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Does Food Safety Knowledge Influence Customer Expectation and Perception on Restaurant's Quality Attributes?

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ABSTRACT

The number of restaurants has increased recently and leads to a pierce competition in this business. To be more competitive, restaurant owners need to pay more attention on customer satisfaction. This study is aimed to examine customer satisfaction in restaurants using three variables, namely food quality, services, and environment facilities in a restaurant. Unlike studies in this area the variables were evaluated using food safety criteria where the customers's knowledge about food safety issues were measured to analyze whether it affects the customer perception and satisfaction. The importance-performance analysis (IPA) is used to explain which attributes that need to be improved after mapping the customer expectations and perceptions. Implementing IPA to could help restaurant owners to concentrate on improving the priority quality attributes, i.e., the attributes that are important for customers but have relatively low performance. A questionnaire with food safety perspective question were distributed to 400 customers and 395 questioner were completed. The IPA Diagram reveals that the higher the consumer's knowledge the more attributes were suggested to be improved.

Keywords: food safety; IPA; knowledge; restaurant

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INTRODUCTION

Restaurants are one of the small and medium food industries that continues to grow. According to the Regulation of the Minister of Tourism and Creative Economy of Indonesia No.11 2014, a restaurant/restaurant is a food and beverage service provider equipped with tools and equipment for the process of making, storing and serving in a fixed place with the aim of making a profit. Requirement of more practical way of life including consuming food has caused an increase in the number of people eating outside the household (Ufrida & Harianto, 2022). It lifts the number of restaurants as well as competition between them (Ronitawati & Simangunsong, 2016). Hence, it is crucial for a restaurant to give more attention to customer satisfaction since it affects repeat orders and maintains customer loyalty (Wulansari et al., 2014).

A careful supervision needs to be carried out by both the government and restaurant management since the restaurants are required not only to provide delicious food but also ensure safety. According to PP No. 86 of 2019, food safety is a condition and effort needed to prevent food from possible contaminants/dangers that can harm human health. Unsafety food is potential to cause harm that affects consumer health usually called as the foodborne disease (Jiastuti, 2018). Based on the BPOM Annual Report, in 2019 there were 50 KLB KP (Extraordinary Incidents of Food Poisoning) reported with a total of 2,569 victims and 1,783 of them experiencing symptoms of illness (attack rate of 69.40%). Then from this incident there were 10 victims who died (fatality rate of 0.56%). BPOM divides the cause of poisoning into several sources, e.g., animals, drinks, medicine, food, chemical substances, pesticide, where poisoning food and drinks contribute around 20% of all reported cases (BPOM, 2019).

Knowledge of food safety makes a person more aware of the importance of food safety. Consumer understanding of food safety also plays an important role in customer satisfaction. This is because food safety is the most basic standard for consumers with knowledge of food safety in evaluating food quality related to customer satisfaction (Liu and Jang, 2009). Consumers with limited food information have more attention about food safety of the products they consume compared to consumers who process their own food. Even though if the aspects of food safety from harvest to ready for consumption are not considered, still there is a risk of causing food poisoning (Ha et al., 2019).

According to Low et al. (2016), food safety knowledge of students at leading universities in the city of Kuala Lumpur is not evenly distributed, thus making it necessary to have education about food safety so that students are more aware of the importance of food safety. From this study, differences in knowledge may cause consumers having different perspectives in assessing a food product. Lack of understanding of food safety will lead to feelings of security in consumers in consuming food products (Redmond and Griffith, 2004). Meanwhile, consumers with food safety knowledge have higher concerns regarding the consumption of food products due to an understanding of the causes of food contamination (Verbeke and Viaene, 2000). This leads to an increase in demand for safe and qualified food, meaning that consumers will be more critical in assessing satisfaction, especially with regard to food safety (Mergenthaler et al., 2009).

