
Insights into Food Safety: Exploring Knowledge, Climate, Behaviour, and Culture

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Abstract

Emphasizing food safety culture is crucial in food management as it underscores the necessity of fostering a collective dedication to food safety within an organization. This research aims to determine the interconnections among food safety knowledge, climate, behaviour, and culture among employees at Aeon Food Processing Centre. Data collection involves the use of questionnaire forms, and quantitative analysis methods include descriptive statistics and Chi-Square tests conducted using Statistical Package for Social Science Version 26.0. Giving priority to food safety knowledge, climate, and behaviour significantly contributes to nurturing a strong food safety culture within an organization. The expected outcomes suggest a significant correlation among all variables, with implications that are advantageous for both organizations and employees. Maintaining a secure and high-quality food supply is crucial for upholding consumer trust and confidence in the food industry.

Keywords : Food Safety Culture, Food Safety Knowledge, Food Safety Behaviour, Food Safety Climate, Foodborne Illness

I. INTRODUCTION

Food safety culture embodies the collective principles and actions within an organization concerning food safety. It entails ensuring that every member, spanning from upper management to frontline staff, comprehends the significance of food safety and is committed to its preservation. A robust food safety culture indicates a shared commitment to food safety across the organization. This encompasses transparent communication and teamwork, proactive identification and mitigation of risks, consistent training and enlightenment on food safety practices, and a mindset geared towards perpetual enhancement.

Establishing a food safety culture is vital in preventing foodborne diseases and ensuring the safety and excellence of the food supply chain. It necessitates dedication and effort from all members of the organization, along with a readiness to acknowledge mistakes and continually improve. Organizations that prioritize food safety are inclined to adhere to regulations, experience fewer instances of foodborne illnesses, and garner greater trust and confidence from customers and other stakeholders.

Food safety knowledge encompasses individuals' understanding and awareness of the fundamental

principles and practices crucial for safeguarding the safety of the food supply. This includes both theoretical and practical knowledge concerning regulatory requirements, proper sanitation procedures, microbiological risks, and food handling techniques.

Food safety climate denotes the overarching ambiance or perception within an organization concerning the significance of food safety. It encompasses the shared attitudes, beliefs, and values that shape the behaviours and actions related to food safety among individuals within that setting. This entails transparent communication of expectations, a sense of responsibility for adhering to safe practices, and the implementation of systems that encourage and uphold a proactive stance toward food safety across the organization.

Behaviours of food safety encompass the actions, habits, and practices individuals employ to safeguard the quality of food from its handling and preparation through to storage and consumption. These practices are relevant across all stages of the food supply series and entail the decisions and behaviours individuals adopt to minimize the incidence of foodborne illnesses and maintain food safety criteria.

Culture in food safety is defined and then used to oversee food safety measures and improve adherence to hygiene regulations [1]. The goal of investigating food safety knowledge, climate, and conduct in connection to culture of food safety is to acquire insights into the aspects that help organisations sustain standards requirements in the food industry.

II. LITERATURE REVIEW

The research examines the association between knowledge, climate, and behaviour in influencing culture. Emphasizing the culture of food safety is crucial globally to ensure the security and purity of the food chain, free from harmful substances. As noted by [2], educating individuals engaged in food handling about safe practices is essential in averting foodborne illnesses. This study focuses on comprehending the roles of food safety knowledge, climate, and behaviour in upholding food industry standards for safety, thus reducing the likelihood of foodborne illnesses.

Acquiring food safety knowledge is imperative for individuals across the food industry spectrum, encompassing food handlers, processors, manufacturers, retailers, and even consumers engaged in food preparation at home. This knowledge enables individuals to make educated judgements and take appropriate precautions to maintain the culture and integrity of the food they handle. Finally, this helps to reduce the likelihood of foodborne infections while also ensuring consumer safety. Assessing individuals' perceptions culture of food safety, as well as their knowledge of food safety, is critical for determining their awareness of the hazards they face, understanding of the nature of these risks, and scientific comprehension of such risks [3].

