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RESEARCH ARTICLE

Halal Food Analysis Methods and Research on Consumer Trends: Malatya Example

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Abstract

Halal food is defined as food in which all processes are carried out in accordance with Islamic rules, from production to consumption, that is, from the place where the product is produced to the table. While certain conclusions can be made about whether many products are halal or haram, more information is needed for products with questionable status. For this, high-sensitivity analysis methods have been developed. In this study, a questionnaire was conducted to determine the attitudes and expectations about halal food of consumers living in Malatya about halal food. The questionnaire form consists of three parts. In the first part, the demographic and socio-economic characteristics of the consumers were questioned. In the last part, questions were asked to learn the attitudes and expectations of consumers. Data were obtained from 430 consumers living in the city center of Malatya. The obtained data were analyzed with SPSS 25.0 program. According to the result of the questionnaire; 51,4% of the respondents were female, 80,5% of them were married. Also 37,9% of respondents are undergraduates, 26,7% of them are housewives and 18,6% have an income level of minimum wage or below. While it has been determined that 76% of the respondents have knowledge about halal food, but just 27,9% of them pay attention to the halal food certificate of the products they buy. In addition, it has been determined that the majority of consumers question the halal food certificate when purchasing animal food products. According to these results, it is necessary to increase more information on products in order to be more involved in the halal food market.

Keywords: Halal food, halal food certificate, Malatya, consumer trends

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1. Introduction

As a result of technological developments in recent years, mass production has increased the variety and capacity of products, but has made the reliability and controllability of these products difficult. In addition, the evaluation of the reliability of food products within the framework of predetermined criteria is a necessity for health. Because with the increase in foodborne diseases and human deaths caused by these diseases, it has become mandatory to take measures to ensure the safety of food products (Meral & Şahin, 2013).

Many personal and environmental factors such as traditions and customs, habits, income status affect the food consumption of human beings. It is also known that they purchase products or services under the influence of their religious beliefs. Therefore, the importance of halal product concept increases (Kurtoğlu & Çiçek, 2013). Halal is becoming a universal symbol for standard of living and quality assurance. Halal products and services are increasing strongly in the global food market and halal food is one of the fastest growing sectors among Muslim and non-Muslim countries (İnan, 2018).

It is estimated that the Muslim population of approximately 2.2 billion will reach 2.9 billion by 2050 and therefore the demand for halal food will increase substantially. The increase in the global trade volume of halal food leads to an increased risk of adulteration or misuse of halal food fiqh rules and guidelines. In particular, it should be taken into account that haram food additives or food ingredients may be used in food products to imitate halal ingredients because they are cheaper. Therefore, reliable and accurate analytical methods are needed to verify the origin of food ingredients and to fulfil halal food requirements (Kurt, 2017)

In this study, firstly, literature information about the most commonly used analysis methods in the determination of halal food is given. In addition, a face-to-face survey was applied to 430 people in Malatya to determine the awareness, attitudes, expectations and tendencies of consumers about halal food. The aim of the research is to determine the perception of safe food and halal food of consumers in Malatya, to determine the level of knowledge of consumers about halal food certified products, to determine the level of halal food consumption, to determine the product groups that consumers want to have halal food certification, to determine socio-economic characteristics in consumer behaviour in halal food certified products.

2. Halal Food

Halal is of Arabic origin and is defined by the Islamic Food and Nutrition Council of America (IFANCA) as "legitimate and permitted", the opposite of "haram", which means "illegitimate and prohibited". The Turkish Language Association (TDK), on the other hand, defines the word halal as "not contrary to the rules of religion, not prohibited in religious terms, anti-haram".

Halal food is defined as food in which all the processes to which foodstuffs are subjected from production to consumption, that is, from the place where the product is produced to the table, are carried out in accordance with Islamic rules (Batu, 2012).

The Codex Alimentarius Committee (CAC) defines halal food as "a product that must not come into direct contact with any food during its preparation, processing, transport or storage using a device or element that does not contain any element prohibited by Islamic law; except in this case, it must not come into direct contact with any food during its preparation, processing, transport or storage".

The mere presence of the phrase "does not contain pork" on the food label of processed products does not mean that the product is halal food. Because non-halal foods are not only pork, but also animals such as cats, dogs, donkeys, mice and the meat of animals that are not slaughtered according to Islamic conditions. In addition, it is not enough to have the phrase "no alcohol" on the drinks. In order for food and beverages to be halal, no non-halal substance must be added in a way and proportion that will be evident in its content, taste, smell, colour and must not be harmful to health (Karaman, 2012).

Countries where the Muslim population is in the majority or where Muslims constitute the majority of the immigrant

population are countries where the use of halal food is widespread. Malaysia, Indonesia, Singapore, Thailand, North America, Australia, England, Germany, France, many Middle Eastern and African countries are the countries where halal food is most common (Çallı, 2014). There are differences in the perception of halal food among Muslims. In the Middle East, halal food is primarily associated with red and white meat, while in Southeast Asia, there is a rule that "all good and consumable products must be halal". In Malaysia, Indonesia, Singapore and Brunei, the concept of halal food is more pronounced than in most of the Middle East countries (Fischer, 2012). It has been observed that the institutionalisation movements that started in the United States of America (USA), Malaysia and Indonesia have started to manifest themselves in Europe and have become a need wherever Muslims live (Akgündüz, 2012).

