

AWARENESS OF MUSLIM CONSUMERS TOWARDS FOOD SAFETY OF HOME-BASED PRODUCERS DURING PANDEMIC COVID-19 AT BANDAR BARU BANGI, SELANGOR, MALAYSIA

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ABSTRACT

The COVID-19 Pandemic that happened in our country and worldwide caused an increase in the number of home-based food producers and operators for the local consumers where the food is been marketed directly or online. This phenomenon fairly gives impacts the important aspect of food safety that is crucial for customers' health and able to avoid any foodborne deceased which can bring fatal to man health. The food preparation practice that does not keep the hygiene and quality during the food production process will cause the food to be contaminated and thus not safe for consumption. Besides, the food producer does not understand the requirements specified in the regulated law such as Food Act 1983 that need to have complied. Thus, this study aimed to examine the awareness level among Muslim consumers towards the practices of food safety, hygiene, and quality from the preparation and production, and sale of the food that has been conducted among home-based producers and operators. This study adopted a quantitative method where the data is collected from a survey online using Google Forms. The respondents are randomly selected from customers aged above 18 who stay in the area of Bandar Baru Bangi. The data is analyzed using descriptive and inferential analysis by using Statistical Package for The Social Science (SPSS) tool version 21. This study shows that the awareness and knowledge of consumers towards the safety, quality, and hygiene of food is likely high. Thus, this study would like to recommend that the safe food practice should be taken seriously by the government and the food operator on the other hand should have indefinite integrity in the business conducted by putting the customer's health as a priority in dealing with the food provided.

Keywords: *Awareness, Covid-19 Pandemic, Food Safety, Halal.*

1.0 INTRODUCTION

The COVID-19 Pandemic faced by people around the world give an impact on the changes of life to the new norms. The same goes for the food business where the pandemic has to affect to the increase of food sold being prepared at home and marketed either direct or online. The phenomenon caused issues on food safety which should be attended to properly to prevent the consumer from any infected deceased caused by foodborne deceased which could be fatal to human life (My Health, 2021). The food preparation which not follow the required specification then the food is consumed could be caused diarrhea, vomiting, and headache due to contamination and food poisoning. (Bahagian Keselamatan dan Kualiti Makanan KKM, 2021). Furthermore, Bacteria, viruses, and parasites found in the food can cause food poisoning (CAP, 2020). In other words, Safety food is food that is free from any contamination from physical, chemical, and biological aspects (Bahagian Keselamatan dan Kualiti Makanan KKM, 2021).

According to World Health Organization (WHO), every year one out of ten people fall sick due to consuming food contaminated by bacteria, viruses and parasites including chemical material (WHO, 2021). The statement issued by the Ministry of Health in Malaysia based on reported data on the food poisoning cases in 2018 shows that the increase of 23.69 % that is from 401 cases to 496 food poisoning cases throughout Malaysia in the same year as 2017 (Bahagian Keselamatan dan Kualiti Makanan KKM, 2021). The contamination could occur throughout the food supply chain from preparation, production, delivery, and usage of food. Among the types of contaminations are contamination of water, air, as well as the way of storage and unsafe food processing (WHO, 2021). The food producer should comply with food hygiene practices as specified in the Food Act and Food Hygiene Regulation 1983 (MOH, 2021). The preparation process at home should be conducted under the surveillance of the authority as well as the selling of food without control and license from the authority could cause contamination, quality of food is affected (MOH, 2021). Besides, the authority has determined that the food operator should have typhoid injection and certification of food handling as required by the Ministry of Health. According to the Chief Director for the Ministry of Health from 2018 until June 2020, about 20,492 food samples and raw materials including meat, fish and vegetables, and fruits sold in the local market that has been analyzed indicates that 853 samples are not abiding by

laws as specified in Food Act 1983 and Food Hygiene Regulations (Bahagian Keselamatan dan Kualiti Makanan KKM, 2021).