Customer satisfaction can be the first step to take corrective action in restaurant management. Improving performance is important to do because it provides benefits, such as consumer loyalty and it is hoped that food safety will be given more attention and guaranteed so that cases of foodborne disease can be avoided (Arfifahani, 2018). Customer satisfaction has a significant effect on the intention to return or not to buy a product. Satisfied customers/consumers will reuse the product at a later opportunity. According to Petzer and Mackay (2014), the importance level of each attribute is not the same. Hence, knowing the level of customer satisfaction and measuring the performance of the attributes is not enough. It is also important to know the level of importance of attribute from the customer's perspective. There are several methods used to analyze the customer expectation and perception such as Servqual analysis, customer satisfaction index (CSI) and importance performance analysis (IPA). Servqual focuses on analyze customer perceptions and expectations based on multiple dimensions where CSI measures overall customer satisfaction with a product or service. Unlike Servqual and CSI, IPA can identify and prioritize attributes that are important to customers and assessing how well an organization is performing on those attributes. Information from IPA diagram can be used to define the appropriate improvement strategy (Pai et al., 2016). IPA is able to show improvement priorities

based on the level of importance and performance (Martilla and James, 1997). The results of the IPA are in the form of a Cartesian diagram containing four quadrants based on the rating of the average score of service performance and consumer interests. A restaurant can provide quality products and services with the information obtained about consumer needs and desires (Ivkov et al., 2014).

Later the results of this study can be useful for the food industry, especially restaurants as a guide in increasing customer satisfaction with the services provided (food quality, service quality, and environmental conditions and facilities). In addition, the results of this study can also provide an overview to the government of the condition of food safety in restaurants. Coordination and cooperation between all stakeholders (government, food service providers, and consumers) will lead to a conducive situation in creating food safety guarantees in this industry (Pudjirahaju, 2018). Hence, consumers' rights to consume food products that are safe for health can be fulfilled and the sustainability of restaurants can be maintained because they gain the trust of consumers (Putro, 2014). According to KAP (knowledge, attitude, practice) knowledge model, eating behavior develops on a positive attitude, and a positive attitude is derived from knowledge on nutrition and food safety (Shen M, et al 2015). However, to improve food safety practices in restaurants, it not only comes from the awareness and responsibility of the restaurant but also from the need to increase consumer knowledge about food safety. Consumer who are aware of the potential risk of food contamination also can be a good mechanism for alerting other consumer, policymaker and supplier for the potential problem.

METHODOLOGY

Respondent

Respondents in this study were consumers of Restaurant X who were eating at the restaurant and at least 15 years old. This research was conducted through a survey method with data collection techniques using two types of questionnaires, i.e., (i) customer satisfaction (ii) food safety knowledge questionnaires. Those questionnaires were distributed to customer that were dinning in the observed restaurants (i.e., on the spot survey). A discount voucher was given to appreciate the customers that agreed to fill the questionnaires.

Questionnaire Design

The questionnaire in this study consisted of two types. First, a customer satisfaction questionnaire with the IPA method consisting of 3 three dimensions i.e., food quality (6 attributes), service quality (9 attributes), and environmental conditions and facilities (10 attributes). This questionnaire used a Likert scale with 7 scale options as can be seen in Appendix 1. Second, a consumer food safety knowledge questionnaire consisting of four variables, namely knowledge on personal food safety (11 questions), knowledge of causes of foodborne disease (9 questions), symptoms of foodborne disease (12 questions), and knowledge on food handling practices (12 questions). There are three options for responding t hose questions, namely "Yes", "No", and "Don't Know". Based on the total number of correct answers, consumers are grouped into 3 categories of knowledge. Consumers are included in the category of good knowledge if they have a total percentage of correct answers more than or equal to 75%, the knowledge category is quite good between 56% -74%, and is said to have poor knowledge if it is less than or equal to 55%. The questions to measure the customer satisfaction questionnaire were referred to Fauza et al. (2022) while the instrument to measure the food safety knowledge is sourced from Low et al. (2016). The existing instruments were then tested for validity and reliability.

Statistic analysis

The validity of the criteria in the consumer knowledge questionnaire and customer satisfaction were tested using the Pearson Correlation method. While the reliability test used the calculation of Cronbach's alpha value. Testing was carried out with the help of SPSS 25 software. Descriptive statistics were used to analyze the demographic profile of respondents and consumer categorization based on their level of knowledge. ANOVA is used in the analysis of the effect of consumer food safety knowledge on customer satisfaction. As for the mapping of attributes into four quadrants based on their level of importance and performance, the Importance Performance Analysis (IPA) method is used so that attributes with improvement priorities are identified.

RESULT AND DISCUSSION

Validity and Reliability Test.