3. Analysis Methods Used in Halal Food Determination

The uncertainty of the origin of food ingredients is becoming an important issue for religiously sensitive consumers (Özgen & Hazarhun, 2019). In addition, the increasing awareness of safe, halal food consumption and adulteration issues makes it a necessity to know the contents of the foods consumed. In particular, foods produced under various production conditions and containing various ingredients increase the concerns of conscious consumers and some consumer groups with special needs (halal and gluten-free food consumers, vegetarians, etc.) (Kurt, 2017). In addition, the processing of different food products in the same facility may cause unintentional cross-contamination, which may jeopardise the halal status of the food produced. Therefore, fast, reliable and accurate analytical methods are needed to verify the origin of food components and to meet the requirements of halal food. Other features expected in the methods to be applied are independence from morphological differences and low cost. Various molecular and instrumental techniques have been developed to determine whether a food is halal or not (Ermiş & Salleh, 2020).

Many of the recently developed methods are based on the identification of specific markers present or absent in the food sample. Furthermore, the methods mostly used to determine the origin of halal foods and to identify ingredients not permitted for use in foods (Table 1) are Fourier transform infrared (FTIR) spectroscopy (Ordoudi et al., 2018), differential scanning calorimetry (DSC), Raman microspectroscopy (Cebi, 2018), different polymerase chain reaction (PCR) analyses (Erwanto & Abidin, 2012; Safdar et al., 2014), multiplex PCR (Sultana et al., 2018), real-time PCR (Amaral et al., 2016), sandwich ELISA (Alina et al., 2012), GC-MS (Park et al., 2016), LC-MS (Von Bargen et al., 2013), GC -TOF MS (Witjaksono et al., 2017), electronic nose (Nurjuliana et al., 2011; Park et al., 2017), measurement of dielectric properties (Abidin et al., 2016), colorimetric methods (He & Yang, 2018), electrochemical determination of alcohol (Musa et al., 2014), immuno strip test (Kuswandi et al., 2017) electrophoretic (Slattery & Sinclair, 1983) and immunochemical (Swanson et al., 1992). However, these methods are not sufficient for the use of animal products that have died spontaneously or have not been slaughtered in accordance with Islamic rules, as well as for the identification of substances that do not comply with the requirements of halal food and are not physical, chemical or biological in nature (El Sheikha et al., 2017; Ermiş & Salleh, 2020; Mursyidi, 2013).

Table 1. Methods mostly used in halal food analyses (Ermiş & Salleh, 2020).

Methods	Samples	Limit of Detection	Sources
Sandwich ELISA	Not authorised Plasma Transglutaminase	Present/absent	(Alina et al., 2012)
PCR	Meat	Raw pork meat >%0,1	(Nikzad et al., 2017; Song et al., 2017)
FTIR	Biomarker identification	Present/absent	(Wielogorska et al., 2018; Witjaksono et al., 2017)
Electronic nose combined with gas chromatography-mass spectrometry-headspace (GC-MS-HS), PCA analysis	Meat	Pork has been distinguished.	(Nurjuliana et al., 2011)
DSC, GC, HPLC	Pork fat detection	Present/absent	(Azir et al., 2017)
LC-MS	Meat authenticity, SS gelatine detection	> % 0.13	(Von Bargen et al., 2013)
Raman and Chemometry analysis	L-Sistein	> %0.125 (w/w)	(Cebi et al., 2017)
ELISA	Meat	0.01% of pork adulteration within 20 minutes	(Mandli et al., 2018)
Real-Time PCR analysis	Meat	Limit of detection of pork from 0.01 to 0.001% (w/w)	(Amaral et al., 2016; Demirhan et al., 2012)
nano-LC-Q-TOF-MS/MS	Proteins of non-meat origin	Present/absent	(Montowska & Fornal, 2018)
FTIR and chemometric analysis	Carminic acid (CA)	% 10.0 CA herhangi bir örnek olmadan	(Ordoudi et al., 2018)
NA-based colourimetric method using gold nanoparticles	Meat	0.25 - 1.16 mg/kg	(He & Yang, 2018)
Dielectric constant and dielectric loss factor measured in the frequency range 0.5 to 50 G, fast and on-site detection approach	Meat	At frequencies of 7.43 and 31.19 GHz, two separate peaks were observed only for raw and sterilised pig samples.	(Abidin et al., 2016)
PCR, SDS-PAGE, western blot, LC-ESI-MS/MS	Porcine Pancreatic α-amylase	Present/absent	(Picariello et al.,2018)
PCR	Beef and chicken meat	In pork, 0.1 % was found in chicken meat and 0.04 % in beef.	(Chiş & Vodnar, 2019)

4. Materials and Methods

This study was planned as a descriptive cross-sectional study and the population of the study consists of individuals living in Malatya city centre in 2020. The lack of any study on determining consumer trends about halal food in Malatya is the most important reason for choosing Malatya as the population. According to 2020 data, the provincial population of Malatya is 806 156 people and the central population is 635 137 people (TUİK, 2020). The following convenience sampling volume formula was used to determine the volume of the survey (Can, 2019).

