

Analysis of Food Handler's Knowledge of Hygiene and Sanitation Impact on Food Quality

A Study of Lubana Sengkol Restaurant

Fidjria L. Salsabela, Rano Abryanto*

Study Program of Business Administration with Concentration on Hotel and Tourism Management, Faculty of Business and Communication, Swiss German University, Tangerang, Indonesia

*Corresponding author. Email: rano.abryanto@sgu.ac.id

ABSTRACT

As the food and beverage industry in Indonesia has a large demand and supply, the quality and safety of food as well as effectiveness in the production process are important to consider for quality assurance. Food safety is very important to avoid side effects arising from contamination, abuse, and food poisoning. One of the worldwide food safety systems is the Hazard Analysis and Critical Control Points (HACCP). Not only HACCP which regulates food safety, SOPs from companies can also play a role. Most major food and beverage industries in Indonesia are already using international food security. However, small businesses in the food & beverage industry rarely use international standards therefore it is still often the case with food safety. With the Lubana Sengkol restaurant case study, the writer wants to know whether the food handler in Lubana Sengkol knows about food safety management and whether the food handler implements the HACCP. This research analyzes food handler knowledge about hygiene and sanitation and whether it affects food quality or not with quantitative methods and in-depth interviews or the same as qualitative and tested validity and reliability. This research concluded that the influence of the food handler's knowledge about hygiene and sanitation impact on food quality in Lubana Sengkol was proven from the questionnaire results and was supported by in-depth interviews that there were several cases acting as factors for food borne illness.

Keywords: *Food handler knowledge, Food safety, Food quality, HACCP, SOP.*

1. INTRODUCTION

In Indonesia, the food and beverage industry has become one of the mainstay manufacturing sectors in making a major contribution to national economic growth. The potential of the food and beverage industry in Indonesia can become a champion, because there are a lot of supplies and users. For that reason, one of the keys to competitiveness in this sector is food innovation and security [1].

Furthermore, the food and beverage industry in Indonesia continues to develop rapidly from 2017 - 2019 and in 2020 the revenue in the food and beverages segment amounts to US \$ 1,920m and it is expected to show an annual growth rate (CAGR 2020-2024) of 15.3%, resulting in a market volume of US \$ 3,395m by 2024. It can be proven from industry statistics on food and beverage revenue in Indonesia that it will continue to increase until 2024 even though by 2020 there was a pandemic worldwide [2]

Since the food and beverage industry in Indonesia has large demand and supply, the food quality and safety as well as effectiveness in the production process are important to fulfill the demands of consumers about quality assurance. Food safety is very important to avoid side effects arising from contamination, abuse, and food poisoning. Several things cause a decrease in food quality e.g., including improper storage of food ingredients, processing and presentation that is not in accordance with applicable systems and procedures.

One such system for food safety worldwide is Hazard Analysis and Critical Control Point (HACCP). HACCP aims to identify and control hazards ranging from receipt of materials, storage, production process to presentation to guests. One of the factors that support the implementation of HACCP is the food handler itself as in a hotel kitchen, namely chef or food handler who need to know about HACCP [3].

But it is not only HACCP that regulates and influences hygiene and sanitation; the SOP from the company can also play a role. SOP is the standard operating procedure, one of the keys that regulates hygiene and sanitation for food quality. SOP is an activity that is documented to form a set of written instructions, to direct the food handler or individual to do the job correctly and produce the highest quality final product [4].

Thus, the SOP helps to use and carry out certain activities of the process effectively and efficiently. SOP can also be referred to as instructions, procedures, worksheets or protocols. SOP for hygiene and sanitation food are SOP that regulate the work of chefs or people who work in the kitchen to make food or the path of food to the customer. For example, the regulation of food paths at buffets to avoid any viruses entering the food.

