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Estimating the Qualitative Pricing Model of Honey in Iran

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ABSTRACT

In this study, using qualitative pricing model, the price of honey in the urban areas of Kermanshah province of Iran has been studied from the consumers' viewpoint. Data were obtained from interview and completing 420 questionnaires in 2011.Results show that physical and chemical characteristics of honey are effective on its market price. So that characteristics like the scent of honey, production location and high traction of honey have positive significant effect on its price and, characteristics like proper packaging, bright colours and types of honey (with wax) have a negative significant effect on its market price.

KEYWORDS: honey, hedonic, qualitative pricing, Iran.

1. INTRODUCTION

Honey is not the only product of bees but there are a lot of products which could be obtained from them. The most known ones are pollen, royal jelly, propolis, bee venom, wax, larvae and bees themselves. All the bee products can be consumed as drinks. It should be also pointed out that all these products could be found in the retail as drinks in ampoules, these products are more beneficial when drunk more than when eaten.

Beekeeping industry increases the agricultural and horticultural products and also plant biodiversity quantitatively and qualitatively.

According to the Codex Alimentarius definition, Honey is a natural and sweet substance produced by honeybees from the nectar of flowers or secretions of living parts of plants or fecal material from insects after sucking of living parts of plants. Then the honeybee collectsand transports these materials and combines them with particular materialsfrom its body, and stores them in honeycombsto be processed.

Different honeys have different physical and chemical properties; because honey bees can obtain the nectar use of one or more types of flowers. Shahrestani (2002) Honey is a carbohydrate-rich food and glucose (about 31.0%). Honey's remaining carbohydrates include maltose, sucrose and other complex carbohydrates. The most important minerals found in honey are found in honey. Khaniki et al (2003), there are different enzymes such as Nectaz(Sucrose) Diastase (amylase) and glucose oxidize in honey. Diastase enzyme (amylase) is unstable to heat and it is an important qualitative indicator to recognize heated honeys. Shahrestani (2002) Honey as a perfect food material also contains he most common types of vitamins (B1-B2-B3-B5-B6-C-E-K), organic acids (Malic acid, citric and lactic) and proteins. It can produce 315 to 335 kcal of energy (per each 100 gram).

As previously mentioned generally, honey is classified by the floral source of the nectar from which it was made. Honeys can be from specific types of flower nectars or can be blended after collection.

However, apart from above differences, there are three types of honey in the markets: 100% fake honey, half fake honey and natural honey. In the first one, bee has no involvement in its production; in the second one the latter bees are fed with sugar by beekeepers and natural honey is the only honey has unique medicinal and therapeutic properties.appropriate pricing based on quality and richness of honey is very important factor to protect its quality in next production process years. According to statistics provided by Livestock Department of Iran Ministry of Jihad-E-Agriculture in 2011 about 51 thousand tons of honey has been produced in Iran and the contribution rate of Kermanshah Province was 1462 tons (about 2/9 %).

Qualitative pricing model is used for diagnosing of desirability and real wishes of consumers. Using Hedonic model, Aghapour (2007) estimated qualitative pricing model of cheese in Tehran province, and the results showed that among the characteristics of the cheese, fat, salt, tissue hardness and type of packaging are the most important factors that influence the price paid by consumers. Dourandish et al(2011) investigated qualitative factors on the price of barberry in Khorasan province of Iran based on Hedonic model. The results show that the being puffy of barberry and its colour and consumer awareness of the benefits of barberry have positive and significant effects on the price of