In a recent study conducted in Turkey, halal food consumption tendency was found to be 37% (Kızılkaya, 2017). Accordingly, the research sample size was calculated as 358 people with p=0.37 q=0.63, sampling error d=0.05 and 5% margin of error t=1.96. In order to increase the reliability of the research, 465 people were reached and 450 people who agreed to participate in the study were included in the study, and the study was completed with the data of 430 participants in total with the removal of 20 questionnaires with missing and incorrect data.

4.1. Research Methodology

In this study conducted to determine the awareness and attitudes of consumers in Malatya on halal food consumption; study data were collected through face-to-face questionnaires. In the research, the perception of safe food, the status and reasons for consuming halal food, and the products that the participants want to have halal food certificate were investigated.

The questionnaire consists of three parts. In the first part; demographic and socioeconomic questions were included. In the second part; 6 propositions were used to determine consumers' perception of safe food. In the last part of the questionnaire; determination of halal food consumption tendencies and the reasons under their behaviours were tried to be determined with 9 propositions. For this purpose, for each proposition; 5-point Likert type (1. Strongly disagree; 2. Disagree; 3. Undecided; 4. Agree; 5. Strongly agree) responses were created.

4.2. Analysing the Data

Within the scope of the research, the data obtained from 430 participants with face-to-face survey technique were analysed with SPSS 25.0 programme and 95% confidence level was used. For descriptive statistics, mean, standard deviation, maximum, minimum values, number (n) and frequency (%) values were used. Chi-square analysis test was used to compare qualitative data. In addition, Cronbach's Alpha coefficient was used for the reliability of the propositions, the normal distribution of the quantitative data was evaluated with the Kolmogorov-Smirnov test and the t test was used to compare two groups with normal distribution.

5. Results

5.1. Demographic Characteristics of the Consumers

Frequency analysis was performed to determine the demographic and socio-economic characteristics of 430 consumers participating in the research. According to the results obtained when the demographic characteristics of the participants included in the research are analysed; 51,4% of the participants are female and 48,6% are male. Although the distribution is balanced, 32,1% of the participants are between the ages of 36 and 45. 80,5% of the participants are married and directly purchase food products. It was determined that 41,4% of the participants' spouses were employed, 37,9% were licence, 26,7% were housewives, 25,6% were officier, 49,5% had 3 or 4 people per household. Most of the participants consisted of people with permanent income and 18,6% of them had an income level of minimum wage and below (Table 2).

Table 2. Demographic characteristics of the consumers.

Gender	Number of Individuals (n)	%	Education Status	Number of Individuals (n)	%
Female	221	51,4	Primary education	87	20,2
Male	209	48,6	High School and Equivalent	146	34,0
Total	430	100	Licence	163	37,9
Age			Postgraduate	34	7,9
25 and below	32	7,4	Total	430	100
26-35	102	23,7	**Profession**		
36-45	138	32,1	Housewife	115	26,7
46-55	112	26,0	Officier	110	25,6
56 and above	46	10,7	Tradesmen	61	14,1
Total	430	100	Doctor-Lawyer-Engineer	68	15,8
Marital Status			Pensioner	15	3,5
Single	67	15,6	Student	12	2,8
Married	346	80,5	Other	49	11,4
Separated	16	3,7	Total	430	100
Total	429*	99,8	**Household Income Status**		
Employment Status of Spouses			2020 TL (min. wage)** and below	80	18,6
Yes	178	41,4	2021-3999 TL	125	29,1
No	168	39,1	4000-5999 TL	100	23,3
Total	346	80,5	6000 TL and above	125	29,1
Number of People Living in Household			Total	430	100
1-2 person	51	11,9			
3-4 person	213	49,5			
5-6 person	138	32,1			
7 and above person	28	6,5			
Total	430	100			

* One participant did not specify his/her marital status. ** Minumum wage amount is 2020 year.

5.2. Attitudes and Behaviours of Consumers Regarding Halal Food According to Sociodemographic Characteristics

It was determined that the attitudes and behaviours of consumers about halal food were different according to gender ($p<0.05$). As a result of the tests carried out to determine the main source of these differences, the following data were obtained;

- Female participants prefer to buy "Halal Certified" products because they are of better quality" more than male participants and they think that the foods sold in artisan restaurants, kebab shops and street vendors are not Halal. In addition, the fact that the products purchased have Halal Certificate affects the purchase preference of female participants more than male participants and they want chicken and chicken products, fruit juice, ice cream, ketchup-mayonnaise type products, milk and dairy products, confectionery, bakery products and carbonated drinks (cola, soda, fruit soda, etc.) to have Halal Food Certificate.
- Male participants stated that they have never heard of a Halal Certified product with a higher rate than female participants.

- Female participants look at the quality certificate more than male participants to find out whether the products purchased are halal food or not. Male participants search for the Ministry of Agriculture and Forestry more than female participants.

It has been determined that there are differences in the attitudes and behaviours of consumers regarding halal food according to age ($p<0.05$). As a result of the tests carried out to determine which age groups are the main source of these differences, the following data were obtained;

- Participants aged 56 years and over prefer to buy Halal Certified products because they are healthier than other participants and consume less fast food style (hamburgers, wraps, sandwiches, pizza, etc.) foods than other participants.
- Participants in the 26-35 age group prefer to buy Halal Certified products because they are more delicious than other participants and buy more Halal Certified products than other participants.
- Participants aged 25 and below think that the food sold in street vendors is not Halal more than other participants and prefer to buy Halal Certified products because they are of better quality than other participants.