The customer has to play a role to ensure food consumed is safe to eat, hygiene and good to be eaten. The awareness was able to pressure the food producer to prepare properly the food as specified by the law though during the pandemic. The contaminated food might cause mental and physical disturbance. Low quality of food can cause a bad impact on their businesses and decrease the trustworthiness level of consumers towards the business. According to Mohtar and Daud (2020) in the food industry, food quality is the important element that influences the sustainability of the business. It influences the positive attitude towards customers' satisfaction. The customers' satisfaction is interrelated to the experience and behavior of the customers while transacting with one organization. (Mokhtar et al., 2017). Good food activities enable a person to benefit from the consumption of any food (Azeman et al., 2016).

2.0 LITERATURE REVIEW

Food prepared by home-based operators is difficult to monitor, there should have follow the government rules of food hygiene and safety and apply for a license to operate and get the necessary vaccinations, like typhoid injection and food handling courses (Musa, 2020). Hygiene should not be compromised when it comes to preparing food for sale either at homes, hawker or roadside stalls. The government would conduct a detailed study on the standard operating procedure (SOP) for small-scale food traders operating from home and provide the SOP to ensure the safety of food at same time to help them generate their income. According to Akabanda et al., (2017), many lack of practices among food handlers such as do not use glove during the distribution on unpackaged food, do not wear apron and face mask and do not use sanitizer in washing utensils. Any food made available to the public must be safe to eat. Operators are required follow the steps to ensure home-prepared foods are prepared properly and kept safe until sold (Government of Alberta, 2020). Need special standards in the food industry because here is a potential for the spread of disease and illness through food and customers want to know that the food is safe in the places they buy their food (Ministry of Health and Long-Term Care, 2018). Malaysia's Director General of Health

also reminded to online food operators to take care of food hygiene and safety to avoid any food poisoning case (Hussain & Adnan, 2020). The cases of food poisoning that were reported were like the contaminated of laksa in Baling Kedah and food poisoning at the Tahfiz Center in Senawang, Seremban, the food is from public contribution (Roslan, 2018).

Healthy food can full fill the human biological need, whereas a balanced diet and good eating schedule could ensure prolonged good health for people (Mohamad et al., 2015). The contaminated food could cause foodborne disease and food poisonings such as vomit, dhyrea, and fever. Many bacteria causes food poisoning such as salmonella and *E. coli* (Yunus et al., 2015). The waste that is not properly managed can attract flies and insects which become the agent for commuting deceased and bacteria. Flies are a mechanic vector to the disease and their ability to transmit about 64 types of pathogen bacteria to humans (Kanan, 2019). Flies are also able to transmit the Antract deceased from other dead animals which infected by the deceased and could spread to humans from the unmanaged waste (Aliah, 2016). Food poisoning caused by the bacteria managed to enter the human body through contaminated water and food (Tomaszewska et al., 2018). The awareness of customers shows an increase, however, the food poisoning cases still reported and occurred in Malaysia (Kamal et al., 2015). According to Kamal (2015) based on his study, the operators are urged to make sure the premise's infrastructure, for example, the premise is free from any pest contamination and unused utensil that can cause cross-contamination. Thus, Food safety certification and standard is a very important element that helps to ensure the safety of food products (Demirci et al., 2016).

Certification and documentation are regarded as effective method that has been developed by the authority to control and examine business activities. Halal certification can ensure the halal and safety assurance of product which is under the management and role of Jabatan Kemajuan Islam Malaysia (JAKIM) and Jabatan Agama Islam Negeri or Majlis Agama Islam Negeri (JAKIM, 2021). The halal certification consists of the halalan tayyiban aspect and is so practical to be used by the food operator for halal and quality assurance. This is due to the application of halalan tayyiban is holistic covering also the safety, hygiene, and quality that are in line with the safety food objectives (Sani & Dahlan, 2015). There are a lot of operators who do not understand yet the concept and halal regulation (Shahwahid et al., 2015).

