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A Study on Determinants of the Willingness to Pay for Native Honey: Focusing on Knowledge of and Experience with Honey and Attitude toward Health

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Abstract

This study analyzes overall honey consumption and purchasing behavior, and in particular, seeks to identify factors that influence the willingness to pay (WTP) for native honey. A survey of 500 South Korean consumers was conducted to understand their purchasing experiences and perceptions related to honey. A multiple linear regression analysis was carried out to comprehend the effect of the following factors on the willingness to pay for native honey: 1) knowledge of honey, 2) health consciousness, 3) the unhealthy = tasty intuition (UTI), and 4) positive perception of sweetness. As a result, consumers with more knowledge about honey, higher health consciousness and more positive perception of sweetness were more willing to pay for native honey. On the other hand, past honey purchasing or consuming experience had no significant impact on the willingness to pay for native honey. Marketing strategies and implications were derived from the characteristics of native honey consumers identified in this study.

Key words

Native honey, health consciousness, knowledge, experience, unhealthy = tasty intuition (UTI), willingness to pay, purchasing behavior

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1. Introduction

Interest in beekeeping is increasing as it is known to serve the public interest through its relation to the conservation of agricultural ecosystems (Jung 2008). Since bees produce useful substances such as honey and propolis and play a key role in the pollination process of plants (Corlett 2004), the priority of the beekeeping industry in developed countries overseas is on the provision of pollinators rather than honey production. The United States Department of Agriculture (USDA 2014) evaluated that pollinators contributed more than USD 24 billion to the United States economy, with bees alone accounting for greater than USD 15 billion.

The South Korean beekeeping industry uses two species of bees—eastern honey bees (Apis cerana) and western honey bees (Apis mellifera)—that are used for different honey-producing methods. "Western honey," which is named after a specific name of flower, is produced by moving beehives to places where the flower blooms according to the flowering time. "Native honey," on the other hand, is made once a year from fixed beehives installed in mountains and on fields (Oh et al. 2016). Native honey produced from fixed comb hives is believed to reflect the terroir in that it is influenced by the natural environment and vegetation of the region. Just as overseas wine is specialized by area of production, native honey also can be differentiated by region since flavor, aroma, and color of honey vary depending on the major honey plants, climate, production methods in each region.

Despite the growing interest in honey bees, honey production continues to decline due to a decrease in the number of honey plants, changing climate and diseases and harmful insects. More than 90% of the bees used in South Korea for native honey production died from sacbrood virus (SBV) in 2009, although a variant of native honey bees—confirmed to be tolerant to the virus in a

recent study—has been supplied to increase production (Choi et al. 2016). In addition, while a tariff rate of 243% is currently applied to imported honey, tariffs on Vietnamese honey are set to be eliminated in 2029 under the Korea-Vietnam Free Trade Agreement, which is expected to help raise the market share of Vietnamese honey in South Korea (Lee et al. 2019). In response to this, South Korean beekeepers are trying to increase their ability to compete in the changing market by adding values to and commercializing honey and diversifying their related business beyond the range of traditional primary products.

Prior studies on the beekeeping industry examined the income structure of beekeepers, their management activities, and perceptions of beekeeping. Kim et al. (2010) analyzed the income structure of South Korean beekeepers and the operating expenses of the beekeeping industry to understand the realities and studied ways to increase beekeeping farmer income. Hahn and Kim (2017) conducted a perception survey of beekeeping farmers to identify their management activities and suggested consequent implications that the longer farmers are engaged in beekeeping, the more important it is for them to diversify the number of honey plants and secure vegetation. A paper that suggested the necessity of marketing strategies for the South Korean beekeeping industry segmented the honey market into groups through a conjoint analysis and presented a marketing strategy for each type of honey and related preferred pricing (Kim 2016).

Previous studies on native bees include research into sacbrood virus with regard to their ecology (Shon et al. 2015; Kim 2015) and research on the breeding environment of improved native bee variants (Lee et al. 2020). However, little research has been done from the perspective of consumers. To more effectively promote the local beekeeping and honey industries, studies should be carried out to analyze consumer perceptions and purchasing behavior in relation to native honey. Therefore, this study attempts to examine the factors that influence consumers' overall honey consumption behavior and willingness to pay for native honey.

2. Theoretical Background

2.1. Knowledge

Consumer knowledge about a product plays an important part in their decision making to purchase the product (Brucks 1985). Knowledge is necessary to process and understand information, and consumers use what they perceive as reliable information to make decisions (Verbeke 2008). Consumer product knowledge is one of the topics that have been constantly studied in marketing since processing and searching for information and the results may differ according to the gap in consumers' level of knowledge (Alba & Hutchinson 2000).

According to Brucks (1985), knowledge can be divided into two categories: objective and subjective. The former is measured with accurate information, whereas the latter implies the degree of confidence in the knowledge and how much one knows subjectively. Objective knowledge and subjective knowledge are different concepts and influence people's behavior differently (Kanwar et al. 1981). According to Brucks (1985), the two kinds of knowledge act differently during information seeking and decision making. People who believe they have insufficient subjective knowledge gather more information because they have little confidence in their low level of knowledge. People who believe they have a high degree of subjective knowledge tend to rely on information gained in the past. Objective knowledge allows people to obtain information through more questions and exploration of newly acquired information.