Most of the large food and beverage industries in Indonesia are already using international food security. However, small businesses in the food and beverage industry rarely use international standards and because of that there are still often cases of food safety, especially hygiene and sanitation, which makes food quality in Indonesia not really good. Hygiene and sanitation are important in determining food quality where *Escherichia coli* is an indicator of food profanation that can cause food borne diseases. *E. coli* in food and beverage is an indicator of contamination due to handling of food and beverage that are not good. The lack of knowledge of food safety on how to manage the hygiene of food and beverage increases the risk of food and beverage contamination.

There are two points considered to be important issues to this research. First, food safety is a global problem in recent years that will make food development decrease in Indonesia [5]. Hygiene and sanitation are one of the important factors in food. Secondly, previous research found that food handlers and improper food handling in practice can contribute 97% to food illnesses [2,6]

Research from the United States explains that food handlers must be hygienic and food handling must be appropriate to avoid the factors that cause food poisoning. Therefore, this study seeks to show that a Food Handler's knowledge of cleanliness and sanitation affects the quality of food safety in Lubana Sengkol.

2. RESEARCH METHOD

In this study quantitative descriptive method through a survey method with questions about the problem of the case study to Food Handlers in the restaurant Lubana Sengkol. After the survey, qualitative methods will be conducted following the evidence from the quantitative. The population to be evaluated are food handler or someone who handler the food directly in Lubana

sengkol restaurant. The primary data will be collected from questionnaires and observed as its quantitative collection method, then interviews and observations as its qualitative collection method. While secondary data will be collected from previous studies and journals.

Descriptive data analysis will be used using the questionnaires as its data. Descriptive Statistics explains the maximum, minimum, average and standard deviation of each variable in the form of a questionnaire based on the respondent's answer in the post test. The values of descriptive statistic to describe each variable that the food handler's knowledge on hygiene and sanitation impacts to food quality

After that, validity and reliability will be tested using SPSS. This is to ensure the questions are suitable for the researched variables, and that the questionnaire is dependable to be used for this particular research and other future research with similar variables. The tests are effective to detect any mistake such as typo or difficult lingo that the public may not understand. In order for the questions to be considered valid, the Pearson correlation must surpass the minimum R value, which for this research

Hypothesis used in this study are as below

- Independent: Food Handler knowledge with the indicator is Hygiene and Sanitation, HACCP and SOP
- Dependent : Food quality with the indicator is foodborne-illness
- Hypothesis 0#: There is no impact of the hygiene and sanitation of Food Handler knowledge toward food quality.
- Hypothesis 1#: There is an impact of the hygiene and sanitation of Food Handler knowledge toward food quality

3. RESULTS AND DISCUSSION

One of the important things for food quality is the temperature control as keeping potentially dangerous food out of the temperature danger zone is very important. As such, food is cooked, cooled or stored at the right temperature to avoid food contamination. many tools for measuring food temperature. Temperature control is called temperature danger zone, which is food that has a temperature between 41 and 135 degrees Fahrenheit and bacteria grow quickly between 70 and 125 degrees Fahrenheit. The longer the food is between these temperatures, the more likely it is to be exposed to bacteria [7].

One of these variables is food safety, especially hygiene and sanitation. Indonesia has great developments in the food and beverage industry. Hygiene is an effort to maintain health and study to influence the environmental

conditions and human health. Hygiene includes the efforts to maintain health and learn about environmental health conditions. Efforts and learning about environmental health care can create a healthy environment. Efforts to prevent illnesses due to environmental influences create healthy environmental conditions while personal hygiene is an effort to maintain one's personal health that aims to prevent the outbreak of disease and to improve their health status [8].

Moreover, hygiene is a scientific discipline that aims to learn how to live healthy and achieve a safe condition that is free from danger (hazard) and also there is a specific hygiene namely personal hygiene. Personal hygiene is an effort to maintain one's personal health that aims to prevent the outbreak of disease and to improve their health status [9].