Awareness of society through education activities should be cultivated so that food poisoning can be prevented and food safety practices can be increased (Tomaszewska et al., 2018). The study by Grabowski and Klein (2017) indicated that bacteria are found in edible insects and animals this clearly shows that hygiene and safe food must be handled wisely. The dangers of health might arouse from anywhere throughout the food supply chain for example using the contaminated raw material or during processing, transporting, storing, and retailing. To decrease the risk of food safety, the effective way is by avoiding contamination throughout the supply chain from farm to fork (Othman, 2013). The measurement of halalan tayyiban started from the supply chain process until a fork is interrelated to the practice of food operators themselves (Saad & Ramli, 2019). Thus, the hygiene and safety level of food could be increased after getting the commitment and cooperation from diverse agencies as well as obtaining support from the communities (Salleh et al., 2020).

The customers have the right to choose a clean operator and practices of hygiene in their products. Almost home-based producers don't have any professional experience or training. All food handlers must have an understanding of the basic principles of food hygiene and know how to work safely so as to protect the food they serve from contamination. Food Hygiene knowledge to help anyone who handles, prepares or serves food and gets best practice in controlling food safety hazards, food storage, food preparation, personal hygiene and cleaning. The demand for high quality food has constantly increased according to the food quality issues and knowledgeable consumers and also as a reaction to other factors, for example health and environmental concerns (Petrescu et al., 2020). The important factors in food manufacturing are packaging, processing and production. Home-based food businesses use their home to handle food for sale, this includes preparing food for local markets and online food sales from home and they must comply with relevant parts of the food standards code, including food safety practices and general requirements (Food Standards Australia & New Zealand, 2021). However, owner of a home-based food business has its challenges, including legal requirements and costs. A food poisoning case involving baked goods from a home-based food business has triggered a discussion about whether operators should be more strictly regulated (Yun, 2021). In few cases people who were awarded after eating and tested positive for salmonella, a bacteria that can cause diarrhoea, abdominal pain, fever, nausea and vomiting (My

Health, 2021). According to the ministry's data, 288 food poisoning episodes were reported in 2020 and another 123 this year until September 2021 (Bernama, 2021). The ministry, through the Food Quality and Safety Programme, is responsible for ensuring that the food and raw materials at the local markets adhere to the Food Act 1983 (MOH, 2021).

3.0 METHODOLOGY

This study aimed to examine the awareness level among Muslim consumers towards the practices of food safety, hygiene, and quality from the preparation and production, and sale of the food that among home-based producers and operators has been conducted. The study focuses on the understanding and awareness of Muslim consumers from Bandar Baru Bangi, Selangor towards the safety of food during the Covid-19 Pandemic. To achieve the objective, this study adopted a quantitative method where the data is collected from a survey online using Google Forms. The respondents are randomly selected from customers staying in Bandar Baru Bangi whose ages range from 18 to 70 years old. The respondents consist of male and female respondents whether working in government or private sectors, housewives, students, and pensioners who purchased the products from home-based producers. The data from 216 respondents have been analyzed by using descriptive and inferential analysis using Statistical Package for The Social Science (SPSS) tool version 21. The questionnaire consists of four main sections that are Section A on personal information (age, gender, marital status and job sector), Section B on awareness factor, section C on knowledge factor, and Section D on food safety, hygiene and quality practices. The Likert scale of 5 scales has been used that range from 1: strongly disagree, 2: not agree 3: less agree 4: agree 5: strongly agree.

The demographic background of respondents indicated that 57% are females, and the least is male with 47%. The respondent comes from age group between 41- to 60-years-old with 49% then, it followed by age group of 18 to 40 years old with 45% and lastly, 61 years old and above with 6%. Most of the respondents are married. Since the percentage of married is higher compared to others. Married status with 70% followed by unmarried and others by 26% and 4% respectively. From the survey, the researcher found that most of the respondent of this study is dominated by government sector with 55.56%. The second highest was dominated by private sector with 16.20%. Students was the third highest and the percentage was 9.26%. Besides, retiree was the

middle group with 7.87%. Hence, self-employed, unemployed and housewife is the bottom listed or the least of respondent's participation in this study with 6.02%, 3.24% and 1.85%, respectively.