Through previous studies, it can be confirmed that

consumer knowledge level leads to differences in attitudes toward and willingness to buy certain products. When it comes to purchasing organic food, which is considered a premium agricultural product, knowledge of organic food is regarded as one of the main reasons behind purchases (Z. Pieniak et al. 2010). A study by Thogersen (2009) explains that uncertainty about organic food has a negative effect on purchasing and is one of the factors that hinder purchase. In addition, in Yoo and Park (2012), which measures willingness to pay for fair trade coffee, the higher the subjective knowledge of fair trade coffee, the more likely it is that there will be a willingness to pay the prices for fair trade coffee. As such, knowledge of a product plays an important role in making decisions to purchase the product.

Native honey is a premium product that differs from ordinary honey in terms of price and quality, and as a result, consumer behavior related to its purchase is expected to vary by any existing gap in information and knowledge about honey between consumers. Therefore, this study aims to measure the degree of subjective knowledge that consumers have about honey and to uncover the effect of the measured values on the willingness to pay for native honey.

H1. The more knowledge consumers have of honey, the more positive the influence on their willingness to pay for native honey.

2.2. Individual attitudes towards health

2.2.1 Health consciousness

When it comes to personal perception of and interest in health, a wide range of studies exist regarding the decision-making process of consumers in their choice of food. Health consciousness is a factor that explains personal interest in health and refers to the degree to which an individual performs health-related behavior (Becker 1977). According to prior studies, health consciousness influences the overall decision-making process of food purchases by influencing consumer preferences for products and services (Huang 2014). In addition, health consciousness raises individual awareness of health, resulting in a greater willingness to purchase domestic food products (Uzdavinyte et al. 2019).

Honey has been used as a natural sweetener as it contains fructose, glucose and other sugar components, and is known for its other nutrients, including vitamins, minerals, amino acids, and unsaturated fatty acids (Bogdanov 2008). Native honey produced by South Korean honey bees is regarded highly by domestic consumers, and has maintained its value due to its high scarcity stemming from production restrictions (Oh et al. 2016). Therefore, this study sees health consciousness as an important factor influencing consumer willingness to pay for native honey.

H2. The higher the health consciousness, the greater the positive effect on consumer willingness to pay for native honey.

H3. The more positive the consumer attitude is toward sugar, the greater the positive influence on willingness to pay for native honey.

2.2.2. Unhealthy = Tasty Intuition (UTI)

While consumers become more aware of the importance of healthy eating, they often face contradictions in choosing food to make up their diet due to conflicting goals between instinctive desire and the pursuit of a healthy diet (Chandon & Wansink 2007; Laran 2010). Previous studies have shown that consumers generally have an intuitive belief that healthier food tastes worse through the Unhealthy = Tasty Intuition (UTI) (Raghunathan et al. 2006). In other words, when choosing food,

consumers are caught in a continuous dilemma between unhealthy yet delicious foods that give short-term pleasure and unsavory foods that will keep them healthy in the long run (Wilcox et al. 2009).

The higher a consumer's belief in UTI (i.e. the stronger the belief that healthy food does not taste good), the more unhealthy food they consume and the less interest they have in natural foods (Mai & Hoffmann 2015). Honey, however, is a good example of natural food as it is synthesized by bees from flower nectar (Dashora et al. 2011; Hilary et al. 2017) and has positive nutritional effects on health (Bogdanov 2008). Therefore, this study regards UTI as an influence on willingness to pay for native honey. In addition, this study strives to examine the effects of positive consumer attitude toward sugar on willingness to pay for native honey.

H4. The higher the UTI in consumers, the more positive influence on their willingness to pay for native honey.

2.3. Experience

Past experience is regarded as a variable in determination and prediction of a consumer's purchasing behavior and attitude (Norman & Smith 1995). Consumers' past repetitive behavior (habit) especially indicates that past experience influences future decision making and behavior, rather than their perceptions (Smith et al. 2008). The theory of planned behavior (TPB) proposed by Ajzen (1991) explains that inclusion of variables related to past behavior could make predictions more accurate, along with the impact of attitudes, subjective norms, and self-efficacy on consumer behavior (Bagozzi & Kimmell 1995).

A variety of studies have been conducted to measure the impact of past behavior on future behavior and decision making. Dean et al. (2011) analyzed the effects of moral norms and self-identity, as well as purchasing experience, on the willingness to buy organic tomatoes and organic tomato sauce. That study shows that the past experience with purchasing organic tomatoes has a positive effect on consumer willingness to buy organic tomatoes and tomato sauce in the future. In addition, there have been studies that examined the effect of time and frequency of past experiences on future behavior. Bagozzi & Kimmel (1995) confirmed that more recent experiences have a more significant effect on prediction of future behavior, whereas Hagger et al. (2002) found that the time of experience does not have any significant modulating effect on forecasting future behavior.

Since insufficient research has been conducted on the willingness to purchase honey according to past purchasing behaviors, this study attempts to explore the effect of past experiences with purchasing honey and processed honey products on the willingness to pay for native honey.