Apart from hygiene, sanitation is vital to maintain food safety. Sanitation is a program that should be run to address the problem of a dirty environment or the dirty process of making food. Moreover, the function of sanitation is to prevent the recontamination because it may arise from insects or animals such as rats or other objects such as wood fiber and broken glass [10]. Hygiene and sanitation cannot be separated from one another because they are closely related. For example, hygiene is good because the food handler washes his hands, but if the sanitation does not support because there is not enough clean water available, the hand washing becomes not perfect [11].

The respondents consist of 17 female and 14 males with age between 23-28 years old. The following statements are two most agreed by the respondents from each variable: (1) The respondents know about hygiene and sanitation; (2) The respondents understand about food quality.

While these following statements are the ones least agreed by the respondents from each variable: (1) The Respondent does not really know about HACCP meaning; (2) Some of respondent not really aware about food borne illness; (3) The company doesn't provide food safety training

For validity and reliability test, after collecting the questionnaires and input the eligible ones into SPSS, the results are all questions pass the validity test; all Pearson correlations from all variables surpass both 0.355 minimum and the questionnaire pass the reliability test; the Cronbach's alpha of all variables surpass the minimum 0.70.

For the classical assumption test, this research passes the heteroscedasticity test because di significant value more than 0.05 which means No symptoms of heteroscedasticity in this research. The statistical evaluation of the heteroscedasticity test is shown in Table 1.

Table 1. Heteroscedasticity test result

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.179	1.436		.821	.419
	food quality	-.003	.069	-.008	-.043	.966

a. Dependent Variable: Abs_res

Normality test was also conducted as part of classical assumption test. The two pictures in Figure 1 show that the regression model passed the normality test. As a black line overlay on the histogram illustrates the curve of a positive and bell-shaped influence. In addition, the data plot also follows a diagonal line

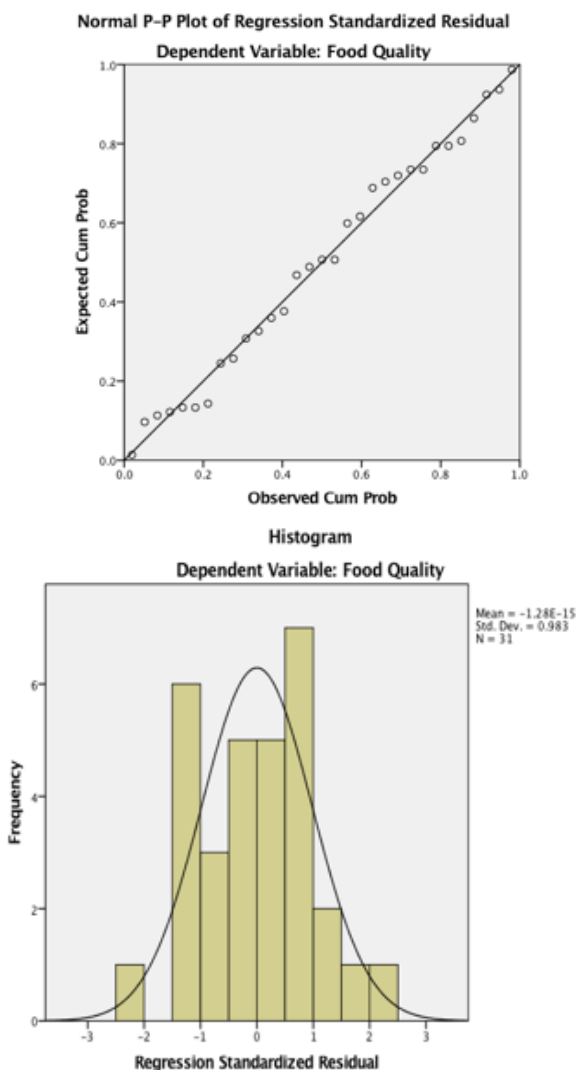


Figure 1. Normality test result

For hypothesis test result, F-test and T-test were conducted using SPSS. The F-test the level of significance is below 0.05. The table above shows that the significance level is 0,000 which means that 0,000 is less than 0.05 and it gets an F value of 42.048. Then the regression model can be used to predict independent variables in other words there is the influence of food handler knowledge variables on food quality (Table 2).