The food safety climate influences an organization's procedures and attitudes towards food safety. A good food safety climate encourages staff to prioritise and follow safe food handling practices, fostering a culture of high standards. In contrast, a weak or unfavourable food safety climate can stymie putting in place a strong culture of food safety to reduce risks and possible dangers in the food supply chain.

Food safety behaviour is important because it can help employees in food processing organisations make decisions and follow processes. This level is critical because, according to several studies [5], individual employees' behaviour ultimately decides whether procedures are followed, and the proper

decisions are made (in terms of food safety culture). Food safety difficulties appear as obstacles, including a lack of adherence to hygiene, inappropriate handling of raw materials, and insufficient use of personal protective equipment (PPE). Without thorough training initiatives, personnel may lack the necessary skills and understanding for safe food processing operations.

In conclusion, the study emphasises the need of an organisation focusing on knowledge, climate, and conduct regarding food safety to cultivate a culture centred around food safety. This research is intended to help both organisations and employees. This research may also contribute to the mitigation of foodborne illnesses within the organization by identifying biological, chemical, and physical risks connected with food and establishing ways to avoid the chances of foodborne diseases.

III. RESEARCH METHODOLOGY

A research design entails a structured strategy for collecting and analysing data and information aligned with the study's objectives and inquiries. Quantitative research methodology is employed in this study due to its ability to offer various approaches for conducting research and yielding precise results. Within this methodology, uniform questions are posed to all participants.

The research design adopted for this study is descriptive. Descriptive research aims to provide a precise portrayal of observed phenomena. Additionally, it systematically and accurately describes the facts and attributes of a specific population or area of interest.

This research utilized both primary and secondary data collection approaches. Primary data were acquired through a structured questionnaire disseminated to participants via an online platform, specifically Google Form. This method was chosen for its direct relevance to the research problem and perceived higher validity compared to secondary data.

Secondary data sources, such as books, journals, websites, and government papers, were used to supplement the original data, hence increasing the study's sample size and effectiveness. Because secondary data is readily available, researchers have the opportunity to concentrate on particular areas of interest through the utilization of pre-existing resources.

The study's population consists of 210 respondents, with a sample size comprising 136 employees from the AEON Food Processing Centre. Simple random

sampling, employed in this research, involves the researcher randomly selecting a subset of participants from the total population of 210 workers at the AEON Food Processing Centre. Data is then gathered from as many individuals as feasible from this randomly selected subset. The sample size determination can be facilitated using a table devised by Krejcie (1970).

This study aimed to examine the correlation among independent variables such as safety of knowledge, climate, and behavior using questionnaires adapted from prior research. The survey is accessible in both English and Malay languages, is divided into five sections. Section A captures respondents' demographic information, including age, gender, nationality, and length of service, which is crucial

for establishing the respondent's background early on. Section B focuses on the dependent variable of the study, namely food safety culture. Sections C, D, and E, deemed as the primary sections, contain the independent variables: knowledge, climate, and behaviour, respectively. The questions for these sections, consisting of eight questions each, were developed by [6]. The questionnaire set comprises 36 questions in total, distributed across the five sections.

For the survey, a questionnaire was utilized to collect information and facts from the respondents. Employees were given the questionnaire and had the choice utilising a Likert scale to indicate agreement or disagreement, where 1 denotes "strongly disagree" and 5 denotes "strongly agree."

IV. RESULT AND DISCUSSION

The findings are consistent with the data analysis derived from respondents who are employed at AEON Food Processing Centre in Shah Alam, Selangor. The discussions encompassed various topics, including an examination of respondents' demographic profiles, data analysis aligned with the study's objectives, and a summary of the chapters. Employees in the Shah Alam department received digital questionnaire forms, specifically Google Form, via email from a member of the company's HR team. The survey garnered a response rate of 138 out of a total of 136. The data indicates a response rate of 100% for this study.