H5-1: Consumer experience with purchasing honey has a positive effect on their willingness to pay for native honey.

H5-2: Consumer experience with consuming honey has a positive effect on their willingness to pay for native honey.

3. Method and Measures

3.1. Data collection

The sample group in this study was selected from South Korean consumers aged 20 to 59. A survey was conducted with 500 respondents, who were gathered through Embrain, an online panel survey company, in July 2019, regarding their honey-related purchasing experience and perceptions.

3.2. Demographic characteristics

The total number of surveyable samples was distributed equally by gender and age. Table 1 shows the demographic breakdown of survey respondents. In terms of average monthly income, 85 people (17%) earned KRW 3 to 3.99 million, 82 people (16.4%) earned KRW 2 to 2.99 million, and 79 people (15.8%) earned KRW 4 to 4.99 million. By occupation, housewives (175 people) accounted for the highest percentage, at 35% of all participants. By number of people in the household, respondents with 4 persons comprised 33% (165 people), followed by those with 3 (28%, or 140 people) and finally 2 (20%, or 100 people).

Table 1. Socio-demographic characteristics of the sample. n=500

Socio-demographic characteristics		Frequency	Percentage (%)
Sex	Male	250	50
	Female	250	50
Age	20-29	100	20
	30-39	100	20
	40-49	100	20
	50-59	100	20
	60-69	100	20
Monthly income	Less than KRW 2m	46	9.2
	KRW 2-2.99m	82	16.4
	KRW 3-3.99m	85	17
	KRW 4-4.99m	79	15.8
	KRW 5-5.99m	74	14.8
	KRW 6-6.99m	48	9.6
	KRW 7-7.99m	31	6.2
	KRW 8m or more	55	11
Educational level	High school graduate	2	0.4
	Undergraduate/college graduate	105	21
	Graduate student/ graduate school graduate	340	68
	Other	53	10.6

Socio-demographic characteristics		Frequency	Percentage (%)
Occupation	Office management	0	0
	Professional	52	10.4
	Housewife	175	35
	Student	24	4.8
	Self-employed	75	15
	Technician/ production worker	71	14.2
	Agriculture/fisheries/ forestry	47	9.4
	Other	56	11.2
People in household	1	54	10.8
	2	100	20
	3	140	28
	4	165	33
	5	34	6.8
	6 or more	7	1.4

3.3. Composition of survey

The survey consisted of questions and statements on respondent experience with purchasing and consumption of raw honey, their perception of honey and willingness to pay for it, and their personal interest in and perception of health. The statements on past purchasing and consumption of raw honey included past purchases, frequency of purchases, place(s) of purchase, factors they considered when purchasing, past consumption, frequency of consumption, manner of consumption, and type of preferred honey. The experience with purchasing and ingesting honey was measured through answers of "yes" or "no" to the statements, "I have purchased raw honey before" and "I have consumed raw honey before."

The statements on perception of honey and willingness to pay for it covered degree of general knowledge about honey, degree of awareness of the term "native honey," and willingness to pay for native honey. The degree of general knowledge about honey was measured using the index developed by O'Cass (2004) to honey (Table 2). Each statement was responded to using a five-point scale, with the higher the score representing the greater familiarity respondents had with honey and the more knowledge and experience. The degree of recognition of the term "native honey" was categorized into two types: degree of overall recognition and degree of awareness of its accurate definition. The overall perception of native honey was measured as a dummy variable of "yes/no" for the statement "I have heard of the term 'native honey'." Awareness of the exact meaning of native honey was measured on a 5-point scale based on the responses given to "I am aware of the exact meaning of 'native honey'." The willingness to pay for native honey was determined by the degree of agreement on the willingness to pay and the additional amount willing to be paid (%) by applying the index developed by Arvanitoyannis & Krystallis (2006) to honey (Table 3). The degree of agreement was measured on a 5-point scale, with the higher the score, the higher the willingness to pay for native honey. A percentage (given in 10% increments from 0 to 40%) of the price willing to be paid for general native honey compared to the price of premium native honey was asked for in the question, "How much more are you willing to pay for native honey?"

Table 2. Measuring respondent knowledge of honey

Items	Measures
1	I am very familiar with honey.
2	I feel I know a lot about honey.
3	I am an experienced user of honey.
4	I would classify myself as an expert on honey.

Table3. Items related to WTP for native honey

Items	Measures
WTP	I would be willing to pay extra for native honey (for the same quantity as foreign-bee honey)
WTP (%)	How much more are you willing to pay for native honey? (for the same quantity as foreign-bee honey)

The items on personal interest in and perception of health consist of health consciousness, UTI, and positive perception of sugar. To survey health consciousness, the index adopted by Mai & Hoffmann (2015) was used (Table 4). Mai & Hoffmann (2015) evaluated personal interest in health through four items from the health consciousness scale developed by Gould (1988). Each response was measured on a 5-point scale based on the degree of agreement, with the higher the score, the higher the personal interest in health and the more eager respondents are to engage in activities beneficial to health. UTI was measured with the index used by Mai & Hoffmann (2015) (Table 5), who in turn modified and expanded the UTI scale developed by Raghunathan et al. (2006). Each item was measured on a 5-point scale according to the degree of agreement, with the higher the score, the stronger

the belief that health and taste are inversely related. The positive perception of sweetness was measured using two of three items in the index developed by Katou et al. (2005) (Table 6). Each item was measured on a 5-point scale of agreement, with the higher the score, the higher the positive perception of sweetness.

