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A Study on Consumers' Knowledge of Distinguishing Natural and Organic Honey

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ABSTRACT

In today's marketing processes, knowing what consumers want plays an active role in shaping the products businesses offer and gaining a competitive advantage. This study aims to obtain a guiding result for companies in this sector by questioning the knowledge levels of consumers regarding honey products. The study aims to reveal the uncertainties in consumer perception between natural and organic honey and examine this distinction's impact on purchasing decisions. The research seeks to create more informed consumer preferences in the honey market and to show the contributions of positioning the product correctly in the minds of consumers. In this study, content analysis was conducted to determine the responses of 117 participants to the statement, "There is a difference between natural honey and organic honey, and I have information about what this difference is." After the analysis, the study is shaped by dividing consumers into four categories according to their level of knowledge about honey. The qualitative research aims to obtain comprehensive information on the participants' awareness of natural and organic honey. The study results show that the concepts of natural and organic honey can be confused by consumers, and the difference between these two products cannot be fully conveyed. This result shows that organic honey businesses and regulatory organizations should inform consumers more accurately and clearly through marketing communication efforts in marketing their products. In the study, recommendations are presented to consumers and businesses based on the results of the qualitative analysis, and the methods that companies should apply to overcome the deficiencies in consumer perception of the distinction between natural and organic honey are included.

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Introduction

The distinction between natural and organic honey is increasingly important in consumer markets, reflecting broader trends in health awareness and environmental sustainability. As consumers become more aware of the health benefits of honey, their preferences are shifting towards products perceived as more beneficial. Research shows that consumers generally associate organic honey with higher quality and health benefits, which may influence their purchasing decisions (Cosmina et al., 2016; Testa et al., 2019; Zanchini et al., 2022). The organic label is a quality indicator that aligns with consumers' interest in sustainable and responsible food sources (Sparacino et al., 2022). Studies show that consumers are willing to pay more for organic honey and view it as a healthier alternative to conventional options (Mi et al., 2023; Vapa-Tankosić et al., 2020). This trend is particularly evident among demographic groups prioritizing health and well-being, such as older adults and those with greater awareness of nutrition (Sparacino et al., 2022).

The perception of honey as a natural remedy drives demand for organic varieties, with consumers increasingly seeking products free of synthetic additives and pesticides (Escuredo & Seijo, 2019). Despite the growing interest in organic honey, there is a significant gap in consumers' knowledge of the differences between natural and organic classifications. Many consumers may not fully understand the implications of organic labels, which can lead to confusion and incorrect purchasing decisions by misinformed consumers (Šedík et al., 2022; Elsadibah, 2023). This lack of awareness highlights the need for many initiatives to inform consumers about natural and organic honey's unique properties and benefits, enabling them to make more informed choices (Šedík et al., 2021). As demand for honey grows, producers and marketers need to understand consumers' knowledge and attitudes toward these products. This study was undertaken to provide insight into the complexity of consumer preferences, health perceptions, and market dynamics in the current landscape of honey consumption. It also aims to determine consumers' level of knowledge about the differences between natural and organic honey.

This research is essential as it addresses a significant gap in understanding how consumers differentiate between natural and organic honey, which can influence purchasing decisions and overall market dynamics. Consumers' knowledge of honey types is influenced by factors such as local production preferences and the perceived quality of honey. Studies show that consumers prefer locally produced honey and associate it with higher quality and better taste (Šedík et al., 2022; Kallas et al., 2019). The preference for local honey is further complicated by the growing awareness of the health benefits attributed to honey, which consumers increasingly recognize as a natural alternative to refined sugars (Testa et al., 2019). Moreover, willingness to pay for honey is significantly influenced by its attributes, such as whether it is organic or locally sourced. This is because it shows that consumers are interested in production methods as well as the origin of the product (Vapa-Tankosić et al., 2020; Cosmina et al., 2016).