Professional judgment with Focus Group Discussion (FGD) is a method for testing the validity of the contents of the consumer food safety knowledge questionnaire (Heryanto et al., 2019). The FGD was carried out by the multicross disciplinary team, consist of one lecturer from agriculture communication field, two lecturers expert in food quality management, one lecturer from microbiology field, and one lecture from center study for food, nutrition and public health. FGDs were aimed to check the suitability of the contents in the questionnaire, whether the questions were relevant to consumers in Indonesia and whether the editorial translations could be easily understood by the respondents. The instrument is declared valid if a professional agreement has been reached regarding the contents of the instrument and the choice of words in the instrument is correct (Heryanto et al., 2019). As for the results of the FGD, out of the 44 questions, 41 were declared valid and 3 others were declared invalid. The three questions were declared invalid based on the agreement of experts who assessed the existing attributes causing confusion in understanding the content and the possibility of major misinterpretation.

The validity of the criteria for the consumer food safety knowledge questionnaire, it is known that 40 questions are valid and 1 question is Q_{10} "*Is the best way to avoid food poisoning from fruits and vegetables is to wash them under running water?*" declared invalid because it has a value of r count< r table (0.078 < 0.0989). Hence, Q_{10} was removed from the research instrument. Whereas in the customer satisfaction questionnaire all attributes at the level of importance and satisfaction have an r count greater than 0.0989 and p value less than 0.05. Therefore, data from all attributes were declared valid and can be used for further analysis.

Demographic Profiles.

Based on the survey data, the demographic profile of the 395 respondents is summarized and presented in Table 1. As seen in Table 1, the majority respondents were female (59%) and 80% respondents have visited the restaurant at least twice. 70% respondents were in 20-40 years old, 37% were college students and majority have income below 5 million IDR per month.

Furthermore, in terms of educational characteristics, it is dominated by consumers with the last educational status taken, namely high school with a rate of 50%. This is consistent with the characteristics of the job, where most of the respondents at Restaurant X are students (37%). The location factor of Rumah Makan X, which is relatively close to the campus environment, may be one of the causes. As for the characteristics of income, it is dominated by consumers with income between IDR 1,000,000 - IDR 3,000,000.

In the data reliability test, consumer food safety knowledge has a Cronbach's alpha value of 0.789. Whereas the variables in the customer satisfaction questionnaire have a Cronbach's alpha value of 0.860 (M);

Table 1. Demographic profile of respondents

No	Characteristics of Respondents	Percentage
1.	Gender	
	Male	41%
	Female	59%
2.	Age	
	< 20 years	15%
	20-40 years	70%
	> 40 years	15%
3.	Eating frequency (last 6 months)	
	Once	20%
	2-4 times	53%
	Times	12%
	8-10 times	9%
	>10 times	6%
4.	Education level	
	Nonformal education	0%
	Elementary school	0%
	Junior high school	3%
	Senior high school	50%
	Diploma	12%
	Graduate	32%
	Post graduate	3%
5.	Occupation	
	Highschool student	6%
	College student	37%
	Government employee	4%
	Employee of private sectors	25%
	Entrepreneur	9%
	Housewife	5%
	Lecturer/teacher	6%
	Police/military	0%
6.	Income	
	<Rp1.000.000	25%
	Rp1.000.001 – Rp3.000.000	31%
	Rp3.000.001 – Rp5.000.000	14%
	>Rp5.000.000	11%
	others	19%

0.873 (P); and 0.909 (L). So that all variables on consumer knowledge and customer satisfaction are declared reliable because they have a Cronbach's alpha value > 0.70 (Taber, 2018).

Overall, based on Table 2, the average percentage of correct answers for all questions answered by all respondents was 64%. The variable with the largest average percentage of correct answers is knowledge on food handling practice with a value of 74.7%. While symptoms of foodborne disease is the variable with the lowest average value (52.4%). This is in line with the research of Low et al. (2016), where symptoms of foodborne disease are the variable with the lowest average. Knowledge of the symptoms of foodborne disease is related to a person's sensitivity when experiencing foodborne illness. According to WHO, from 1 reported case of food poisoning there are still 99 other cases that are not reported. A low level of knowledge about the symptoms of foodborne disease can lead to misinterpretation of the pain experienced and result in delayed treatment (Lim et al., 2016).