Table 4. Measuring respondent health consciousness

Items	Measures
1	I reflect about my health a lot.
2	I'm very self-conscious about my health.
3	I'm generally attentive to my inner feeling.

Table 5. Measuring UTI (Unhealthy = Tasty Intuition)

Items	Measures
1	Things that are good for me rarely taste good.
2	There is no way to make food healthier without sacrificing taste.
3	Healthy food is usually less tasty.

Table 6. Measuring positive cognition of sweetness

Items	Measures
1	I can refresh with sweetness.
2	If I eat sweet foods, I become energetic.

3.4. Methodology

First, a frequency analysis was conducted using collected data to understand the overall honey purchasing and consumption behavior of South Korean consumers and characteristics of their perception and consumption of native honey. Second, a regression analysis was performed to confirm the factors that influence the willingness to pay for native honey. To analyze the validity and reliability of variables used in the regression analysis, a confirmatory factor analysis using persistent images (PIs) was performed with the following potential variables: 1) knowledge of honey, 2) health consciousness, 3) degree of UTI, and 4) positive perception of sweetness (Harrington 2009). Then, a multiple linear regression was performed to determine the causal relationship between each factor and the willingness to pay for native honey (Aiken 2012).

4.Results

4.1. Analysis of raw honey purchasing and consumption behavior

4.1.1. Analysis of raw honey purchasing behavior

Prior to analyzing the purchasing behavior related to native honey, this study attempted to examine the overall behavior of consumers who purchase and consume domestic raw honey. Table 7 shows an analysis of past experience with purchasing raw honey. Of all 500 respondents, 262 (52.4%) answered they had purchased raw honey, while 238 (47.6%) responded they had never done so.

An additional survey of 262 respondents who had purchased raw honey was conducted to identify the frequency of purchase, the place of purchase, and the most important factors they considered when purchasing honey. As for the frequency of purchasing raw honey, "once a year" was the most common answer (51%), followed by "two to three times a year" (33.6%) and "once every two years" (11.8%). As for the place of purchase, purchasing online or offline directly from farmers was the most common at 50.7% combined, offline purchases at general retail stores accounted for 39.8%, and online purchases at general retail stores at 15.6%. Other responses included "Introduced by an acquaintance," "Purchased overseas," and "depending on the situation." The most important factor considered when purchasing honey was the kinds of flowers used (31.7%), followed by place of origin (19.8%), taste (17.94%), country of origin (14.5%), and price (10.7%).

Table 7. Frequency analysis of honey purchasing behavior

Items	Frequency	Percentage (%)
Purchasing experience (n = 500)		
Yes	262	52.4
No	238	47.6
Frequency of consumption (n = 262)		
Two to three times a year	88	33.6
Once a year	134	51.1
Once every two years	31	11.8
Once every three years	9	3.4
Other	0	0
Place of purchase (n = 262)		
Offline from a convenience store, supermarket, large retail store, etc.	78	29.8
Online from Gmarket, E-Mart Mall, etc.	41	15.6
Directly from farmer (in person)	58	22.1
Directly from farmer (online/by phone)	75	28.6
Other	10	3.8
Important factors considered before purchasing (n = 262)		
Price	28	10.7
Color	2	0.8
Taste	47	17.9
Area of production (e.g., Uiseung in North Gyeongnam Province, Pocheon in Gyeonggi Province, etc.)	52	19.8
Country of origin (e.g., South Korea, Australia, etc.)	38	14.5
Brand	8	3.1
Kinds of flowers used (e.g., chestnut, acacia, etc.)	83	31.7
Volume	1	0.4
Form of packaging	2	0.8
Other	1	0.4

4.1.2. Analysis of raw honey consumption behavior

Table 8 shows the analysis of respondent consumption of raw honey. Of all 500 respondents, 388 (77.6%) responded that they had consumed raw honey, while the remaining 112 (24.4%) answered that they had not. An additional survey of the 388 people responding that they had consumed raw honey in the past was carried out to identify the frequency and manner of raw honey consumption. Regarding frequency, "once a week" was most common (38.7%), followed by "once or twice a month" (27.1%) and "less than once a month" (17.0%). Other responses included "twice a week" and "two to three times a week." As for manner of consumption, most common was "In a beverage, such as honeyed water" (52.1%), while "As is" accounted for 18.8% of all respondents, "Adding to other dishes" accounted for 17.8%, and "With cereal/yogurt" for 10.8%.

This additional survey involved a short-answer question about their preferred type of honey, to which 273 responded, while 115 did not. Through this item, the criteria in honey preference were analyzed (Table 9). Of responses to the question, "What is your favorite kind of honey?" most responses (89.4%) referred to the type of flowers used, followed by whether it was natural honey (5.1%), and what the country of origin was (2.6%). The type of flower(s) used was the most important criterion for 243 of the 273 respondents (89.4%), with acacia the favored flower (79.9%) followed by chestnut flower (11.9%).