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Barberry and packaging and brand are not statistically significant on the price of barberry. Ghorbani(1997)has used Hedonic model in Ghaemshahr city of Iran to determinethe factors affecting theprice of rice. Results show that the most important factors affecting rice price are purity, rice strain after cooking and type of variety. Saboohi and Tavana (2008) have also used this model. Jabar (1998) used qualitative pricing model to determine the preferences of goats and sheep buyers in Nigeria. The factors such as age, sex, race, purchased date and market type effect on the price bid of buyers. Spinsa and Goudin (1991) estimated the qualitative price for wheat properties of Kansai using Hedonic model and concluded that flour and dough characteristics is effective in wheat prices. Hatfer and Monk (1991) Using Hedonic model for qualitative price analyzing in U.S. apple industry. The results showed that the size, storing methods, temperature and season affect the price of apples. Richard Carew (2000), Using Hedonic model, investigated the effect of the two sets of the qualitative factors on value of apple. The factors influencing the price to be divided into two categories, one category is characteristics of own product such as size, grade and market factors and the second one is marketing factors such as: type of packaging, cold storageto keep the apple, and sale season . The results indicate that the rank and type of apple are the most important factors affecting the price of apple.

The purpose of this study is to estimate the hedonic pricing model for honey in Kermanshah province. This research can be utilized for honey producers to determine ensure selling their products with proper price and also producing honey based on consumers taste. In the other side, after diagnosing the wrong perspective of consumers about natural honey and its difference with fake honey, necessary proceedings can be programmed to correct their vision and to improve their knowledge. The results can be used by the producers and consumers of natural honey finally.

2. MATERIALS AND METHODS

The statistical population consisted of all households consume the honey in Kermanshah province of Iran. Due to the extent of the area and scattering of the cities, two stages cluster sampling has been done. The necessary data to estimate the implicit prices of the characteristics and properties of honey has been collected from completing 420 questionnaires in 2012.

2.1. Qualitative pricing model:

The value of honey depends on its characteristics. Therefore, the economic model that can provide these properties is qualitative pricing. This model is made based on theoretical works of Becker (1965), Rosen (1974) and Lancaster (1966) and it includes the regression of the observed price of a commodity on its qualitative attributes (Lucas, 1975). Thus, the demanded qualitative pricing model for a product is considered as a function of its properties. For example, a firm with a product (Y), the production function may be defined as follows:

$$Y = f(Z)$$

Where, Z is a vector of input parameters. The firm is assumed to maximize the profits:

$$\Pi = Pf(Z) - WX$$

Where P is the price of the product, while the W and X are vectors of prices and quantities of constant and variable parameters respectively. The first order condition to maximize profit is:

$$\frac{\partial \Pi}{\partial X_i} = P\sum_{j=1}^{m}\left[\frac{\partial f}{\partial Z_j}.\frac{\partial Z_j}{\partial X_i}\right] - W = 0$$

For any particular variable of X_i, Rosen (1974) and Lancaster' equation (1966) has been created and it includes the regression of the observed price of a commodity on its qualitative attributes (Lucas, 1975).

So we can say that the qualitative pricing model takes demand for a product as a function of its characteristics. For each specific Xj, the above equation can be written as follows:

$$W_i = \sum_{j=1}^{m}\left[T_j.\frac{\partial Z_j}{\partial X_i}\right]$$

Where, $T_j = P.\frac{\partial f}{\partial Z_j}$

T_j explain the marginal value of j th property.

In fact, the above equation is the qualitative pricing function. Which, withthe appropriatedata, thisfunctioncan beused to determine theeffects ofchanges inphysical and qualitative properties on input prices and therefore demand for input. In fact, using this relationship, we can estimate the marginal implicit input features. Implicit prices show the changes in the price per unit change in its characteristic.

2.2. Choosing Properties:

Properties are characteristics belong to a commodity. On the other hand, commodities have a lot of properties which inputting all into a model is impossible statistically, because a large number of independent variables into the econometric model may make problems such as Multi-collinearity.
So it should be careful in the selection of features and it should be considered the most important factors in the purchase from consumers point of view.