The knowledge of respondents in Restaurant X about food safety shows that consumers have good knowledge of the variable knowledge on food handling practice, quite good on the variable knowledge of personal food safety, and not good enough on the other 2 variables (symptoms of foodborne disease and knowledge of cause foodborne diseases). This means that consumer knowledge is only good on certain variables. Unlike the respondents in Low et al. (2016) who came from Malaysia, knowledge of all variables has an average percentage of correct answers of 62.1%; 70.7%; 71.9%; and 73%. All of these values fall into the category of fairly good knowledge, namely between 56%-74% (Budiman and Riyanto, 2013). Hence that the knowledge of respondents in Malaysia about food safety can be said to be equal/even in all questions/variables of existing knowledge.

Food poisoning incidents in Malaysia were much lower, namely 21 cases compared to events in Indonesia, where there were 56 outbreaks of food poisoning in 2018. Consumer knowledge in Indonesia regarding food safety is still low. This low knowledge causes consumer concern for the food safety of the products they consume is also low. So that only a few consumers demand food service producers/providers to produce food products that are of good

quality and safe for the health of consumers. Things like this have led to many cases of food poisoning (BPOM, 2019).

In the Personal Food Safety variable shown in Table 3, the question with a low percentage of correct answers, namely "*Don't put raw chicken, fish, and meat in the same place/location in the fridge/freezer*" was proven by only 32% of consumers who answered correctly. In addition, only 55% of consumers know that "*pasteurization of milk and fruit juice can help prevent the occurrence of diseases that may be caused by consuming the milk or fruit juice*". In contrast to the study of Low et al. (2016), the question regarding pasteurization which can help prevent foodborne illness (Q_{11}) received a good response. This question can be answered correctly as much as 82.5% of the correct answers.

In terms of knowledge on the Cause Foodborne Disease variable according to Table 4, the question that cannot be answered properly is "*dry food stored in a cupboard near the oven will increase the risk of the food causing illness/ health problems if consumed (foodborne illness)*" as only 23% customers who answered correctly.

In addition, there is a question with only 19% correct answers, namely "*canned vegetables consumed without heating first will increase the risk of these foods causing health problems/disease if consumed*". Relatively low knowledge of questions 13 and 14 is the same with Low et al. (2016).

For knowledge on the Symptoms of Foodborne Disease variable which can be seen in Table 5,

Table 2. The percentage of correct answers

Type of knowledge	Min.	Max.	Mean	Std. Deviation
Knowledge on personal food safety (10)	20.0	100.0	71.4	16.5
Knowledge of cause foodborne diseases (9)	0.0	100.0	53.0	23.0
Symptoms of foodborne disease (9)	0.0	100.0	52.4	24.4
Knowledge on food handling practice (12)	0.0	100.0	74.7	16.1
Overall knowledge (40)	17.5	97.5	64.0	14.0

Table 3. Percentage of correct answers on Personal Food Safety knowledge

No	Knowledge on Personal Food Safety	Correct answer	
		n	%
1.	Does good personal safety of the people/employees who prepare/clean ingredients, process and serve food guarantee the food safety of a product? Yes	362	92%
2.	To your knowledge, should we always wash our hands after coughing and sneezing? Yes	362	92%
3.	To your knowledge, can physical hazards (eg hair) in food products cause health problems if the food product is consumed? Yes	258	65%
4.	Will contamination occur when raw and cooked food are stored together in the same place/room? Yes	253	64%
5.	Is it necessary to avoid touching ready-to-eat food with hands? Yes	295	75%
6.	Do not put raw chicken, fish and meat in the same place/location in the fridge/freezer? No	126	32%
7.	Is it enough to just wash your hands under running water to remove bacteria before touching food? No	292	74%
8.	To ensure food safety, should you taste/smell the food/check the expiration date before eating? Yes	345	87%
9.	Should the kitchen sink be cleaned after every use to avoid food poisoning? Yes	312	79%
11.	Does heating treatment at a certain temperature and time (pasteurization) on milk and fruit juice help prevent the occurrence of diseases that may be caused by consuming the milk or fruit juice? Yes	216	55%