Table 8. Frequency analysis of honey consumption behavior

Items	Frequency	Percentage (%)
Consumed in the past (n = 500)		
Yes	388	77.6
No	122	24.4
Frequency of consumption (n = 388)		
Everyday	55	14.2
Once a week	150	38.7
Once or twice a month	105	27.1
Less than once a month	66	17.0
Other	12	3.1
Manner of consumption (n = 388)		
As it is	73	18.8
With cereal/yogurt	42	10.8
With beverage, such as honeyed water	202	52.1
Adding to other dishes	69	17.8
Other	2	0.5
Criteria in honey preference (n = 273)		
Kind of flowers	244	89.4
Whether it is natural honey	14	5.1
Country of origin	7	2.6
Brand	5	1.8
Whether it includes the comb	3	1.1
Preferred kind of flowers (multiple answers allowed, n = 244)		
Acacia	195	79.9
Chestnut	29	11.9
Mixed	12	4.9
Manuka	5	2.1
Rape	2	0.8
Others	1	0.4

4.2. Analysis of consumer perception of native honey and willingness to pay

4.2.1. Survey on perception of native honey

Table 9 shows the results of analysis on awareness of the term "native honey." Of 500 respondents, 481 (96.2%) answered "Yes" to the statement, "I have heard of the term 'native honey'," while 19 (3.8%) answered "No." Using a 5-point scale, the 481 respondents who answered "I have heard of the term 'native honey'" were surveyed on their awareness of the term's correct meaning. Those who answered "Neutral" to the statement "I am aware of the exact meaning of 'native honey'" accounted for 45.0%, followed by "Agree" (29.0%), "Disagree" (20.0%), and "Strongly agree" (3.4%), and "Strongly disagree" (2.6%).

Table 9. Analysis of awareness of term, "native honey"

Items	Frequency	Percentage (%)
Aware of the term "native honey" (n = 500)		
Yes	481	96.2
No	19	3.8
Aware of the exact meaning of "native honey" (n = 481)		
Strongly disagree	13	2.6
Disagree	100	20.0
Neutral	225	45.0
Agree	145	29.0
Strongly agree	17	3.4

4.2.2. Willingness to pay for native honey

The willingness to pay for native honey was analyzed by degree of agreement and percentage of additional payment tolerated (Table 10). In terms of degree of agreement, 54.4% of respondents answered "Agree" to the statement, "I am willing to pay more for native honey," followed by "Neutral" (28.8%), "Strongly agree" (9.2%), "Disagree" (6.0%), and "Strongly disagree" (1.6%). Excluding the 38 respondents who answered, "Strongly disagree" and "Disagree," the 462 other respondents were asked how much more they would be willing to pay for native honey in 10% increments between 0 and 40%. The average percentage of the additional amount they were willing to pay was 11.6%: "20% more" accounted for 40.6%, "10% more" for 33.6%, "30% more" for 14.2%, "0% more" for 7.2%, and "40% more" for 4.4%.

Table 10. Frequency analysis of WTP for native honey

Items		Frequency	Percentage (%)
"I am willing to pay more for native honey." (n = 500)	Strongly disagree	8	1.6
	Disagree	30	6.0
	Neutral	144	28.8
	Agree	272	54.4
	Strongly agree	46	9.2
"How much more are you willing to pay for native honey?" (n = 462)	0%	36	7.2
	10%	168	33.6
	20%	203	40.6
	30%	71	14.2
	40%	22	4.4

4.3. Analysis of factors that influence the willingness to pay for native honey

4.3.1. Verification of validity and reliability

This study carried out a suitable validity and reliability analysis of the survey items, with the results shown in Table 11. A factor analysis was conducted on potential variables such as health, attitude toward sugar, degree of UTI, and knowledge, with validity and reliability evaluated based on this analysis. This study used factor loading, composite reliability, average variance extraction (AVE), and Cronbach's alpha.

Table 11. Confirmatory factor analysis of survey items

Factor	Items	Factor loading	Composite Reliability	AVE	Cronbach's alpha
Health consciousness	I reflect about my health a lot.	0.9016	0.922	0.798	0.838
	I'm very self-conscious about my health.	0.9145			
	I'm generally attentive to my inner feeling.	0.8636			
Attitude toward sugar	I can refresh with sweetness.	0.8966	0.891	0.804	0.872
	If I eat sweet foods, I become energetic.	0.8966			
UTI	Things that are good for me rarely taste good.	0.8935	0.909	0.77	0.755
	There is no way to make food healthier without sacrificing taste.	0.8588			
	Healthy food is usually less tasty.	0.8796			
Knowledge of honey	I am very familiar with honey.	0.7413	0.893	0.678	0.838
	I feel I know a lot about honey.	0.8791			
	I am an experienced user of honey.	0.8893			
	I would classify myself as an expert on honey.	0.7733			

Factor loading and average variance extraction were used to evaluate convergent validity. All factor loading values surpassed 0.7, confirming validity of the study. Convergent validity was also upheld as all AVE values stood at 0.5 or more. In addition, discriminant validity was confirmed by comparing the correlation between each latent variable and square root of the AVE (Bohrnstedt & Knoke 1994; Werts et al. 1974).