It has been determined that there are differences in the attitudes and behaviours of consumers regarding halal food according to their educational status ($p<0.05$). As a result of the tests carried out to determine which educational status groups are the main source of these differences, the following data were obtained;

- Participants with primary education prefer to buy Halal Certified products because they are safer, better quality and more delicious than other participants.
- Participants whose educational status is high school and equivalent prefer to buy Halal Certified products because they are healthier than other participants, and they pay attention to the fact that the product purchased more than other participants to find out whether it is Halal food or not.
- Participants with undergraduate education think that all products are halal more than other participants.
- Participants with postgraduate education do not trust the Halal certificate and consume fast food style (hamburgers, wraps, sandwiches, pizza, etc.) less than other participants.

It has been determined that there are differences in the attitudes and behaviours of consumers regarding halal food according to occupations ($p<0.05$). As a result of the tests carried out to determine which profession is the main source of these differences, the following data were obtained;

- Participants who are housewives think that foods with higher prices are Halal Food more than other participants.
- Participants who are tradesmen think that organic products are Halal Food more than other participants and prefer to buy Halal Certified products for religious reasons more than other participants. In addition, the participants who are shopkeepers prefer to buy Halal Certified products because they are safer, healthier, better quality and tastier than other participants and state that the Halal Certificate of the products purchased will affect the purchase preference. In addition, the participants who are tradesmen want fruit juice, oil or fat, milk and dairy products and confectionery to have halal food certificate more than other participants.
- Participants who are civil servants think that all products are halal more than other participants. In addition, civil servant participants do not consume halal certified products because they do not trust halal certification more than other participants.
- Participants who are students are more likely than other participants to call the Ministry of Agriculture and Forestry to find out whether the purchased product is halal food or not.

- Participants who are retired pay attention to the fact that the product purchased more than other participants to find out whether the product is halal food or not.

It was determined that there were differences in the attitudes and behaviours of consumers regarding halal food according to income status ($p<0.05$). As a result of the tests performed to determine which income status groups are the main source of these differences, the following data were obtained;

- Participants with an income between 2021- 3999 TL prefer to buy Halal Certified products because they are safer, healthier, higher quality and tastier than other participants. In addition, the fact that the products purchased more than other participants have Halal Certificate affects the purchase preference.
- Participants with an income between 4000- 5999 consume fast food (hamburgers, wraps, sandwiches, pizza, etc.) more frequently than other participants.

Participants with an income of 2020 TL and below want fruit juice, participants with an income of 2021- 3999 TL want ketchup-mayonnaise type products, participants with an income of 2020 TL and below want oil or fat and milk and dairy products, participants with an income of 2021- 3999 TL want carbonated drinks (cola, soda, fruit soda, etc.) to have halal food certificate.

5.3. Consumers' Perception of Halal Food

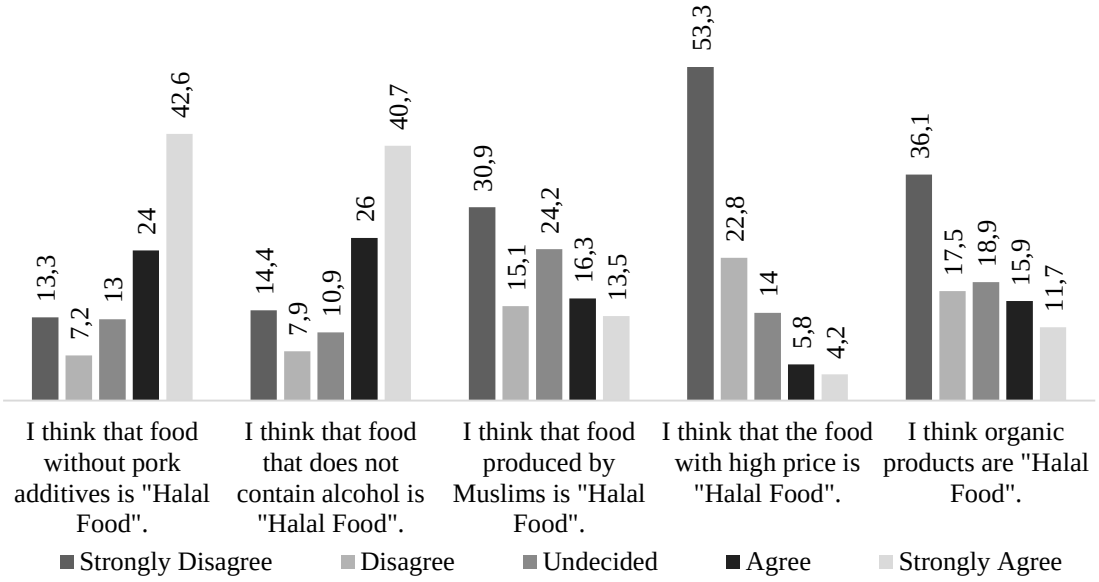

Figure 1. Consumers' perception of Halal Food.