According to data analysis, it was noted that the female respondents outnumbered the male respondents, comprising 53.7% (N=73) being female and 46.3% (N=63) being male. Figure 1 below illustrates a significant difference between female and male respondents, with a variance of 7.4.

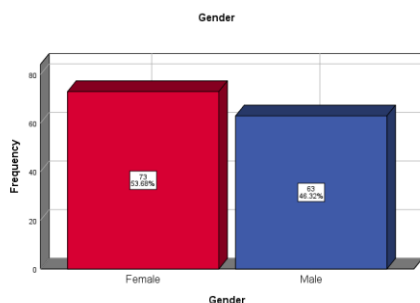


Figure 1: Gender

The predominant age group among employees at AEON Food Processing Centre, Shah Alam, who participated in the questionnaire, falls within the

range of 30 to 39 years old, while the minority of respondents belong to the age group above 50 years old. According to the data analysis, 43.4% (N= 59) of respondents were aged between 30 to 39 years old, whereas only 1.47% (N= 2) were above 50 years old. Additionally, 27.94% (N=38) the age group of respondents were in between 20 to 29 years old, and 27.21% (N= 37) were in the age group between 40 to 49 years old.

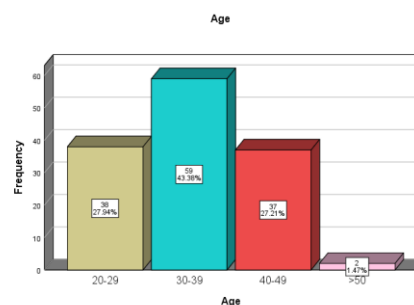


Figure 2: Age

The analysis of nationality reveals that the majority of respondents in this study are Malaysian. As depicted in figure 3, Malaysian respondents represent the largest proportion, accounting for 94.1% (N= 128) of the total number of respondents. Conversely, respondents who are foreigners comprise 5.9% (N=8).

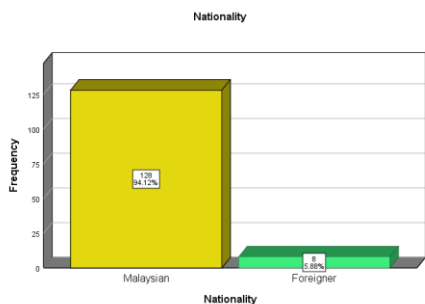


Figure 3: Nationality

As indicated in figure 4, the highest percentage of respondents' length of service falls within the range of 5 to 6 years, accounting for 38.2% (N=52), followed by a length of service between 2 to 4 years, representing 28.7% (N=39) of respondents. Additionally, respondents with a length of service of 6 years and above constitute 23.5% (N= 32), while those with a length of service of 2 years and below make up 9.6% (N=13) of the total. Furthermore, figure 7 illustrates that the most frequent length of service for respondents is between 5 to 6 years, while the least frequent length of service is less than 2 years.

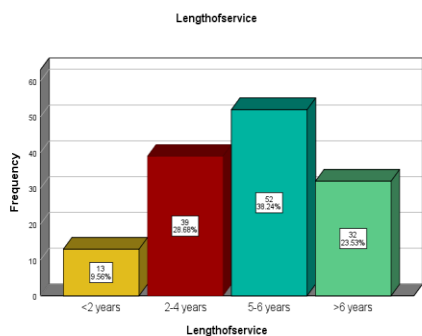


Figure 4: Length of service

The researcher employed a descriptive analysis method to fulfil the initial research objective of determining the levels of food safety knowledge, food safety climate, food safety behaviour, and food safety culture. Each variable's analysis involved categorizing mean scores and standard deviation.

Table 1 shows that the mean for X_1 is 4.22 (SD= 0.638), the mean for X_2 is 4.15 (SD= 0.678), the mean for X_3 is 4.14 (SD= 0.769), and the mean for Y is 4.12 (SD= 0.607). This suggests that, in comparison to the independent variable of food safety climate, food safety knowledge exhibits the highest means, signifying that a majority of respondents agree with the perspectives presented in the surveys in section B. However, it is important to

note that the dependent variable with the lowest mean is food safety culture.