Table 12. Correlation of measured items and square root of AVE

	Health	Attitude toward sugar	UTI	Knowledge
Health consciousness	0.893			
Attitude toward sugar	0.259**	0.897		
UTI	0.093*	0.005	0.877	
Knowledge of honey	0.325**	0.086	.089*	0.823

Diagonal line: square root of AVE

4.3.2. Descriptive statistics of measured items

Table 13 shows the descriptive analysis conducted to identify the variables that influence willingness to purchase native honey. A 5-point Likert scale was used, with respondents' health consciousness averaging 3.59, their attitude toward sugar averaging 3.88, degree of UTI averaging 2.72, and knowledge of honey averaging 2.80. In addition, those who had consumed native honey accounted for 77.6% of all respondents, while those who had purchased native honey made up 52.4%.

Table 13. Descriptive statistics of measured items

	Max	Min	Average	Standard deviation
Health consciousness	1.00	5.00	3.587	0.672
Attitude toward sugar	1.00	5.00	3.877	0.620
UTI	1.00	5.00	2.717	0.794
Knowledge of honey	1.00	5.00	2.801	0.691

	Experienced		Non-experienced	
	N	%	N	%
Past consumption experience	388	77.6	112	24.4
Past purchasing experience	262	52.4	238	47.6

4.3.3 Verification of the hypothesis

This study attempted to identify the factors that influence willingness to pay for native honey (Table 14). It confirmed that health consciousness (β = 0.184, $p < 0.001$), positive attitude toward sugar (β = 0.176, $p < 0.001$), and knowledge of honey (β = 0.128, $p < 0.001$) have a statistically significant positive effect. Therefore, hypothesis H1 on knowledge, H2 on health consciousness, and H3 on positive attitude toward sugar were all adopted. In other words, the authors found that higher health consciousness, a more positive attitude toward sugar, and more knowledge of honey positively affect consumer native honey purchasing behavior. In addition, it can be seen that of the control variables, the higher the age (β = 0.008, $p < 0.01$), the higher the preference for native honey. On the other hand, hypothesis H5-1 on purchasing experience and H5-2 on experience with consumption were rejected as they did not have a significant influence on willingness to pay for native honey.

Table 14. Verification of the research model

	Standardized regression coefficient. beta	t	Significance probability
(Constant)	3.059		0.000
Age	0.008	3.447	0.001
Number of people in household	0.042	1.431	0.153
Income	0.014	0.840	0.401
Knowledge of honey	0.128	3.708	0.000
UTI	0.003	0.081	0.935
Health consciousness	0.184	5.257	0.000
Attitude toward sugar	0.176	5.300	0.000
Past experience with consumption	0.002	0.024	0.981
Past experience with purchasing	0.011	0.172	0.863
R^2	0.232		
Adjusted	0.218		

Control variables: age, number of people in household, income

***p < .001, **p < .01, *p < .05

5. Discussion and implications

This study examined the overall behavior of consumers in relation to purchasing honey, and especially, attempted to explore the key factors that influence the purchase of native honey. With regard to the beekeeping industry, studies on the management activities of farmers, their perception, and growth of bees as well as ecological studies have been conducted (Kim et al. 2014; Shon et al. 2015; Kim 2015), but few studies exist on honey and native honey from the perspective of consumers. Therefore, this study aims to understand overall honey consumption behavior, identify factors that influence the purchase of native honey, and based on an understanding of consumers who make such purposes, proposes marketing strategies towards revitalization of the native honey market.

First, analysis of the overall honey purchasing and consumption behavior shows that most consumers purchase honey once a year, and that the major distribution channels are online and offline retailers and beekeeping farmers themselves. In addition, the most important considerations for consumers when choosing the honey they will purchase appear to be the kind of flowers and place of production. The flower most preferred by consumers was acacia (79.9%), followed by chestnut (11.9%). It was also found that honey is mainly consumed once a week in the form of beverages such as honeyed water, as it is, or by adding to other dishes.

As a result of confirming the effect of knowledge of honey on the willingness to pay for native honey based on an understanding of overall honey purchase and consumption, it was found that the more knowledgeable a consumer is about honey, the more positive the impact on willingness to pay for native honey. This is the same as the findings of previous studies, that how confident people are in their knowledge influences their purchases and the formation of attitudes toward products (Thogersen 2007;

Pieniak et al. 2010). This study confirms that the level of consumer knowledge about honey serves as a major factor in increasing the willingness to pay for the difference native honey offers over non-native honey.