In the light of the data in Figure 1, it was aimed to determine the knowledge of consumers about halal food. For this purpose, consumers were presented with the proposition "I think that food without pork additives is Halal Food". 66,6% of the consumers agreed and strongly agreed with this proposition. 66,7% of the consumers agreed and strongly agreed with the statement "I think that food that does not contain alcohol is Halal Food". For the statement "I think that food produced by Muslims is Halal Food", 29,8% of the consumers agreed and strongly agreed, while 46% disagreed and strongly disagreed. While 27,6% of the consumers agreed and strongly agreed with the statement "I think organic products are Halal Food", 53,6% of the consumers disagreed with this statement. It can be concluded that consumers do not trust Muslim producers about halal food because of the low level of agreement with the statement "I think that food produced by Muslims is Halal Food". The lowest option that the consumers participating in the survey study understand when it comes to halal food is the proposition "I think that the food with a high price is Halal food".

According to the data obtained from the study conducted by Genç and Yardımcıoğlu, (2015) 85,6% of the consumers

gave the answer "Halal certified food is food that does not contain pork or pork type", while 79,6% gave the answer "Halal certified food is food that does not contain alcohol".

5.4. Reasons Why Consumers Pay Attention to Halal Certified Products

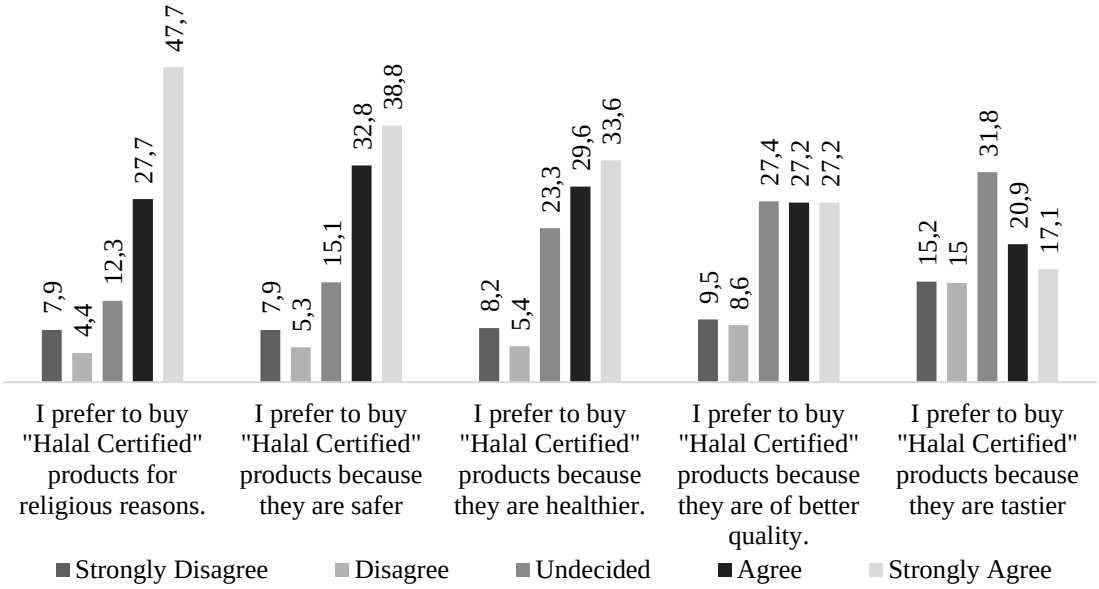

Figure 2. The perception of halal certified food

In the light of the data in Figure 2, consumers were questioned about the reasons for paying attention to halal certification when purchasing food products. When the answers given to the proposition "I prefer to buy Halal Certified products for religious reasons" from the options answered according to Likert scale are analysed, it is seen that 75,4% of the consumers agree and strongly agree. When the answers to the statement "I prefer to buy Halal Certified products because they are safer." are analysed, 71,6% of the consumers agree and strongly agree. When the answers to the statement "I prefer to buy Halal Certified products because they are healthier." are analysed, 63,2% of the consumers agree and strongly agree. For the proposition "I prefer to buy Halal Certified products because they are of better quality", 54,4% of the consumers said that they agreed and strongly agreed, while 27,4% said that they were undecided. When the answers of the consumers to the proposition "I prefer to buy Halal Certified products because they are more delicious." are analysed, it is seen that 31,8% of the consumers are undecided on this issue, while 38% of them agree and strongly agree. At this point, it can be determined that consumers do not have a positive approach to halal certified foods in terms of taste and quality in advance.

In the survey study conducted by Kızılkaya, (2017), it was determined that the majority of consumers prefer to buy halal certified products for religious reasons. In addition, in the study conducted by Yener, (2011), the reason why consumers use halal certified products was questioned and the highest average among other variables is the proposition "using halal certified products is also in accordance with my religious values".