Table 1: Mean and Standard Deviation

Variable	Mean, μ	Standard Deviation, σ
Food Safety Knowledge (X_1)	4.22	0.638
Food Safety Climate (X_2)	4.15	0.678
Food Safety Behaviour (X_3)	4.14	0.769
Food Safety Culture (Y)	4.12	0.607

For identifying the relationship between all the independent variable (X_1 , X_2 and X_3 and dependent variable (Y), the Chi- square method was utilized. This demonstrates that, when the p-value less than 0.05 all three variables have a significant relationship with the dependent variable.

According to output on table 2, show the results of the chi-square analysis where the independent variable (X_1) knowledge and (Y) culture when p-value for food safety knowledge is $p= 0.0001$, indicating there is a relationship between food safety culture. In analysing knowledge of food safety, this discovery aligns with the research conducted by [7], which identified a notable connection between knowledge and culture.

Table 2: Chi-Square Analysis Output of Food Safety Knowledge (X_1) * Food Safety Culture (Y)

Chi-Square Tests of $X_1 * Y$			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	154.223 ^a	4	.000
Likelihood Ratio	57.814	4	.000
Linear-by-Linear Association	86.695	1	.000
N of Valid Cases	136		

According to table 3, the outcomes of the chi-square analysis conducted on the independent variable (X_2) food safety climate and the dependent variable (Y) food safety culture. The p-value for food safety climate is recorded as $p= 0.0001$, signifying the presence of a connection between food safety

climate and culture. Regarding the comparative analysis, the findings regarding food safety climate in this study align with those of a study conducted by [8], where a significant relationship was identified between climate and culture of food safety among 85 respondents.

Table 3: Chi-Square Analysis Output of Food Safety Climate (X₂) * Food Safety Culture (Y)

Chi-Square Tests of X ₂ *Y			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	151.537 ^a	6	.000
Likelihood Ratio	58.768	6	.000
Linear-by-Linear Association	39.904	1	.000
N of Valid Cases	136		

According to table 4, shows that the outcomes of the chi-square analysis conducted on the independent variable (X₃) food safety behaviour and the dependent variable (Y) food safety culture reveal a p-value of p= 0.0001, indicating a significant relationship between food safety behaviour and food safety culture. The findings pertaining to food safety behaviour in this study align with those of a study conducted by [9]. Enforcing appropriate food safety practices can promote the establishment of a strong food safety culture and consequently reduce the likelihood of outbreaks of foodborne illnesses. This study underscores a notable correlation between food safety behaviour and food safety culture.

Table 4: Chi-Square Analysis Output of Food Safety Behaviour (X₃) * Food Safety Culture (Y)

Chi-Square Tests of X ₃ *Y			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	107.622 ^a	6	.000
Likelihood Ratio	46.072	6	.000
Linear-by-Linear Association	54.334	1	.000
N of Valid Cases	136		

V. CONCLUSION

This study adheres to a reliable analysis scale. It establishes a connection between the independent and dependent variables, enabling employees to meet Aeon Food Processing Centre's objectives of prioritizing hygiene and food quality. The findings show a noteworthy correlation among knowledge, climate, behavior, and culture on food safety among

AFPC employees in Shah Alam, Selangor. Consequently, organizations can enhance awareness of prioritizing food safety culture among employees by identifying factors influencing the workplace's food safety culture, ensuring employees consistently prioritize hygiene, safety, and attentiveness when handling food.

The study involved 136 respondents from Aeon Food Processing Centre, with a majority of female workers and most respondents were in the 30 to 39 age range. Data analysis was performed using SPSS Version 26.0., employing ad-hoc analysis, hypothesis testing, and predictive analytics to ensure research problem accuracy. To check the reliability Cronbach's Alpha was utilized to determine a pilot study was conducted to validate questionnaire questions and assess respondent comprehension.

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