Table 2. F-test results

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	84.154	1	84.154	42.048	.000 ^b
	Residual	58.040	29	2.001		
	Total	142.194	30			

a. Dependent Variable: Food Quality
 b. Predictors: (Constant), Food Handler Knowledge

In the T-test, the significant value is 0,000 <0.05 which can be interpreted as the variable X determines the variable Y. Furthermore, the T value in the table is greater than the T table for N 31, the T value is 6.484 and greater than 2.750 concluded the X variable determines with respect to the Y variable (Table 3).

Table 3. T-test results

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.753	2.494		1.906	.067
	Food Handler Knowledge	.266	.041	.769	6.484	.000

a. Dependent Variable: Food Quality

There are two hypothesis to be evaluated in this study, which were: There is an impact of the hygiene and sanitation of food handler knowledge toward food quality (H1) and there is no impact of the hygiene and sanitation of food handler knowledge toward food quality (H0). The hypothesis concluded from the results of the hypothesis testers that the food handler knowledge influences food quality. The previous studies on food handlers and food quality also states the influence of food handler knowledge on food processing and food quality [12].

Knowledge Management (KM) is an important element for an uncertain and fast-changing business environment especially the food and beverage industry. Knowledge management, known as KM, is the process of gaining experience, knowledge and expertise that results in new skills and drives new innovations, and creates good customer values. Because human knowledge, intelligence, and skills are secretly and individually catered, they are not easily captured and processed for the benefit of the organization [13].

Hazard Analysis and Critical Control Points regulates food safety, especially hygiene and sanitation and is known as a food safety system (FSMS) and is approved in the international food security community [14]. In addition, Hazard Analysis and Critical Control Points (HACCP) is the world's most recognized Food Safety Management System.

SOPs (Standard Operating Procedures) have proven to be useful in doing the right job on training personnel. A definition of SOP according to Madhav Madhusudan Singh is a set of instructions that discuss what, who, when

and where an activity or work is carried out. SOP is also defined as a tool that provides written instructions and documents for repetitive and routine activities. Written instructions are intended to achieve uniform performance of certain.

The positive image of a restaurant is also influenced by the quality of the food - it is very unlikely a restaurant works well if there is no quality. Food safety and quality are considered essential at home level until industry level. They are also essential in production and processing, and also where food is freshly prepared and served. Many foods were processed at home in the past but advancement in technology and processing, larger per capita incomes and better purchasing power now led to a variety of products of processed foods, food for health/functional foods being manufactured. Increased consumer demand also plays a role in it.

4. RECOMMENDATION

Based on the research conducted, namely the variable X (hygiene and sanitation) has an average value that is not too large, it can be interpreted that they lack knowledge about food safety systems such as HACCP. Supported by interviews that show the Lubana Sengkol restaurant rarely conducts training for food safety. Therefore, the authors suggest holding compulsory training for food safety, especially food hygiene and sanitation, every 3 months and new employees in Lubana Sengkol should receive training on food safety before entering work.

Furthermore, Lubana Sengkol restaurant has a standard operation procedure about hygiene and sanitation but is incomplete. The authors suggest completing SOPs on hygiene and sanitation as well as food safety, for example there should be an SOP that regulates the flow of food preparation based on food safety management and rules for general cleaning every 3 days so that there are no cases that harm the Lubana Sengkol.

The limitations of this study raise additional topics that can be further investigated. This research only examines the food quality of the food borne illness section even though there are many indicators of food quality other than foodborne illness such as flavour, aroma and nutrition which can be impacted by food handler knowledge.

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