4.0 RESULT AND DISCUSSION

Two types of analysis conducted in this part which is preliminary analysis also known as descriptive analysis and advanced analysis by applying multiple linear regression (MLR) analysis. For descriptive analysis, all the demographic information is discussed, and there 9 elements. There is gender, age group, marital status, education level, income level, job status, how often they are buying foods or drinks, method of buying the foods or drinks, and city area. While advanced analysis is to answer the objective of the research.

1. Descriptive Analysis on the awareness of consumer on Food Safety

a. Awareness Factor

The average value of each item on the awareness factor is shown in Table 1.

Table 1. a: Mean value of awareness factor

Items	Mean
I'm aware that choosing clean, safe, and quality food is the responsibility of the consumer.	4.82
I'm aware that enjoying halal and good food is a religious requirement.	4.95
I'm aware that ready-processed foods whether at home or on the premises must adhere to hygiene practices and practice complete food safety procedures.	4.90
I'm aware that many traders process products at home for which the level of cleanliness cannot be ascertained by the authorities.	4.60
I'm aware that during a pandemic, the COVID-19 virus can be spread through the neglect of SOPs of food preparation and sale.	4.63
I'm aware of foodborne illnesses such as diarrhea, vomiting, and headaches caused by dirty food.	4.81
I'm aware that personal hygiene and the employer's clothing must be at the maximum level.	4.81
I'm aware that buying food online also needs to be kept clean.	4.83

Table 1 shows the average value of each item on the awareness factor. Awareness is very important especially in food safety to avoid food poisoning. As a result, majority of respondents strongly agree with all of the items on awareness factor with the average value of nearly 5.00. Apart from that, the most agree about awareness from the respondents are enjoying halal and good food is a religious requirement with the highest average compared to other questions and followed by the ready-processed foods whether at home or on the premises must be obeyed to hygiene practices to follow the food safety procedures.

b. Understanding Factor

Aforementioned, an understanding of food safety, hygiene, and quality practices is also needed in this study. It will be able to determine the respondent’s understanding on the important of food safety. Table 1. b is the summary of the mean value of the understanding factor.

Table 1. b: Average / Mean value of understanding factors

Items	Mean
Food that is free from dirt and excrement is food safe.	4.76
Safe food must be clean, quality, and not harmful to the body.	4.85
Safe food must be passed through a manufacturing and sales process that adheres to proper hygiene and safety practices.	4.85
The responsibility of maintaining food safety is the role of entrepreneurs throughout this pandemic.	4.69
The preparation of products must be safe and clean even if not on registered premises during a pandemic.	4.61
Operators must always have hygiene practices and not just according to specific situations and circumstances.	4.86
As a consumer, I will buy a portion of food at clean premises and hygiene practices only.	4.77
The minimum responsibility of a food operator is to have received a food injection (Anti-Typhoid) and to have attended a food handler course organized by the Ministry of Health Malaysia.	4.78

According to the table above, the highest mean of the understanding factor was respondents strongly agreeing that operators must have hygiene practices at all times, not just in specific conditions and circumstances. This item shows that the mean value is high in comparison to the other items. Another two items on which the majority of respondents agreed are on safe

food must be clean, of good quality, and not dangerous to the body, and it must go through a manufacturing and distribution safe food process that follows proper hygiene and safety procedures. The results also demonstrate that the mean values for the overall items under the understanding factors are almost 5.00, which indicating strong agreement.

c. Food Safety, Hygiene, and Quality Practices

Food safety, hygiene, and quality practices are variable observed for this study. It was aimed to be claimed as the true event identified. However, this section would only discuss the average value for each question in the questionnaires.

Table 1. c: The mean value for food safety, hygiene, and quality practices questions

Items	Mean
Acts of food and laws are important to ensure the safe provision of food to consumers.	4.83
The halal certification issued by JAKIM has assured halal, quality, hygiene, and food safety.	4.69
Consumers and entrepreneurs must increase their knowledge of good personal hygiene and food sanitation practices.	4.87
Food contamination can occur when using equipment that is mixed between the processing part and the food that is ready to be served.	4.75
Operators must ensure food hygiene and safety from the purchase of raw materials to serving food.	4.87
Food stored at the appropriate temperature is very important to prevent contamination.	4.81
Food should not be left exposed and not covered with a suitable container.	4.88
Food contamination occurs when sanitation practices are performed incorrectly and using dirty equipment.	4.83

Based on the statistics in Table 1.c most of the questions tend to strongly agree since all value of the mean is closed to a scale of five. The majority of the respondent are strongly agreed that food should not be left exposed and not covered with a suitable container with the value of 4.88 and followed by consumers and entrepreneurs must increase their knowledge of good personal hygiene and food sanitation practices and operators must ensure food hygiene and safety from the purchase of raw materials to serving food with 4.87 respectively.