Consumer perception must clarify the distinction between natural and organic honey (Bilici, 2024). Research shows that while consumers prioritize organic attributes, they value honey's overall quality and health benefits. Consumers may be confused about the definitions of terms (Cosmina et al., 2016; Závodná & Pospíšil, 2016). The therapeutic properties of honey, which vary according to botanical origin, make consumer understanding and preferences even more challenging to choose (Šedík et al., 2019). This highlights the need for more transparent labeling and consumer education to increase knowledge about the differences between natural and organic honey. Demographic factors such as age and socioeconomic status also shape consumers' attitudes towards honey. Younger consumers may have different preferences compared to older generations, as indicated by studies examining intergenerational differences in honey consumption (Šedík et al., 2023; Šedík et al., 2018). Understanding the importance of demographic influences at this point can raise critical awareness about targeted marketing strategies and educational campaigns aimed at improving consumer knowledge.

Natural honey is a product rich in nutrients and bioactive compounds produced by honey bees from the nectar of flowers (Ajibola et al., 2012; Aljohar et al., 2018; Bilici, 2024). This natural product, which contains sugars, proteins, organic acids, vitamins, minerals, flavonoids, and enzymes, has potent antioxidant, antimicrobial, and anti-inflammatory properties (Bilici, 2024; Khan et al., 2018; Lu et al., 2013; Mandal & Mandal, 2011). The composition of natural honey may vary according to the flower sources, geographical factors, and beekeeping methods, leading to differences in flavor, color, and nutritional values (Bilici, 2024; Chitarrini et al., 2020; Molanaei et al., 2020).

Organic honey, on the other hand, is produced through sustainable practices that ensure that chemicals and pesticides are not used in beekeeping and that bees have access only to organic plant sources (Bilici, 2024; Julia et al., 2023). The main difference between natural honey and organic honey lies in the methods used in production processes and the nature of plant resources. Organic honey is produced under certified organic farming practices, which assures consumers it is free of chemical residues. This honey is certified by organizations authorized by the country's Ministry of Food and Agriculture and is approved as organic through strict inspection and laboratory analysis (Bilici, 2024).

Natural honey is pure honey produced by the bees through natural processes without any additives. While flower honey is obtained from the nectar of plants, glandular honey is obtained from the secretions of the living parts of plants or from the secretions of insects that suck plant sap. In organic honey, however, the bees feed only on organically grown plants, and the hives are managed using natural methods (Julia et al., 2023).

As a result, both types of honey are natural. However, organic honey differs from natural honey because it complies with certified organic farming standards. Both natural and organic honey offer significant health benefits and are valued for their natural origin.

Natural honey is first produced by bees from the nectar of flowers and then processed through enzymatic action and evaporation to create the final product. During this process, the quality and naturalness of honey may vary depending on the available floral resources, environmental conditions, beekeeping practices used, and the intention of the producer (Bilici, 2024; Rababah et al., 2013; Datti et al., 2020). In contrast, organic honey production adheres to stricter regulations prohibiting synthetic pesticides and fertilizers in the surrounding environment and ensuring that bees forage in a chemical-free area. This distinction is crucial as it affects not only the quality and safety of honey but also its marketability and consumer perception (Cucu et al., 2021; Pocol et al., 2022).

Organic honey production often requires a certification process that involves rigorous inspections and compliance with specific agricultural practices. For example, organic beekeepers must ensure that their hives are located in areas free from chemical contamination and that bees are not fed sugar syrups or other non-organic substances (Hawari et al., 2021; Toledo et al., 2022). The fact that such regulations may not be strictly enforced and could lead to potential counterfeiting or contamination from nearby agricultural activities does not apply to natural honey (Warui et al., 2019). Studies have shown that organic honey tends to have higher levels of certain beneficial compounds, such as antioxidants and phenolic compounds, attributed to the diverse and uncontaminated floral sources bees have access to (Pavlešić et al., 2022; Spirić, 2023).

Processing methods of honey can also differ significantly between natural and organic varieties. While natural honey can undergo minimal processing, such as essential filtration to remove impurities, organic honey is generally subjected to much stricter processing and inspection standards to preserve its natural properties while ensuring safety (Chen et al., 2012; Sereia et al., 2017). For example, organic honey must be processed without high heat, which can degrade its nutritional and therapeutic properties (Irish et al., 2011). This careful processing is essential as it helps preserve honey's bioactive components, which are crucial for its health benefits (Cucu et al., 2021; Majtán, 2014). Regarding authenticity and quality assessment, both natural and organic honey face challenges related to counterfeiting and mislabeling.