2.3. Empirical model:

This study attempts for evaluating of honey situation in Kermanshah province determine implicit price of qualitative characteristics influencing consumer choices by estimating honey qualitative pricing function.
Based on theoretical model, for being able to evaluate of consumer responds to the qualitative characteristics of a product, we use qualitative pricing function:

$$U = (X_{1,}X_{2,}X_{3\ldots\ldots\ldots}X_K)$$

Where Xs are the characteristics effecting on demands for honey, such as colour, fragrance, type, amount of sweetness and type of packaging and others.
According to the material presented, demand function can be found according to qualitative characteristics of honey form one of the following forms (logarithmic - linear, logarithmic- logarithmic, linear - logarithmic or linear-linear).

$$logP = \alpha + \sum_{I=1}^{10} \beta_i X_i + U_i$$

$$logP = \alpha + \sum_{I=1}^{10} \beta_i logX_i + U_i$$

$$P = \alpha + \sum_{I=1}^{10} \beta_i logX_i + U_i$$

$$P = \alpha + \sum_{I=1}^{10} \beta_i X_i + U_i$$

Among these models, the most appropriate model according to the obtained results is a logarithmic- linear model. Follows:

$$log\,p = C + \beta_1 I + \beta_2 Q + \beta_3(ELA) + \beta_4(SWE) + \beta_5(MON) + \beta_6(PAC) + \beta_7(SCE) + \beta_8(SHE) + \beta_9(IND) + \beta_{10}(COL) + \beta_{11}(WAX) + e$$

Where:
C: constant coefficient
Q: The amount of household annual consumption of honey(Kg)
I: indicates the household annual income (Million Rials)
COL: Colour of Honey
MON: Dummy variable indicating the location of bee keeping the mountain or not.
PAC: Dummy variable indicating packaging (traditional=0, industrial=1)
SEC: Dummy variable indicating fragrant smell of honey or not.
SHE: Dummy variable indicating sugar sedimentation in Honey or not.
WAX: Dummy variable indicating type of honey with or without wax.
CON: Dummy variable indicating high consistency of honey or not.
IND: Dummy variable of different types of industrial or traditional hive.
SWE: Dummy variable indicating High sweetness of honey or not.
e: represents the Error Term.

3. RESULTS and DISCUSSION

As shown in *Table1* it is observed that properties of being aromatic honey, mountains honey , high consistency or high traction of honey, as expected, have positive and significant effects on its market price and properties as light-coloured honey, packaged honey and honey with wax have negative and significant effects on its prices. Characteristics such as honey sedimentation, high sweetness and traditional honey hive are not significant statistically in the model. Also the coefficient of honey consumption per month has negative and significant affect on the price that is paid by households. Consumers willingness to pay, *ceteris paribus*, for the first two properties of the honey mean scented fragrance versus free scented honey and honey location if it is produced in mountain versus in farms and gardens are about 22.5 percent and14.2 percent farther respectively. These two properties are highly dependent on each other because the quality and variety of mountains flowers is one the main reasons scented and high quality of honey.

Table 1: The coefficients of honey hedonic price model

Variables	Coefficients	t-statistics	Prop
C	5.432**	54.61	0.0000
SEC	0.225**	4.754	0.0000
MON	0.142**	2.792	0.0055
ELA	0.116*	-2.342	0.0196
COL	-0.102*	-2.349	0.0193
WAX	-0.093*	-2.060	0.0400
PAC	-0.136*	-2.528	0.0118
SHE	0.096	1.679	0.0938
SWE	0.054	1.199	0.2309
Th	-0.044	-0.997	0.3190
I	-7.80E-07	-1.424	0.1552
Q	-0.022	-4.019	0.0001
R-squared	0.286033	Mean dependent var	5.311127
Adjusted R-squared	0.262771	S.D. dependent var	0.544703
F-statistic	12.29613	Durbin-Watson stat	1.733798

*significant at 5 percent **significant at 1 percent

In addition, consumer willingness to pay, *ceteris paribus*, for honey property of high traction is about 11.6 percent farther in comparison with little consistency or traction honey. Also willingness to pay for light colour honey is about 10.3 percent less than dark colour honey. Willingness to pay for honey with wax, *ceteris paribus*, is about 9.4 percent less than honey without wax.

Finally willingness to pay for modern packaging has a negative impact about 13.6 percent less than traditional packing because of higher honest to traditional packing suppliers for producing natural honey.