Table 4. Percentage of correct answers on cause foodborne disease knowledge

No	Knowledge on Cause Foodborne Disease	Correct answers	
		n	%
12.	Does raw or undercooked seafood increase a person's risk of food poisoning? Yes	259	66%
13.	Will dry food stored in a cupboard near the oven increase the risk of the food causing illness/health problems if consumed (foodborne illness)? Yes	89	23%
14.	Will canned vegetables consumed without heating first increase the risk of these foods causing health problems/disease if consumed? Not	77	19%
15.	Salmonella bacteria can cause food poisoning? Yes	225	57%
16.	Will chicken eaten when it's cold cause illness/health problems arising from consumption of that food (foodborne illness)? Not	201	51%
17.	Will food that is left open without a cover cause illness/health problems arising from consumption of the food (foodborne illness)? Yes	290	73%
18.	Will rice that is left overnight in an open condition in the kitchen cause disease/health problems arising from the consumption of these foods (foodborne illness)? Yes	259	66%
19.	Will a chocolate cake left overnight in an open condition in the kitchen cause illness/health problems arising from the consumption of these foods (foodborne illness)? Yes	190	48%
20.	Will canned food with inflated cans cause health problems/illness (foodborne illness) if consumed? Yes	295	75%

Table 5. Percentage of correct answers on symptoms of foodborne disease knowledge

No	Symptoms of Foodborne Disease	Correct answers	
		n	%
21.	Are acute stomach cramps a symptom of food poisoning caused by microorganisms found in these foods? (Foodborne disease)? Yes	202	51%
22.	Is fatigue a symptom of food poisoning caused by microorganisms in the food (foodborne disease)? Not	148	37%
23.	Is headache a symptom of food poisoning caused by microorganisms in the food (foodborne disease)? Yes	269	68%
24.	Is low blood pressure (hypotension) a symptom of food poisoning caused by microorganisms in the food (foodborne disease)? Not	145	37%
25.	Is fever a symptom of food poisoning caused by microorganisms in the food (foodborne disease)? Yes	254	64%
26.	Is a stiff neck a symptom of food poisoning caused by microorganisms in the food (foodborne disease)? Not	156	39%
27.	Is diarrhea a symptom of food poisoning caused by microorganisms in the food (foodborne disease)? Yes	371	94%
28.	Is bone pain a symptom of food poisoning caused by microorganisms in the food (foodborne disease)? Not	168	43%
29.	Is coughing or sneezing a symptom of food poisoning caused by microorganisms in the food (foodborne disease)? Not	150	38%

the question with the lowest correct answer with only 37% answering correctly is "*is fatigue (fatique) a symptom of food poisoning caused by microorganisms present in the food (foodborne disease)?*" and "*Is low blood pressure (hypotension) a symptom of food poisoning caused by microorganisms in the food (foodborne disease)?*".

As for Table 6 which contains the variable Food Handling Practice, the questions that were answered poorly were "*food that has been cooked before is safe for consumption without needing to be reheated*" with only 32% correct answers and "*before processing food, food processors can clean hands by rub it on a cloth/rag*" with only 31% correct answers.

Even though cleaning hands before preparing food by wiping it on a cloth/rag can spread the bacteria.

Measuring the Level of Consumer Satisfaction.

Consumers are grouped into 3 categories of knowledge based on the total correct answers, i.e., (i) correct answers more than or equal to 75% is considered as good knowledge customers, (ii) 56% -74% correct answers mean quite good customers, while (iii) less than 55% correct answers is categorized into poor knowledge customers. From a total of 395 respondents, 97 respondents obtained consumers with good knowledge of food safety (24.5%), 184 respondents with fairly good knowledge (46.6%), and 114 respondents with poor knowledge (28.9%). Further, 25 attributes were assessed to measure the level of consumer satisfaction namely food quality, service quality, environmental conditions and facilities (Appendix 1) The result is shown in Appendix 2 while the summary of customer satisfaction based on knowledge can be seen in Table 7.

Based on Table 7 it is known that consumers with good knowledge of food safety have significant differences with consumers with poor knowledge in assessing service quality. Consumers with good knowledge rate higher (more satisfied) (6.33) on the quality of service provided by Restaurant X compared to consumers with poor knowledge (6.05). The biggest difference in value is in the attribute "*Employees are not allowed to wear jewelry or accessories, except watches*" with the average difference in value between consumers with good and poor food safety knowledge of 0.54. Consumers with good knowledge give an average satisfaction value of 6.16 (satisfied) while consumers with poor knowledge only 5.62 (somewhat satisfied).
The level of consumer knowledge and KAP level of food handlers influences the assessment of satisfaction with the services provided by Restaurant X. Consumers with good knowledge of food safety have higher average satisfaction scores in service quality dimension than consumers with poor knowledge. Based on Cahyani (2022), the KAP level of food handlers at Restaurant X is said to be good with a percentage value of 86.99%. It seems that consumers with good food safety knowledge understand and appreciate this situation and give higher score on restaurant service quality performance. According to Naderi et al. (2018), consumer knowledge will influence selective behavior in seeking information and being able to assess a condition more precisely. To assess a condition requires a broad perspective so that the assessment can be done properly.