Additionally, all questions are supported the dependent variable, but the discussion is on the three majorities strongly agree with the statement based on the average value.

2 Inferential Analysis

The objective of the study is to identify the level of consumer awareness and understanding towards food safety, hygiene, and quality practices from the manufacturing and sales processes performed. This can be achieved by using inferential analysis or also known as advanced analysis called Regression Analysis. On top of that, this study will use multiple linear regression (MLR) analysis to answer the research question.

2.1 Relationship between the food safety quality and awareness and understanding

To measure the relationship between independent variables and dependent variables, the determination of coefficient was executed. Since the data shows it is normally distributed, therefore, Pearson correlation is used to identify the type of relationship between response and predicted variables. The information of Pearson correlation is shown in Table 2.1

Table 2.1: Pearson Correlation between the response variable and predicted variables

Response Variable	Predicted Variable(s)	
	Awareness	Understanding
Food safety, hygiene, and quality	0.811	0.507

The relationship between awareness and food safety, hygiene, and quality are positively strong since the correlation value is 0.811 which indicates more than 0.8. From that, it can be said that the consumer needs to be aware of the goods or products or services they buy so that it turns to safely used without any negative consequences. Based on this analysis, awareness is the main factor that can be affected by food safety, hygiene, and quality if this has been emphasized. Besides, the relationship between understanding and food safety, hygiene, and quality is acceptable because the correlation value is 0.507. This value was evaluated as an acceptable group because it has more than 0.5. From that, the understanding variable is a fairly variable that needs to be taken by affecting the food safety, hygiene and quality practices. It means

that understanding can be either in the model to explain the response variable or otherwise.

2.2 Multiple Linear Regression (MLR) Analysis

Table 2.2: Analysis of Variance (ANOVA) Table

Source of variation	Sum of Squares	Degree of Freedom	Mean Square	F	Sig
Regression	12.572	2	6.286	209.474	0.00
Residual	6.392	213	0.030		
Total	18.964	215			

Multiple regression results can be seen by using the ANOVA table which stands for Analysis of Variance. As a result, it has enough evidence to conclude that all two factors which are awareness and understanding are related to the factors of food safety, hygiene and quality practices. By referring to Table 2.2, compromising at 95% significance level proved that the relationship between awareness and understanding is significant with the factor of food safety, hygiene, and quality practices. It is meaning these two factors are explained enough towards food safety, hygiene, and quality practices. This can be seen through a p-value of 0.00 less than 0.05 of the significance levels

Moreover, as shown in Table 2.2a below, the model is also quite strong since the correlation value is 0.814 and there are being adjusted to 0.663. Hence, it shows that there are 66.3% total variation of food safety, hygiene and quality practices were explained by awareness and understanding, while the remaining percentage of 33.7% is explained by other factors. To be added, it shows how strong these predictive variables are in explaining the response variable. Food safety is very important that needs to be studied, as mentioned by Liu & Niyongira (2017), food safety may result in changes in consumers behaviors if the problems like exemption of further inspection after 3 successful inspections, inadequate labeling, lest of manufacturer registrations during processing and handling, no punishment in case of violation due to lack of laws and outdated and missing standards.

Table 2.2a: Correlation value

Model	Correlation	Adjusted Correlation
1	0.814	0.663

Thus, the overall model for the multiple linear regression model is shown as follows: -

$$\hat{y} = 0.724 + 0.792_{\text{awareness}} + 0.062_{\text{understanding}}$$

Based on the model above, shows that the coefficient value for awareness is quite high compared to understanding. Therefore, it can be concluded the most dominant in this model was awareness. Apart from that, this model is not finalized yet, since the model also included the variable that was not significant.