Contaminants and ensuring traceability from hive to consumer (Pocol et al., 2022; Escuredo & Seijo, 2019). Natural honey may not always be subject to the same level of scrutiny, which can raise potential issues related to quality and authenticity (Hawari et al., 2021; Toledo et al., 2022). Advanced analytical techniques such as stable

isotope analysis have been used to distinguish between natural honey and counterfeit products, providing a scientific basis for quality assurance in both categories (Kamdee et al., 2023).

In the context of consumer behavior, consumers evaluate honey based on various qualitative attributes such as taste, aroma, and physical condition. For example, Šedík et al. suggest that urban consumers in Slovakia evaluate honey quality through sensory attributes (Šedík et al., 2022). This preference is further reinforced by the fact that consumers are increasingly aware of the unique properties of natural honey, which increases its attractiveness as a sought-after product (Šedík et al., 2021). Testa et al. found that Italian consumers are willing to pay extra for organic honey, suggesting a strong correlation between organic certification and consumer demand (Testa et al., 2019). This trend is also supported by Vapa-Tankosić et al., who identified food safety and local community support as important factors influencing consumers' willingness to pay more for organic honey in Serbia (Vapa-Tankosić et al., 2020). Bilici (2024) also found that consumers' attitudes are influenced by health awareness, perceived quality, the color of honey, perceived nutritional value, and perceived price, and that attitude towards natural honey strongly influences attitude towards more honey and willingness to pay more. Such results from the literature suggest that consumers are motivated not only by taste and quality but also by ethical concerns and health awareness surrounding production practices.

Health benefits associated with honey consumption also play an essential role in shaping consumer preferences. Research by Ritten et al. shows that consumers are increasingly attracted to honey due to its medicinal properties, which are often emphasized in marketing strategies (Ritten et al., 2019). This result is confirmed by studies showing that consumers perceive honey as a healthy alternative to sugar, especially among older demographic groups that may have historical links to honey consumption instead of sugar (Kowalczuk et al., 2017). Neto et al. (2020) found that health consciousness significantly influences honey purchasing patterns as consumers seek products that align with their nutritional goals.

Demographic factors affecting honey consumption also need to be considered. Younger consumers may exhibit different preferences compared to older consumers. Studies show that older individuals consume honey more frequently (Šedík et al., 2023). Income and brand awareness also significantly influence consumer choices, as in the study conducted in Indonesia, where health benefits and taste are most important (Melina et al., 2023).

Materials and Methods

In this study, content analysis was conducted to determine the responses of 117 participants to the statement, “There is a difference between natural honey and organic honey, and I have information about what this difference is.” Content analysis is a systematic method used in qualitative research that enables researchers to interpret and analyze textual, visual, and conceptual data. It is mainly used to extract meaning from various forms of communication, such as interviews, articles, and social media content. This method facilitates a deeper understanding of the topic under investigation by identifying patterns, themes, and categories in qualitative data (Agarwal, 2023; Suryaningrum et al., 2019). Content analysis in qualitative research can be handled inductively or deductively. An inductive approach involves deriving categories and themes directly from the data without pre-acquired concepts, which allows realizations to emerge more naturally (Mazaheri et al., 2014; Pagnaer et al., 2021). In contrast, a deductive approach starts with predefined categories based on existing theories or frameworks that researchers then apply to the data (Naal et al., 2022; Abdullahzadeh, 2023). This flexibility makes content analysis versatile in various disciplines, including sociology, psychology, and communication studies (Türk et al., 2022; Mustapha & Ebomoyi, 2019).

The content analysis process includes data collection, coding, categorization, and interpretation. Initially, researchers collect qualitative data through interviews, focus groups, or document reviews. The data is then coded, where text sections are labeled with codes representing specific themes or concepts. These codes are then analyzed into categories to draw conclusions and inferences about the data (Azizan et al., 2016; Taufik & Sila, 2023; Horúcková & Berthet, 2017). This systematic approach increases the reliability and validity of the findings as it allows for cross-validation of the data (Mindarti et al., 2021; Dumay & Cai, 2015). This study involved 117 participants who classified and summarized responses through content analysis. This method comprehensively overviews participants' thoughts and perceptions (Serafini & Reid, 2019; Ristovska, 2019).