A broad perspective is obtained from the knowledge possessed by consumers (Hasell and Stroud, 2019). The higher satisfaction score for consumers with good knowledge of food safety compared to consumers with poor knowledge is in line with research on the effect of consumer knowledge on restaurant evaluations, it was found that consumer knowledge of the type of restaurant plays an important role in evaluating the quality dimension. Consumer knowledge of the type of restaurant produces a more favorable evaluation score for chain restaurants on the dimensions of food quality, healthiness, and ambiance. This is because chain restaurants have standardized structured services so that consumers feel more comfortable. Meanwhile, according to consumers with less knowledge of the type of restaurant, it produces an evaluation score that is considered low on the dimensions of food quality, ambiance, and value (Naderi et al., 2018).

Consumers with good knowledge of food safety give a higher rating than consumers with poor knowledge. This higher rating is given according to the information received by the consumer based on his observations when eating dine-in at Restaurant X. Consumers see and assess if employees/food handlers have implemented safety practices and performed their duties properly. A more relevant assessment when taking information from a condition can

improve an assessment of that condition. Consumers with good food safety knowledge are better able to digest existing conditions more precisely and quickly, so satisfaction ratings are carried out spontaneously and higher score results can occur (Hong and Sternthal, 2010).

The value of the practice of food handlers at Restaurant X based on Cahyani's research (2022) states that as many as 80.5% of food handlers answered "No" to the question "*Do you use jewelry or accessories while preparing food?*". This shows that the safety practices carried out by food handlers at Restaurant X are appropriate. Consumers with good knowledge of food safety can assess the suitability and feel satisfied with the attributes related to service quality. Consumers with a good level of knowledge understand more about food safety practices carried out by food handlers. These consumers assess that food handlers are good at carrying out food safety practices, so that consumers give high values to attributes in the service quality dimension.

Importance Performance Analysis.

Based on Appendix 2, the IPA diagram is created as can be seen in Appendix 3. As shown by Appendix 3, consumers with good

Table 6. Percentage of correct answers on food handling practice knowledge

No	Knowledge on Food Handling Practice	correct answers	
		n	%
30.	Should smoking be prohibited in food processing establishments? Yes	382	97%
31.	Cleaning equipment should be stored separately? Yes	380	96%
32.	Is food that has been cooked before safe to eat without needing to be reheated? Not	125	32%
33.	Does the surface of the container/equipment that comes into contact with food have to be cleaned with a cleaning agent? Yes	351	89%
34.	Isn't it important to clean the knife after use? Not	284	72%
35.	Before processing food, can food processors clean their hands by wiping them on a cloth/rag? Not	122	31%
36.	Do people who work in preparing food have to wear a uniform while working? Yes	280	71%
37.	Does the person/employee in charge of preparing food need to wash their hands with soap and warm water before carrying out their duties? Yes	363	92%
38.	Should raw food be stored separately from cooked food? Yes	345	87%
39.	To prevent food poisoning, is it necessary to wash fruits and vegetables under running water? Yes	373	94%
40.	Can't raw vegetables and meat be cut with the same knife and cutting board? Yes	262	66%
41.	Do people/employees who prepare/clean ingredients, process and serve food have to carry out a medical examination at least every six months? Yes	275	70%

Table 7. Customer Satisfaction

Variabel*	Food safety knowledge level		
	Good	Moderate	Low
Food quality (M)	6.50[a]	6.42[a]	6.30[a]
Food service (P)	6.30[a]	6.19[ab]	6.05[b]
Environment and facility (L)	6.22[a]	6.20[a]	6.15[a]
Overall Satisfaction (O)	6.21[a]	6.19[a]	6.11[a]

Note: * Abbreviation of food quality (M= *makanan*), (Food service (P= *pelayanan*), environment and facility (L= *lingkungan*) in Bahasa

** Different superscript letter show a difference at significance level alpha=5%

and good enough knowledge of food safety required more attributes that are included in the improvement priority (7 attributes were located in the 'concentrate here' quadrant) compared to consumers with poor knowledge (only 6 attributes). This explains that knowledge influences one's views in expecting food safety. As stated by Hasell and Stroud (2019), the assessment of a phenomenon is influenced by the consumer's perspective based on knowledge possessed. Someone who understands food safety tends to value more the importance of an attribute.