Table 2.2b: Statistical information for each independent variable in this study

Variables	The coefficient (Coefficient)	Significance value (<i>p-value</i>)	Confident Interval	
			Lower value	Upper value
Awareness	0.792	0.000	0.695	0.890
Understanding	0.062	0.087	-0.009	0.133

Based on Table 2.2b above, information of p-value and confident interval can be used to determine the best model with the significant variable. The p-value or significant value for awareness is 0.00 which is less than the significance level of 0.5, then the awareness variable is significant and remains in the model. To support this, the confidence interval has been taken and the interval is between 0.695 and 0.890, and the value of zero is not included in the limit line, therefore, there is evidence to conclude the awareness variable is significant and should be added or remain in the model. In contrast, it was not applied for the understanding variable. Since the p-value is 0.087 which is greater than the 0.05 level of significance, thus, the understanding variable is not significant. To sum up, the confident interval also proves that the value includes zero which is between -0.009 and 0.133, thus, there is strong evidence to conclude the understanding variable is not significant and not good to remain in the model. Therefore, it should be removed from the model.

2.3 The best model of regression analysis

The method used to determine the best model is the stepwise method of the regression model. This method is the combination of the forward selection method and the backward elimination method. The result is obtained and executed by using SPSS and the outcome is shown in Table 2.3.

Table 2.3: Statistical information for the best model

Variables	The coefficient (Coefficient)	Significance value (<i>p-value</i>)	Confident Interval	
			Lower value	Upper value
Awareness	0.840	0.000	0.758	0.921

Based on Table 2.3 above, the best model only consists of one predicted variable called awareness. It can be supported by a coefficient value is 0.840 which is too high in explaining the response variable which is food safety, hygiene, and quality practices. By looking at the confident interval, the range does not include zero value therefore, it is significant. According to Bektas et al. (2011), awareness of food safety by consumers are very important especially to their health and needs programs tailored to their needs.

On top of that, the relationship between the predicted variable and response variable in the best model is high with a value of 0.811. The statistics show it has a strong relationship and there are 65.8% total variation of food safety, hygiene and quality practices is explained by awareness and the remaining was explained by other factors. This information added is to prove that how important the element of awareness is towards food safety, hygiene and quality practices to the consumer's especially when talking about cleanliness and halal food. The most important thing the consumers need to know is how the foods are produced and the material used in the cooked either healthy or not. To sum up, lack of awareness in food safety may cause illness not only to human beings but also to animals (Gjeci et al., 2016). Hence, it proves that awareness is the best-predicted variable to explain food safety, hygiene, and quality practices in general.

5.0 CONCLUSION

This study shows that the awareness and knowledge of consumers towards the safety, quality, and hygiene of food is likely high. Besides, it also indicates that the consumers clearly understand the importance of consuming quality, safety and hygiene food other than the products must be halal and compliance to shariah. The data proves that how the importance of the element of awareness towards food safety, hygiene, and quality practices to consumers especially as regards the aspect of cleanliness and halal food. The most important thing that the consumers need to know is the production of food and the raw material used in food preparation either healthy or not. To sum up, lack of awareness

in food safety may cause illness not only to human beings but also to animals. Hence, it proves that awareness is the best-predicted variable to explain food safety, hygiene, and quality practices in general. The customers also hope that the authority can enforce and take stringent action against the food provider and manufacturer who neglect the safety aspect of food. Thus, it is recommended for this study to be regarded as a guideline for the authorities to strategize the effective action towards the improvement of food safety aspects that can directly affect the customers. The importance of food safety is significant for ensuring the food is healthy for consumption and free from any foodborne disease that might be dangerous to consumers. Safety and hygienic practice of food during a pandemic should be continuously practiced at any time without limited to specific time and circumstances only. Thus, this study would like to recommend that the safe food practice should be taken seriously by the government and the food operator on the other hand should have indefinite integrity in the business conducted by putting the customer's health as a priority in dealing with the food provided.

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