Results

The research was conducted in a face-to-face interview, and the participants' demographic data was collected first. Then, one-question closed-ended and one-question open-ended questions were asked to determine whether consumers know the distinction between natural honey and organic honey.

When the demographic data in Table 1 are analyzed, it is seen that women (64.10%) are more represented than men (35.90%) in the gender distribution of the participants. This suggests that women are more interested in natural and organic products or are more involved in such research. Regarding marital status, 51.28% of the participants were married, and 48.72% were single. These rates suggest that married and single individuals were represented in the survey in a balanced way. However, married individuals may be more conscious about family health and safe food preferences.

When the distribution according to age groups is analyzed, respondents aged between 31-35 constitute the largest group with a rate of 21.37%. In comparison, individuals aged 45 years and over represent a significant segment with a rate of 18.80%. The density in the young and middle age groups may indicate that these age groups are more interested in organic and natural products. When the level of education is analyzed, it is seen that 36.75% of the participants have a bachelor's degree, and 30.77% have a postgraduate degree. These results suggest that educated individuals are more willing to respond to organic and natural products.

Table 1. Demographic Characteristics of the Participants

Demographic Characteristics		N	%
Gender	Male	42	35.90%
	Female	75	64.10%
Marital status	Married	60	51.28%
	Single	57	48.72%
Age	25 ≤	20	17.09%
	26-30	16	13.68%
	31-35	25	21.37%
	36-40	19	16.24%
	41-45	15	12.82%
	45 ≥	22	18.80%
Education Level	High School and Below	19	16.24%
	Associate degree	19	16.24%
	Undergraduate	43	36.75%
	Graduate	36	30.77%
Income Level (Turkish Lira / TRY)	15.000 ≤	18	15.38%
	15.001 – 30.000	43	36.75%
	30.001 – 45.000	25	21.37%
	45.001 – 60.000	23	19.66%
	60.001 ≥	8	6.84%
Total		117	100.00%

When the income levels are analyzed, 36.75% of the respondents are in the income range of 15.001-30.000 TL, which shows that most are at low-income levels. This suggests that the interest in organic and natural honey products may be concentrated mainly in the low-income group. Price and quality perception may play an essential role in the preference for these products. In general, the participant profile of the research is primarily female, belonging to the middle age group, educated and middle-income individuals.

Participants were asked, "There is no difference between natural honey and organic honey. They both refer to the same product." it is seen that the majority of the participants (64.84%) believe that there is a difference between natural honey and organic honey. This shows that consumers know these two products and perceive the differences. On the other hand, only 35.16% believe these two products are the same, indicating a lack of knowledge about natural and organic honey. The results reveal the need for awareness raising on natural and organic honey and show that consumers are willing to learn more about it. Consumer awareness-raising efforts can support a better understanding of these differences and increase the market share of organic products.

The responses to the open-ended question "There is a difference between natural honey and organic honey, and I have information about this difference. (If you think there is a difference between the two types of honey, you can write 'yes' and if you want, you can write what the difference is.)" were examined and classified one by one, collected below under headings, and divided into four categories:

Providers of Accurate Information: Those who correctly explain the difference between natural and organic honey.

Misinformers: Those who give incorrect, inaccurate, or incomplete information.

Those Who Say There is No Difference: Those who state that there is no difference between the two honeys.

Those who do not know: Those who stated that there was a difference but did not.

Some prominent responses and percentages were calculated according to these categories. The distribution of categories according to consumers' responses is as follows:

1. Those who provided accurate information (35.90%)

- "The two are different. Organic honey requires a certificate."
- "Organic honey is a honey produced from bees raised in places where controlled and certified agricultural production is carried out from production to consumption without chemical inputs that do not harm human health and the environment. On the other hand, natural honey is produced by feeding entirely from nature without external additives for the bee's nutrition in any environment."
- "Organic food refers to food produced with organic methods and controlled at every stage from the soil where it is produced to its consumption. Natural food: foods found in nature and grown naturally are in this group."
- "Natural honey is honey produced by bees in a natural environment with components such as pollen, etc., taken from the source without any control. Organic honey, on the other hand, is honey produced by bees with pollen, etc., taken from a designated (organic) source."
- "Organic honey is a honey produced in locations that meet organic production conditions."
- "Natural honey is a honey produced spontaneously by bees in the natural environment, without controls. Organic honey is a honey produced according to a standard and certified."