By confirming the effect of consumers' personal attitude toward health on the willingness to pay for native honey, this study found that health consciousness and positive attitude toward sugar have a positive effect on this willingness to pay, while UTI, which measures the perceived inverse relationship between health and taste, does not have a significant influence on willingness. It can be interpreted that various vitamins, amino acids and other nutrients found in honey (and specific to our study, native honey) have caused it to be regarded as a healthy food since ancient times, so the higher the health consciousness, the higher the willingness to pay for native honey (Bogdanov 2008; Kim et al. 2011). Honey that contains sugar components such as fructose and glucose is used as a natural sweetener, so it can be seen that the more positive attitude toward sugar, the higher the willingness to pay. On the other hand, in terms of UTI, a previous study showed that consumers who believe healthy foods are not tasty are more likely to consume unhealthy foods and have less interest in their natural counterparts (Mai & Hoffmann 2015). However, this study found that UTI did not have a significant effect on the purchase of honey. Therefore, in regard to native honey, it can be seen that a positive attitude toward health and sugar are important factors that significantly influence purchasing behavior rather than perceptions related to taste.

Finally, this study confirms that experience with purchasing or consuming honey does not significantly influence willingness to pay for native honey, and is in fact overshadowed by the influence of consumer knowledge of honey and perception of health. Since this study does not measure the time and frequency of experience, it is necessary to survey future respondents in detail to better reveal their effect on purchasing native honey.

With these findings in mind, this study derives the following marketing strategies and implications. First, older consumers are more willing to pay for native honey, indicating that a target customer base has been established for native honey. Therefore, efforts to increase the scope of age groups who purchase native honey is needed, and can be done by expanding the distribution networks to include online and department stores and developing native honey products in stylish packaging that targets younger consumers, instead of the existing method of selling honey in large glass jars to acquaintances. Second, more knowledge of honey has a positive influence on consumer willingness to pay for native honey, so marketing strategies are needed to raise consumer awareness and familiarity with native honey through a variety of media, promotional campaigns and content containing the unique characteristics of native honey. This can be done through collaboration with local governments and associations in the region where native honey is produced. Lastly, as respondents more conscious about health were more willing to pay for native honey, the confidence of health-conscious consumers in native honey needs to be increased by emphasizing the health benefits of native honey, offering the result of chemical testing that can certify that honey is 100% native without any added sugar, thereby presenting sales strategies that can lead to greater purchases.

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Reference

International References

Aiken, L. S., West, S. G., Pitts, S. C., Baraldi, A. N., & Wurpts, I. C. (2012). Multiple linear regression. Handbook of Psychology, 2nd Ed., 2.

Ajzen, I. (1991). The theory of planned behavior. Organizational behavior and human decision processes, 50 (2), 179-211.

Arvanitoyannis, I. & Krystallis, A. (2006). An empirical examination of the determinants of honey consumption in Romania. International Journal of Food Science & Technology, 41 (10), 1164-1176.

Bagozzi, R. P. & Kimmel, S. K. (1995). A comparison of leading theories for the prediction of goal-directed behaviors. British Journal of Social Psychology, 34 (4), 437-461.

Becker, M. H., Maiman, L. A., Kirscht, J. P., Haefner, D. P., & Drachman, R. H. (1977). The Health Belief Model and prediction of dietary compliance: a field experiment. Journal of Health and Social Behavior, 348-366.

Bohrnstedt, George W. & Knoke, David. (1994). Statistics for social data analysis.

Bogdanov, S., Jurendic, T., Sieber, R., & Gallmann, P. (2008). Honey for nutrition and health: a review. Journal of the American College of Nutrition, 27 (6), 677-689.

Chandon, P. & Wansink, B. (2007). The biasing health halos of fast-food restaurant health claims: lower calorie estimates and higher side-dish consumption intentions. Journal of Consumer Research, 34 (3), 301-314.

Corlett, R. T. (2004). Flower visitors and pollination in the Oriental (Indomalayan) Region. Biological Reviews, 79 (3), 497-532.

Dashora, N., Sodde, V., Bhagat, J., S Prabhu, K., & Lobo, R. (2011). Antitumor activity of Dendrophthoe falcata against ehrlich ascites carcinoma in Swiss albino mice. Pharmaceutical Crops, 2 (1).

Dean, M., Raats, M. M., & Shepherd, R. (2012). The Role of Self-Identity, Past Behavior, and Their Interaction in Predicting Intention to Purchase Fresh and Processed Organic Food 1. Journal of Applied Social Psychology, 42 (3), 669-688.

Reference

Gould, S. J. (1988). Consumer attitudes toward health and health care: A differential perspective. Journal of Consumer Affairs, 22 (1), 96-118.

Hagger, Martin, Chatzisarantis, Nikos and Biddle, Stuart. "A meta-analytic review of the theories of reasoned action and planned behavior in physical activity: Predictive validity and the contribution of additional variables." Journal of Sport & Exercise Psychology (2002).

Harrington, D. (2009). Confirmatory factor analysis. Oxford University Press.

Hilary, S., Habib, H., Souka, U., Ibrahim, W., & Platat, C. (2017). Bioactivity of arid region honey: an in vitro study. BMC Complementary and Alternative Medicine, 17(1), 177.

Huang, C. H. (2014). Relationships between Consumers' Nutritional Knowledge, Social Interaction, and Health-conscious Correlates toward Restaurants. Journal of International Management Studies, 9, 59-67.

Katou, Y., Mori, T., & Ikawa, Y. (2005). Effect of age and gender on attitudes towards sweet foods among Japanese. Food Quality and Preference, 16 (2), 171-179.