5.5. Consumer Accessibility to Halal Certified Foods

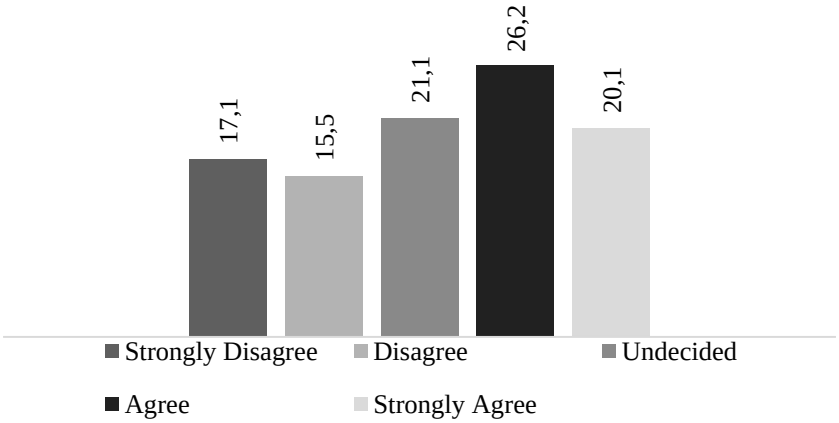

Figure 3. Availability of halal certified foods

Consumers were presented with the proposition "I cannot find halal certified foods". In Figure 3, 21,1% of the consumers said that they were undecided on this issue, while 46,3% agreed and strongly agreed. The purpose of this proposition is to determine the accessibility of consumers to halal certified foods, and in line with the answers given by the participants, it can be interpreted that it is partially difficult to access halal certified foods in Malatya.

In a survey study conducted in Sakarya province, in order to determine the accessibility of consumers to halal certified foods, the participants were presented with the proposition "I think it is difficult to find halal certified foods". While 30.8% of the participants stated that they were undecided on this issue, 39,7% of them agreed (Genç & Yardımcıoğlu, 2015). It was concluded that it is partially difficult to access halal certified products in Sakarya.

5.6. Consumers' Trust in the Halal Food Certification

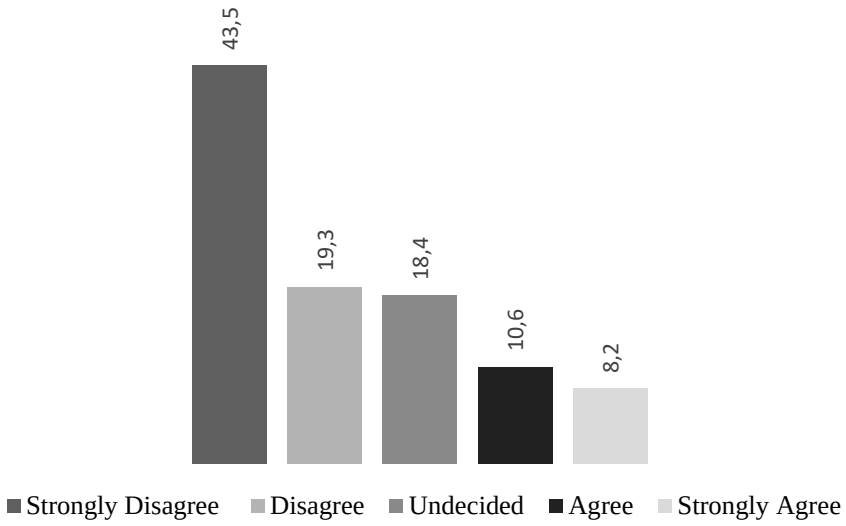

Figure 4. Trust in the halal food certification

In order to determine whether consumers trust halal food certification or not, consumers were presented with the proposition "I do not trust halal certification". According to Figure 4, 62,8% of the consumers strongly disagree and disagree, while 18,4% are undecided. In line with the answers given, we can say that halal food certification is trusted in Malatya.

5.7. Frequency of Purchasing Halal Certified Products

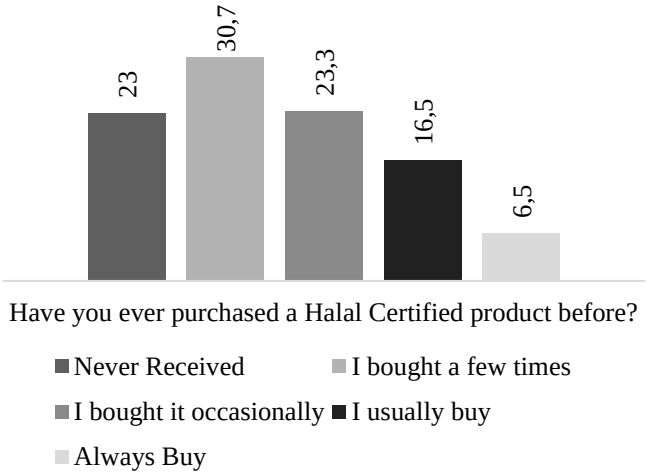

Figure 5. Frequency of purchasing Halal Certified products

In order to determine the frequency of purchasing halal food certified products, consumers were asked the question "Have you ever purchased halal certified products before?". According to Figure 5, 23% of the consumers stated that they had never purchased, 30,7% stated that they had purchased a few times, 23,3% stated that they purchased occasionally, and 23% stated that they usually and always purchased.

According to a study conducted in Kayseri province, participants were asked about the frequency of purchasing halal food certified products. 25% of the participants stated that they always buy, 34% occasionally, 23% a few times and 19% never (Varinli & Erdem, 2015). In a survey study conducted in the city centre of Kahramanmaraş province, when consumers were asked whether they had purchased halal certified products before, 65,8% stated that they had never purchased halal certified products, 14,9% stated that they had purchased a few times, 13,1% stated that they had purchased occasionally and 6% stated that they usually purchased halal certified products (Çuhadar, 2015). It was concluded that consumers living in Malatya consume more halal certified products compared to consumers living in Kahramanmaraş.