2. Those Providing False or Incomplete Information (32.48%)

- "There is a difference in smell and taste. Organic honey is candied."

- "If bees produce organic and natural honey, there is no difference."
- "Organic honey is produced without any non-organic production materials. On the other hand, natural honey does not comply with organic rules but uses natural production materials for the bee."

3. Those who said there is no difference (9.40%)

- "Natural honey can also crystallize over time to protect itself."
- "I do not think organic honey has to be natural. It can be produced in a production facility. I think natural honey is a product derived from its ecosystem."

4. Those who do not know (22.22%)

- "I think there is a difference, but I cannot explain it scientifically."
- "According to an experiment on a bear in a bee field, the bear recognized the natural honey every time and ate it."
- "I do not know the difference; I do not know to make a distinction."
- "There is a difference, but I do not know what it is."

In addition, when the responses of the participants were grouped under headings, other responses were categorized as follows:

Certification of Organic Honey and Rules: According to some respondents, compliance with specific standards and certification is essential in producing organic honey. The idea that organic honey is certified and subject to various controls and rules during the production process is shared among the respondents. According to some respondents, the fact that organic honey is subject to the certification process and compliance with specific rules is emphasized. Some respondents know that organic honey has to meet particular standards. It is commonly stated that organic honey is a product that is produced according to organic production standards approved by the Ministry of Agriculture and Forestry, and its compliance with these standards is based on specific criteria. Among the requirements that organic honey must meet are that it must be at least 1 km away from areas where chemicals or products are used (mines, factories, etc.), that the certifying organization must accept medicines and bee foods according to specific standards, and that no chemical additives or external factors are used in the production process.

Production by Bees and Definition of Natural Honey: According to some respondents, honey produced in their natural environment is often called "natural honey." However, there are many opinions on this definition. While some users stated that honey produced by bees is automatically called "natural," others noted that this definition is limited.

Bear Experiment and Preference for Honey: Some participants mentioned an experiment conducted in a bee field. According to this experiment, it is claimed that bears prefer natural honey. However, no clear information was given about the scientific reliability of this experiment.

Flavor and Other Characteristics: Survey respondents indicated differences between organic and natural honey regarding smell, taste, color, and sweetness. There are opinions that organic honey generally tends to sweeten.

Environment and Health-Friendly Organic Honey: Participants emphasized that the production conditions of organic honey are environmentally friendly and suitable for human health. Factors such as the absence of chemical inputs and the lack of diesel-powered vehicles were mentioned by the participants as factors that determine the compliance of organic honey with health standards.

Production Process of Natural Honey: According to some participants, natural honey is produced by bees in their natural environment under minimal human intervention.

Discussion

This study aimed to examine how consumers perceive the difference between natural and organic honey and the level of knowledge they have about these two types of honey. The study results reveal that consumers' knowledge about natural and organic honey varies and that they have a certain level of awareness. Most participants stated that natural and organic honey differ and that organic honey is produced within specific rules. This result shows that organic honey is associated with particular standards in the minds of consumers and that consumers have developed a sense of trust towards these products. 64.84% of consumers believe there is a difference between natural and organic honey. However, the respondents have insufficient knowledge of how to define this difference. In particular, those who have correct information about the distinction between organic honey and natural honey are represented by 35.90%, and those who have incorrect or incomplete information are represented by 32.48%. The closeness of these percentages reveals a significant confusion and lack of knowledge regarding consumer awareness.

When consumers' responses are categorized, the idea that organic honey should be certified and subject to specific rules comes first. Some consumers correctly stated that organic honey is produced without chemicals and should be approved. On the other hand, some have incorrect or incomplete information. Generally, superficial factors such as taste, smell, or sugar level incorrectly explain the differences between organic and natural honey. These consumers' answers reveal that they do not have in-depth knowledge about organic products and that education and awareness-raising activities are essential in promoting these products.