Using Eviwes 6 software, the statistical analysis has been done in this study. The coefficient of R^2 *is* 29% that seems low, mainly is due to the limited fluctuations in the price of honey purchased by households. Previous studies indicated the relatively low R^2 . For example in Dourandish et. al (2011) i study titled the factors affecting the price of barberry in the province of Khorasan, R^2 value was 0.35. Also Dewenter et al (2007) in their study on the German mobile market, have earned 0.43 for this statistic value with several regression. Espinsa and Goudin (2012) which estimated the price of wheat quality characteristics in Kansas using hedonic model, R^2 calculated was 0.24 for years 1970-87.

4. CONCLUSION

According to the results, the consumer knowledge for detecting fake honey from natural and pure honey is few. So informing about the properties of natural honey in order to consumers can diagnose pure honey and adulterated or fake honey is very important. It can be useful for both producers and consumers.

1. Unlike many consumers mind, honey sedimentation is not a reason for faked honey. Thus it is recommended for correcting of honey consumers mind, proper informing about it to be very useful for preventing beekeepers to heat their produced honey to avoid sugar handling (sedimentation) that has a lot of side effects on the health and nutritional properties of honey.
2. Due to the 12kg of honey should be consumed by bees to produce one kilogram of natural wax, So it is expected the price of honey with wax for beekeeper being more expensive than honey without wax. While based on the results the consumer wills to pay a lower price for the honey with wax. Then to solve this contradiction beekeeper uses gross wax (paraffin) in many cases. Thus it is also recommended with appropriate

awareness of consumers, dealing of honey without wax to been provided or a higher price for honey with natural wax is paid.

REFERENCES

1- Aghapour. M. 2007. Estimating Qualitative Pricing Function for Cheese (Case Study: Tehran), Agricultural Economics and Development, 57(1):179-197.

2- Becker, G. 1965. A Theory of the Allocation of Time, Econ. J, 75:493-517.

3- Changizi- Ashtiani.S. 2010. Honey in Quran and Medical Science, Arak Medical University Journal, 13(4): 51-57.

4- Dewenter R., Haucap J., Luther R. and Rotzel P. 2007. Hedonic Prices in the German Market for Mobile Phones, Telecommunications Policy; 31: 4–13

5- Doorandish.A., Daneshvar-Kakhaki.M. and Rahnama. A. 2011. Analysis of Qualitative Factors affecting barberry Price, Agricultural Economics (Iran), 25(3):385-91.

6- Ghorbani.M. 1997. Factors Affecting Rice Price: Qualitative Pricing Application, Mazandaran Agricultural Economics Workshop Proceeding, 1-17.

7- Espinosa. Juan. A and Barry .K. Goodin. 1991. Hedonic price Estimation for Kansas wheat Characteristics, Western Journal of Agricultural Economics, 16(1): 72-85.

8- Khaniki.J and kamkar. Gh. 2004. Analysis of Physic-Chemical Properties of Honey Production (Case Study: Garmsar), Iranian Journal of Nutrition Science & Food Technology, 4(1):120-135.

9- Lancaster, K.J. 1966. A new approach to consumer theory, Journal of Political Economics,74:132-156.

10-Lucas,R.E.B. 1975. Hedonic price functions, Econ Iquiry,13:157-158.

11-Rosen,S. 1974. Hedonic price and implicit markets: product differentiation in pure competition, Journal of Political Economics,82:34-55

12-Russell Tronstad, Lori Stephans -Huthoefer, and Eric Momke. 1992. Market windows and hedonic price analysis: an application to the apple industry. Journal of agricultural and resource economics,17(2):314-322

13-Saboohi. M. and Tavana, H. 2008. Determining Agricultural Lands Value Using Hedonic Method (Case Study: Lorestan), Agricultural Economics and Honeybee Development, 64: 41-61.

14-Shahrestani. N. 2002. Honeybee and Its Upbringing, Sepehr Publishing (Persian), Tehran, Iran.

15-Tahmasebi.Gh and Poorgharaei. H., 2000. The Role of Honey bee on pollination and Agricultural production Growth, Agricultural Economics and Development, 30:131-44.