5.8. Influence of Halal Certificate on Purchase Preference

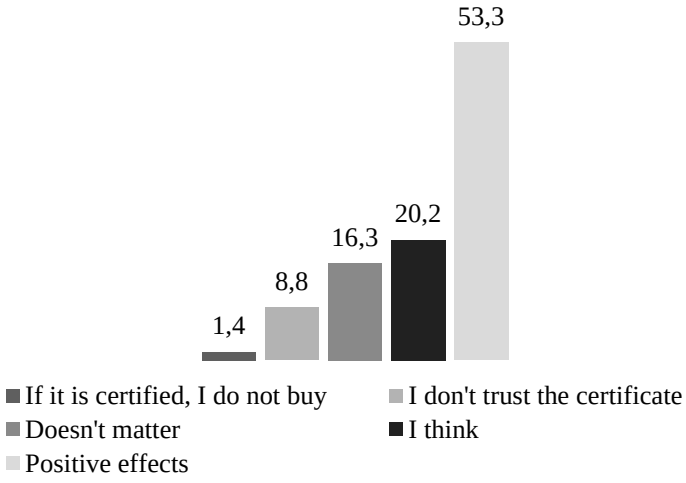

Figure 6. Influence of Halal Certificate on purchase preference

When the consumers who participated in the survey study were asked how the halal certification of the products they purchased affects their purchasing preferences, 53,3% of them answered that it would affect positively. While 20,2% of the consumers answered "I would consider it", 16,3% answered "it does not matter", 8,8% answered "I do not trust

the certificate", 1,4% of the consumers stated that they would not buy it if it was certified (Figure 6).

In a study conducted by Içer and Karadağ (2023), it was determined that the concept of "Halal food" has a more important place in the male gender among the factors determining the purchase preference of consumers. In addition, the study data revealed that female individuals paid more attention to food labels and halal certification in order to avoid consumption of non-halal products.

5.9. Products that Consumers Want to have Halal Certificate

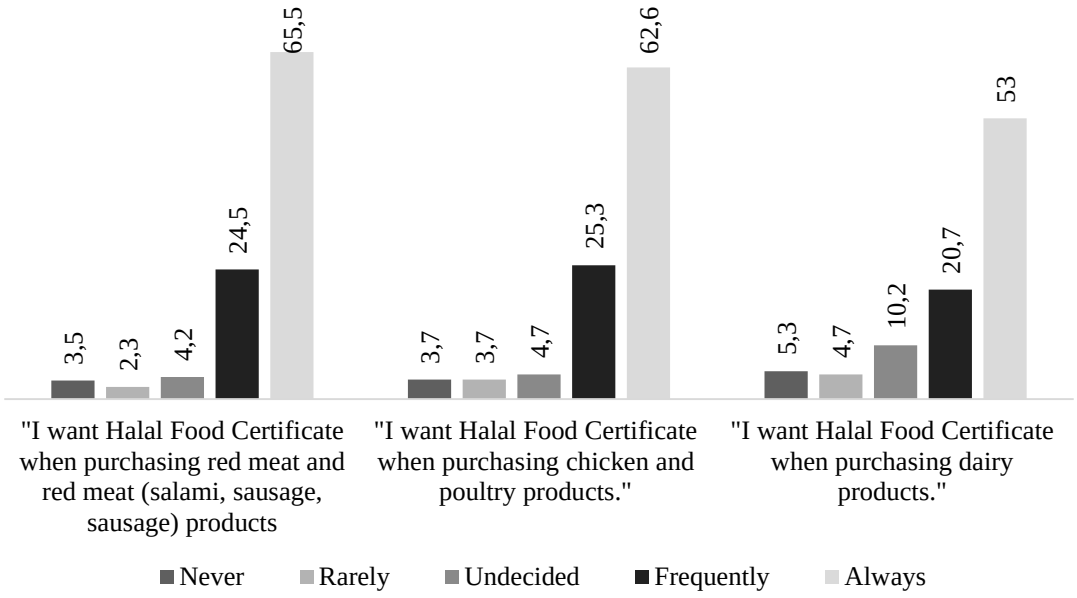

Figure 7. Desire for Halal Food Certificate in animal foods

In order to determine whether consumers want halal food certificate when purchasing animal food products, the propositions "I want Halal Food Certificate when purchasing red meat and red meat (salami, sausage, sausage) products.", "I want Halal Food Certificate when purchasing chicken and poultry products." and "I want Halal Food Certificate when purchasing dairy products." were presented to consumers. According to Figure 7, 90% of the consumers stated that they often and always want these foods to have halal food certificate when purchasing red meat and red meat products, 87,9% when purchasing chicken and poultry products and 73,7% when purchasing dairy products. At this point, it is concluded that the majority of consumers generally want halal food certification in these food products when purchasing animal food products.

In a study conducted by Öztürk (2022), it was determined that halal product awareness for chicken products has a positive effect on purchase intention.