9.40% of the participants verbally stated that there was no difference between natural honey and organic honey, while 22.22% thought there was a difference but had difficulty in explaining this difference. These answers show the imbalance in consumer knowledge level and the lack of clear information about organic honey. The answers given by the participants in the "Do not Know" group especially reveal that social awareness of organic products should be increased. A better understanding of organic products and a more precise positioning in the minds of consumers are essential for the growth of this market.

Conclusion

The research results show that the concepts of natural and organic honey can be confused by consumers, and the difference between these two products is not fully

conveyed. This result indicates that organic honey businesses and regulatory organizations need to inform consumers more accurately and clearly through marketing communication efforts in marketing their products. In particular, it is necessary to explain better the production processes of organic honey, explain the certification process transparently, and organize informative marketing communication campaigns about the environmental and health criteria that these products meet. The idea that organic products are environmentally friendly, sustainable, and more suitable for human health is widespread among consumers. However, it is essential to convey this idea to a broader audience.

The limitations of the research should also be taken into consideration. The sample size and demographic structure of the study have certain limitations. The research results may not be generalizable to a broader population because the majority of the participants in the sample are middle-aged, female, and highly educated. A study with participants from different age groups and spread over a wider geographical area may reveal more clearly how the awareness of natural and organic honey is shaped throughout society. In addition, this study could not fully address the impact of differences in income levels on consumer preferences.

A second limitation is related to the data collection method. The study evaluates the participants' level of knowledge about natural and organic honey only based on self-reported information. However, these statements may not always be accurate and reliable. In particular, respondents who provided inaccurate or incomplete information may have based their responses on subjective experiences or perceptions, which may raise some concerns about the accuracy of the results.

Finally, the study's cross-sectional nature does not capture changes over time. Organic and natural honey awareness may change with marketing communication campaigns and awareness-raising efforts. Therefore, conducting longer-term and follow-up research on this issue may support examining the problem more clearly.

Based on the results of the research, the following recommendations can be made for businesses and consumers:

- Consumer Education and Awareness Raising: Businesses should organize information campaigns to explain the difference between organic and natural honey more clearly. In particular, consumers should be given more information about the certification process, production standards, and environmental sensitivity of organic honey.
- Labeling and Certification: Providing detailed information about the certification process of organic honey on product labels will enable consumers to make an informed choice. In addition, emphasizing the assurance provided by certification will likely increase the preference for organic honey.
- Price and Quality Balance: Especially for low-income consumers, the price-quality balance of organic honey should be emphasized. Presenting the advantages of organic honey in a way suitable for a broad audience, rather than appealing only to high-income consumers, will enable this product to spread to a wider consumer group.
- Environment and Health-Focused Messages: Emphasizing the environmentally friendly production processes of organic honey and its benefits for human health will likely increase the preference rate of these products. Consumers should understand that organic honey is not just a food product and supports a sustainable production model.

The following suggestions can be made for future research in this field:

- Use a Larger Sample: Larger-scale studies can be conducted to include participants from different geographical regions and various demographic groups. This research could provide a clearer picture of consumers' perception of the difference between natural and organic honey.
- Monitoring Changes over Time: Long-term monitoring studies should be conducted to understand how awareness and consumer preferences for organic products change over time. These studies will help evaluate the effectiveness of marketing strategies.
- Comparative Studies with Different Product Categories: It would be helpful to examine the difference between organic and natural products in the context of food products other than honey. Such comparative studies can provide a more detailed and broad perspective on general consumer awareness and attitudes towards organic products.

This research has taken an essential step towards understanding consumers' knowledge and perceptions of natural and organic honey. However, future studies can contribute to the literature in this field by providing broader and more in-depth information**.**

Declarations

Ethical Approval Certificate

The experimental procedures of this study were approved by the Local Animal Care and Ethics Committee of Bursa Uludag University University, 26 January 2024 approval date, and number: 2024-01

Author Contribution Statement

Please indicate how each author contributed to this work and at what stage. For example:

Fatih Bilici: Data collection, investigation, formal analysis, methodology, and writing the original draft

Nebi Seren: Project administration, methodology, supervision, review and editing

Conflict of Interest

The authors declare no conflict of interest.

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