Laran, J. (2010). Choosing your future: Temporal distance and the balance between self-control and indulgence. Journal of Consumer Research, 36 (6), 1002-1015.

Mai, R., & Hoffmann, S. (2015). How to combat the unhealthy= tasty intuition: The influencing role of health consciousness. Journal of Public Policy & Marketing, 34 (1), 63-83.

Norman, P., & Smith, L. (1995). The theory of planned behavior and exercise: An investigation into the role of prior behavior, behavioral intentions and attitude variability. European Journal of Social Psychology, 25 (4), 403-415.

O'Cass, A. (2004). Fashion clothing consumption: antecedents and consequences of fashion clothing involvement. European Journal of Marketing.

Oh, M. S., Kim, D., & Lee, S. (2016). History, Current Status, and Discussion on the Future Vision of Apis cerana Beekeeping in Korea. Korean Journal of Apiculture.

Raghunathan, R., Naylor, R. W., & Hoyer, W. D. (2006). The unhealthy = tasty intuition and its effects on taste inferences, enjoyment, and choice of food products. Journal of Marketing, 70 (4), 170-184.

Reference

Smith, J. R., Terry, D. J., Manstead, A. S., Louis, W. R., Kotterman, D., & Wolfs, J. (2008). The attitude–behavior relationship in consumer conduct: The role of norms, past behavior, and self-identity. The Journal of Social Psychology, 148 (3), 311-334.

United States Department of Agriculture (USDA), Agricultural Research Service (ARS), 2014, Honey Bees and Colony Collapse Disorder. http://www.usda.gov/.

Uzdavinyte, E., Aubel, M., & Gineikienė, J. (2019). It is Domestic, it Must Be Healthy: How Health Consciousness and Consumer Ethnocentrism Shape Healthiness Perception and Purchase Intentions of Domestic Food. Organizations & Markets in Emerging Economies, 10 (2).

Werts, Charles E., Linn, Robert L., and Jöreskog, Karl G. (1974). Intraclass reliability estimates: Testing structural assumptions. Educational and Psychological Measurement, 34.1, 25-33.

Wilcox, K., Vallen, B., Block, L., & Fitzsimons, G. J. (2009). Vicarious goal fulfillment: When the mere presence of a healthy option leads to an ironically indulgent decision. Journal of Consumer Research, 36 (3), 380-393.

Reference

Korean References

Choi, Y. S., Pichai, Kongpitak, Lee, M. Y., Hong, I. P., Woo, S. O., Ratna, Thapa (2013), "Rearing the Queen of Apis cerana for Resistance of Disease (Sacbrood Virus and American Foulbrood) in Thailand," Journal of Apiculture, Vol. 28 No. 5, pp. 291-296.

Hahn, J. H., Kim, B. M. (2017), "Beekeeping Farmers' Perception on Growth of the Beekeeping Industry," Journal of Korea Regional Economics, Vol. 36, pp. 179-192.

Jung, C. E. (2008), "Economic Value of Honeybee Pollination on Major Fruit and Vegetable Crops in Korea," Journal of Apiculture, Vol. 23 No. 2, pp. 147-152.

Kim J. H., Lee B. I., Lee S. C. (2010), "An Income Analysis of Large Scale Honey Bee Farming Households," Korean Journal of Agricultural Science, Vol. 37 No.1, pp. 143-149.

Kim, J. H. (2016), "A Study on Segmentation and Marketing Strategies in the Honey Market," Korean Journal of Food Marketing Economics, Vol. 33 No. 1, pp. 105-128.

Kim, M. Y. (2015), "Is SBV of Asian Honey Bees Really Unconquerable?", Conference Sourcebook of the Apicultural Society of Korea, pp.43-43.

Kim, W. S., Choi, C. Y., Jang, M. K., Nah, J. W. (2011), "Antibacterial and Immune Activities of Mixture of Oligochitosan and Herbal Honey," Journal of Chitin and Chitosan, Vol. 16 No. 2, pp. 98-103.

Lee, C. J., Hong, Y. H., Lee, M. L., Ryu, C. H., Kim, S. I. (2020), "Comparison of Temperature, Humidity and Weight Changes among Different Types of Hive for the Asiatic Honeybee (Apis cerana)," Journal of Apiculture, Vol. 35 No. 1, pp. 9-19.

Lee, J. M., Kim, Y. L., Kim, C. H., Woo, S. H. (2019), "Crisis and Implications of the Beekeeping Industry," Korea Rural Economic Institute, Agri-Policy Focus, pp. 1-27.

Oh, M. S., Kim, D. R., Lee, S. H. (2016), "History, Current Status, and Discussion on the Future Vision of Apis cerana Beekeeping in Korea," Journal of Apiculture, Vol. 31 No. 2, pp. 165-172.

Shon, K. R., Kim, J. H., Chu, K. S., Lee, J. W. (2015), "Monitoring of Sacbrood Virus from Korean Native Honeybees in Jeonbuk Province, Korea," Korean Journal of Veterinary Service, Vol. 38 No. 1, pp. 57-59.