Quadrant I contains attributes that are prioritized for improvement by the management of Restaurant X. Attributes that are included in Quadrant I for all consumer categories are attributes derived from the environmental and facilities quality dimensions, except for consumers with poor food safety knowledge which has one attributes (P_5) from the service dimensions. environment and facilities as well as service quality. Based on the assessment of consumers with good and moderate knowledge of food safety, there are 6 attributes that are priority for improvement, ordered from the lowest level of satisfaction, namely L_1 (*the kitchen is clean and well-maintained.*); L_2 (*Service area and all surfaces of the restaurant are clean and well-maintained*); L_4 (No pests and rodents are present around the restaurant); L_6 (the restaurant has a clean and tidy trash container); L_7 (The cleanliness of the dining table and the cloth used to clean the table); and L_{10} (The toilet is clean and well-maintained). Further, customer with good knowledge perceive that L_5 (*the restaurant is located in a suitable location or not close to the source of contamination*) is also need to be improved meanwhile consumers with fairly good knowledge feel that L9 (there are adequate number of toilets and facilities (running water, tissues, hand dryers, sink soap, etc.) need moe attention.

Similarly, consumers with poor knowledge, also has 5 environment and facility attributes namely L_1, L_2, L_4, L_6, L_7 in Quadrant 1, in addition, customer in this category feel that attribute P_5 (employees come to work in good health) needs more attention. In contrast to consumers with good knowledge, attributes L_5 and L_{10} are not included in the category of consumers with poor knowledge of food safety. This shows that the higher the level of knowledge possessed by consumers, the more attributes that are considered to need to be included in priority improvements. Even though the ANOVA results show that there are only significant differences in the dimensions of service quality, the consumers in different categories have different judgments about the importance of those attributes. Consumers with an increasingly good level of knowledge have a tendency to judge attributes to be more important than consumers with less good knowledge. The higher interest assessment is due to higher consumer concern for food safety in the products they consume (Ha et al., 2019). It is this tendency that allows the number of attributes in Quadrant I to be higher for consumers with good and fairly good knowledge.

If consumers are not differentiated based on level of knowledge, there are 6 attributes that fall into Quadrant I, namely L_1, L_2, L_4, L_6, L_7 and L_{10}. These results have some similarities with Fauza et al. (2022) concerning Consumer Satisfaction and Perceptions of Food Safety Practices at Restaurant X, where there are the same 5 attributes that are included in Quadrant I, namely L_1, L_2, L_4, L_6, L_{10}. 5 out of 10 attributes on the dimensions of environmental conditions and facilities included in the quadrant with improvement priorities indicate that consumers are very concerned about the quality of the environment and existing facilities. This shows that the five attributes must be immediately evaluated by the restaurant management. The evaluation carried out by the restaurant management in the form of increasing the performance of attributes that are considered low by consumers will benefit the restaurant as it would increase

the customer satisfaction and lead to sustainability of the restaurant (Putro, 2014).

Attributes L_1 and L_2 are two of the five important attributes but still have low performance. The kitchen is an important part of the food processing process in restaurants. To ensure the health of consumers, the kitchen must always be clean (Atmoko, 2017), safe, comfortable and efficient in order to minimize food hazards and the risk of work accidents for employees (Kanyan et al., 2016). Further, L_4 attribute, relate to the absence of pests and rodents around the restaurant environment. Food served to consumers should be free from food hazards such as biological hazards originating from rodents (Singal, 2015). Rodents are intermediaries for Salmonella bacteria to contaminate food. Contamination of food by rodents can be prevented by closing places or channels that have the potential to become entry points for rodents (Agustina, 2020). At the X Restaurant on the sides and back that connects to the kitchen, rodents (rats) may appear, either coming out or entering the kitchen. Restaurant management should pay more attention to this because it can cause potential food contamination. In accordance with the Decree of the Minister of Health of the Republic of Indonesia Number 1098/Menkes/SKII/2003, safety and sanitation requirements for restaurants regarding preventing the entry of insects and rats, every hole that has the potential to become an entry point must be closed with wire gauze measuring 32 eyes per inch (for insects) and mounted trellis with a distance of 2 cm (for rats).