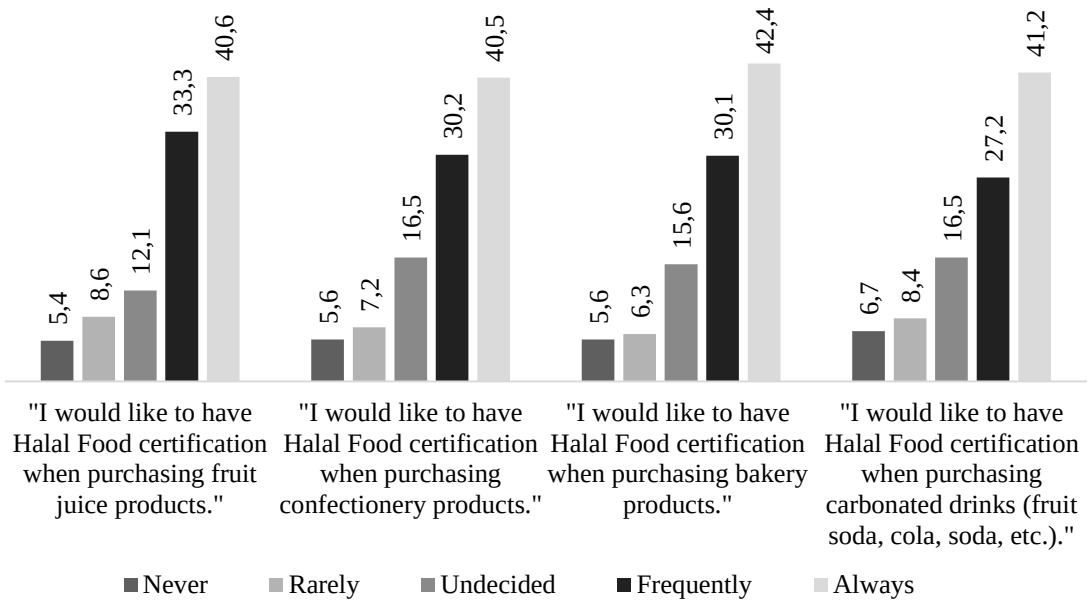

Figure 8. Halal food certification in beverages, confectionery and bakery products

In order to determine whether consumers want halal food certification when purchasing beverages, confectionery and bakery products, the participants were presented with the propositions "I would like to have Halal Food certification when purchasing fruit juice products.", "I would like to have Halal Food certification when purchasing confectionery products.", "I would like to have Halal Food certification when purchasing bakery products." and "I would like to have Halal Food certification when purchasing carbonated drinks (fruit soda, cola, soda, etc.).". According to Figure 5.10, 73,9% of the consumers answered that they often and always pay attention to the halal food certification of these foods when purchasing fruit juice, 70,7% when purchasing confectionery, 72,5% when purchasing bakery products and 68,4% when purchasing carbonated drinks. In Figure 8, there is a group of approximately 15% who are undecided about whether they want halal food certification for food products.

As a result of a similar study conducted in Adıyaman province, it was determined that 50,2% of consumers prefer halal certified red meat and meat products, 39,1% prefer halal certified chicken and poultry products, 43% prefer halal certified milk and dairy products (ice cream, yoghurt, cheese, butter, etc.). In addition, 45,6% of consumers stated that it is not important for them to be halal certified when purchasing fruit juice, 43,3% carbonated drinks, 47,9% liquid oils and 52,8% bakery products (Özçelik, 2019). It can be said that consumers living in Adıyaman are much less sensitive about halal food when purchasing the above-mentioned foods compared to consumers living in Malatya.

6. Conclusion and Recommendations

The results of the research show that consumers mostly use alcohol and pork as halal criteria. The majority of consumers stated that they are sceptical about whether the food is halal or not when buying food from fast-food style food places and street vendors. According to another result obtained, consumers stated that the halal certification of the products they purchased would positively affect their purchasing preferences at a high rate.

Companies operating in the food sector should carry out more informative studies on issues that the public is sensitive to. By creating a halal food stand with halal food certificate in supermarkets, attention can be drawn to halal food and consumers can easily access halal food.

It has been concluded that consumers mostly shop from the places they know and recognise, by looking at the quality certificate and by choosing the brands they trust in order to find out whether the food products they buy are halal or not. Therefore, food policy makers and decision makers should first aim to gain the trust of consumers, and they should transparently share explanatory information about the products in order not to leave any question marks in

the minds of consumers. In the light of the available data, it can be concluded that knowing the definition of halal food correctly has a positive effect on the level of knowledge about halal food. This situation suggests that teaching the correct definition of halal food to individuals may be beneficial for increasing the level of knowledge and awareness of the society about halal food and may affect the product purchase preference.

When the attitudes and behaviours of consumers towards halal food were analysed by using the chi-square method according to socioeconomic and demographic characteristics, it was found that there was a statistically significant relationship between gender, age, educational status, occupation and income status and attitudes and behaviours towards halal food. However, it was determined that there was no significant relationship between marital status and the number of people in the household and knowing this statement.

It is thought that the results of the research will provide useful information to consumers, producers, food industry and policy makers in decision-making processes. According to the results obtained from this study, consumers want the food products they will buy to be halal, so it is recommended that producers, sellers or intermediaries pay attention to the halal of their foods and the presence of halal logo. It is also recommended that consumers should demand retailers to pay attention to this issue.

Investigating the relationships between consumers' knowledge, attitudes and behaviours about halal food and food choice with new studies to be conducted will benefit the efforts to expand the halal food market and to develop the right policies for healthy food preference.

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