20.0 (SPSS Inc., 1999).

Descriptive statistics concerning demographic information of the respondents were given in Figure 2.
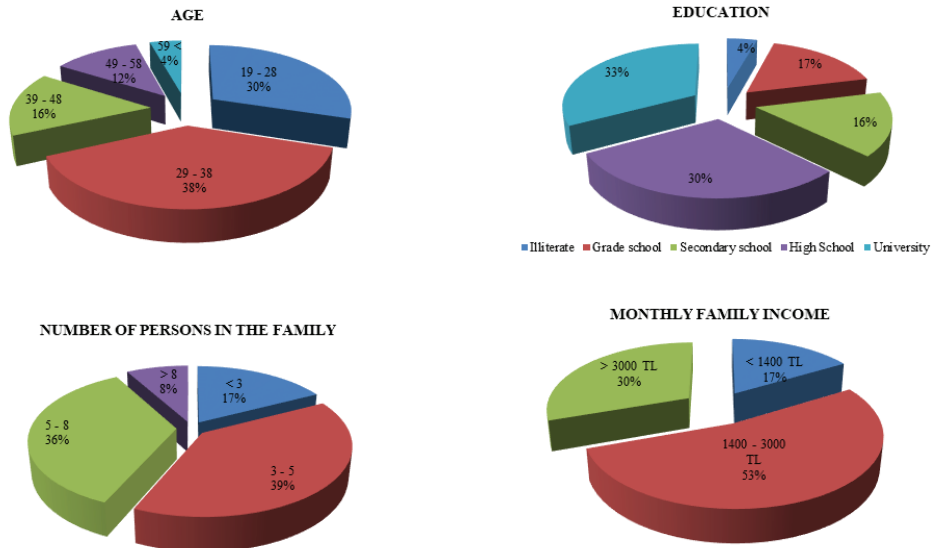

Figure 2. Sample demographic information

RESULTS AND DISCUSSIONS

Most traditional conjoint analysis problems solve a separate regression equation for each respondent (Orme, 2010). In this study regression model was applied to the average preference of respondents per cards. The regression performed for both regular and

non-regular consumers estimated determination coefficient over 99% (Table 1). According to the results obtained in Table 1, it can be said that all the parameters estimated from the model were found statistically significant. The fits obtained for both groups of consumers are similar.

Table 1. Model of estimated parameters for red meat consumers

Variables	Consumer	
	Regular	Non-regular
Sheep	-2.89[**]	-5.67[**]
Goat	-1.00[**]	-2.33[**]
Medium	-6.89[**]	-5.22[**]
Expensive	-5.67[**]	-2.78[**]
SB	1.44[**]	0.67[**]
SOB	4.33[**]	4.33[**]
Constant	17.37[**]	17.33[**]
R^2	99.3	99.2
R^2-adj.	99.1	98.9

**: $p < 0.01$

Utilities of each level of each attribute was calculated (Table 2).

Table 2. Estimated utility of the attribute levels

Attribute	Level	Consumer	
		Regular	Non-regular
	Beef	0.00	0.00
Meat type	Sheep	-2.89	-5.67
	Goat	-1.00	-2.33
	Cheap	0.00	0.00
Price	Medium	-6.89	-5.22
	Expensive	-5.67	-2.78
	Butcher	0.00	0.00
Purchasing source	SB	1.44	0.67
	SOB	4.33	4.33

It is shown from the model that the both group of consumers prefer beef meat. This preference followed by goat and sheep meat. Goat meat is more preferable than sheep meat. From the survey study concerning red meat consumption performed in Edirne the average meat consumption differenced between 22.56 kg/year and 27.36 kg/year. Consumers preferred to beef, lamb and all of them the rate 55%, 35% and 10% respectively (Lorcu and Bolat, 2012). Average monthly meat consumption is 0.7 kg in Antalya. Lamb, goat's meat and beef meat consumption had proportion of 0.79 kg/month, 0.67 kg/month and 0.66 kg/month, respectively (Tosun and Hatırlı, 2009).

Respondents want buy meat when price is lower. Expensive meat is also preferable as shown from the Table 2. Juma et al. (2010) stated that price influenced household's chevron and mutton consumption compared to beef meat. For purchasing places SOB is most preferable place following by SB and butcher. Similar result was found in the study made in Antalya. They preferred to shopping malls exclude butcher the rate 60% (Tosun and Hatırlı, 2009). In the study of Lorcu and Bolat (2012) in Edirne, consumers' preference for place of purchase was butcher. Similar results had been got about consumer's preference and place of purchase in Elazığ and Odemis district of İzmir (Yaylak et al., 2010; Şeker et al., 2011).

The relative importance (RI) of each attribute was computed from the utilities given in Table 2. RI was defined as the percentage of the range assigned to each attribute to the variation of total ranges (Bernabeu and Tendero, 2005; Orme, 2010):

$$RI = \frac{maxU_i - minU_i}{\sum maxU_i - minU_i} \times \%100$$

RI of the meat attributes for regular as well as non-regular consumers was given in Figure 3.
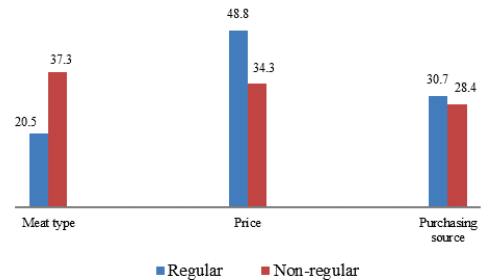

Figure 3. RI of red meat attributes

As shown in Figure 3, there are some differences. The greatest difference between groups was found in meat type. The meat type was very important for non-regular red meat consumers, rather than regular consumers. The second noticeable difference was found in price attribute. As shown in Figure 3 price was more important for regular red meat consumers, rather than non-regular consumers. Du Plessis and Du Rand (2012) determined that price was the most important factor

compared with quality and origin, however some studies reported that price is not important as other factors like origin and quality that determine consumer's decision (Bernabéu and Tendero, 2005; Mesías et al., 2005; Villalobos et al., 2010).

It can be interpreted from the Figure 3 that, non-regular red meat consumers were more selective in meat type following by price and purchasing source. But, for regular meat consumers were very important price following by purchase source and meat type.

CONCLUSIONS

Only in the smallest of problems, people would be asked to rank all possible attribute levels combinations. With this sample of three attributes and 9 total levels traditional conjoint analysis was made with 27 cards.

According to the utility of each attribute level, the red meat preferred by both consumer groups, similarly. But relative importance of attributes was found different between regular and non-regular consumer groups.

Price of the red meat was the most valued attribute by regular consumers followed by the purchasing source however, the type of the red meat was the most valued attribute for non-regular consumers followed by price.

As a result of the study, it can be noted that most of red meat consumers in Siirt prefer cheap meat from the SOB. Non-regular consumers were selective in meat type preference, when it was the last preference for regular consumers.

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