Moreover, Attribute L_6 is included in Quadrant I maybe because consumers realize the importance of having clean and tidy trash cans, but found that garbage collection bins still do not meet consumer expectations as they perceive that there are limited trash cans at the front of the restaurant. According to Agustin and Adriyani (2008), one of the safety requirements that must be met is the availability of trash cans by fulfilling the volume and quantity provided. The restaurant needs to provide adequate trash cans so that the cleanliness of the restaurant environment is maintained (Sofwan, 2019).

Similarly, L_7 attribute, relate to the dining table and the cloth used to clean the table in a clean condition. It is also considered not to meet consumer expectations while the level of importance is high. The dining table is usually cleaned shortly after the consumer leaves the table. When the table is cleaned, sometimes customer may see food residue at the end or in the middle of eating. This would cause consumers rate this attribute quite low, since it is important for consumers.

Attribute L_{10}, namely toilets that are clean and maintained, is included in Quadrant I according to consumers with good and fairly good knowledge. This means that consumers consider that toilets are a very important attribute, but it is perceived that the toilets available are not in a clean and maintained condition according to consumer wishes/expectations. In Iswari et al. (2015), the toilet is the first ranking attribute in terms of importance according to consumer ratings. So that the management really needs to pay attention to improvements for this attribute, because consumer dissatisfaction can cause restaurants to lose their customers. This statement is also supported by research by Barber et al. (2011), where consumers will choose not to return when the restaurant has dirty toilets. Restaurant X has a 3K schedule (Cleanliness, Tidiness, Beauty) in which one of them carries out toilet cleaning by cleaning it every two hours. However, the results of the assessment show a relatively low level of satisfaction on this attribute. Hence it is necessary to review the application of 3K, to find out the weak points of this 3K practice. Differently, for consumers with poor knowledge, the L_{10} attribute is included in Quadrant II, which means that the consumer is satisfied with this attribute. So according to the assessment of consumers with poor knowledge, the cleanliness of the toilets in

Restaurant X is good and not a priority for improvement. However, three of the four categories assessing the L_{10} attribute are included in Quadrant I indicating that majority consumers (71.1%) think that this attribute need to be improved.

Attribute L_5 is an attribute related to the safety and sanitation of restaurants that are included in Quadrant I according to consumers with good knowledge (24.5% of customers). Based on the Decree of the Minister of Health of the Republic of Indonesia Number 1098/Menkes/SKII/2003 the location of the restaurant is not <100 m from the source of contamination. So that the location becomes important in the aspect of food safety.

Availability of toilets with adequate number and facilities (L_9) is an attribute that is included in Quadrant I for consumers with fairly good knowledge of food safety (46.6% of customers). There are two toilets in Restaurant X where there is no separate toilets for women and men and no toilet paper, hand dryers, or hand washing soap available as well. These facilities are only provided in a sink outside the toilet environment and their function is for wash consumers' hands when they want to eat or before and after eating by hand. According to the Decree of the Minister of Health of the Republic of Indonesia Number 1098/Menkes/SKII/2003 concerning Requirements for Sanitation Facilities point 3 states that if the toilets for men and women must be separated, there is a place for washing hands equipped with paper/tissue handkerchiefs, the number of toilets for a capacity of 150 visitors is 2 toilets with distribution of 1 for women and 1 for men. The restaurant management must prioritize improvements to this attribute, because the toilet is part of the cleanliness of the restaurant. Consumers may assess the level of food safety in a restaurant from the cleanliness of the toilets (Bai et al., 2019).

CONCLUSION

Based on the result, it can be concluded that knowledge of consumer food safety on customer satisfaction only affects the dimensions of service quality. Improvement priorities have different results from consumer categories based on their level of knowledge of food safety. Overall, the food safety knowledge still at medium level, hence a campaign to rise the consumers' food safety knowledge is needed hence restaurant owner would be forced to improve the safety practice in their restaurant as well. Further, it would be interested to analyze the effect of customer knowledge and satisfaction on repurchase intention/consumer loyalty (behavioral intention) associated with food safety practices. This could be potential forthcoming research.

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