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**FOOD SAFETY CULTURE FOR SEA-FOOD PROCESSING
INDUSTRY IN YANGON**

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FOOD SAFETY CULTURE FOR SEA-FOOD PROCESSING
INDUSTRY IN YANGON

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This is to certify that the thesis entitled “**FOOD SAFETY CULTURE FOR SEA-FOOD PROCESSING INDUSTRY IN YANGON**” submitted as partial fulfillment towards the requirements for the degree of Executive Master of Development Studies has been witnessed by the Board of Examiners.

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ABSTRACT

This study aims to identify the regulatory environment for the fisheries sector and examine the food safety culture in the seafood processing industry in Yangon. A descriptive method was used, and primary data was collected through surveys and questionnaires to assess food processors' awareness of food safety culture in Yangon. The questionnaires were based on six factors: management systems, style and processes, teamwork, leadership, communication, and commitment including risk concern and environment. The study used a two-stage stratified random sampling method to survey 120 staff from six factories in Yangon. The study found that commitment, teamwork, and communication were crucial factors in developing a positive food safety culture. The lack of food safety culture can negatively impact economic development, limiting a country or company's ability to export its products to markets that demand high levels of safety and quality. Therefore, to promote trade and economic development, food safety is a key factor, and countries and companies should maintain and develop food safety culture to enhance the reputation of their food products.

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LIST OF ABBREVIATIONS

AEGFS:	Association of Southeast Asian Nations Expert Group on Food Safety
ASEAN:	Association of Southeast Asian Nations
COVID-19:	Coronavirus Disease 2019
DOF:	Department of Fisheries
DRD:	Department of Rural Development
EFSA:	European Food Safety Authority
EU:	European Union
FAO:	Food and Agriculture Organization
FDA:	Food and Drug Administration

FSMA:	Food Safety Modernization Act
GAD:	General Administration Department
GAP:	Good Agricultural Practices
GATT:	General Agreement on Tariffs and Trade
GHP:	Good Hygiene Practices
GMP:	Good Manufacturing Practices
ICU:	Inspection and Certification Unit
IQF:	Individual Quick Frozen
JAS:	Japanese Agricultural Standards
JETRO	Japan External Trade Organization.
K.S.A:	Kingdom of Saudi Arabia
LMX:	Leader-member exchange
MHLW:	Ministry of Health, Labor and Welfare
MoALI:	Ministry of Agriculture, Livestock and Irrigation
MoC:	Ministry of Commerce
MoHS:	Ministry of Health and Sports
MoST:	Ministry of Science and Technology
QCRS:	Quality Control and Research Section
SPS:	Sanitary and Phytosanitary Measures
SPSS:	Statistical Package for the Social Sciences
TBT:	Technical Barriers to Trade
UK:	United Kingdom
USA:	United States of America
U.S:	United States
WHO:	World Health Organization
WTO:	World Trade Organization

CHAPTER I

INTRODUCTION

1.1 Rationale of the Study

Viruses and bacteria which have been implicated in causing foodborne illness in fresh produce and raw or undercooked shellfish. Foodborne illness is a persistent problem and has caused morbidity and mortality worldwide. Any step in the chain between farm to plate can result in food contamination. It is crucial to think about food safety, especially while eating bivalve shellfish, which can present distinct food safety issues. Food quality, including safety, is a major concern facing the food industry today. Both consumer and food processor should have awareness about safety of their food.

The best production practices do not guarantee pathogen-free products. Foodborne diseases, which result from consuming food having contaminants of viruses, bacteria, parasites, chemicals, and allergens, have been a seemingly never-ending threat to public health and a significant hindrance to the development of socio-economy worldwide. The World Health Organization (WHO) states that nearly one out of every ten individuals globally become ill due to consuming food that is contaminated, resulting in 420,000 deaths annually.

In the case of seafood processing factories, the study of food safety culture is particularly important because seafood is highly susceptible to contamination and spoilage. This means that seafood processing factories must be vigilant in implementing proper food safety practices to prevent contamination and ensure that their products are safe for consumption. If a seafood processing factory experiences a destroyed container or a product recall due to food safety issues, it can have serious consequences. Customers may become ill or injured, leading to legal and financial liabilities for the company. Additionally, the company's reputation may be damaged, leading to a loss of business and revenue.

Economic development and food safety culture are also closely related in the seafood processing industry. The export of fishery products is an essential aspect of economic growth in many countries, and ensuring the safety of these products is critical to maintaining consumer trust and market access. There are some ways in which economic development and food safety culture intersect in the seafood processing industry:

Food safety culture can be a barrier to economic development: If a country or company does not have a strong food safety culture, it may struggle to export its products to markets that demand high levels of safety and quality. This can limit economic development opportunities and result in lost revenue. Economic development can support food safety culture: By providing resources and incentives for companies to invest in food safety, governments can help create a culture of safety in the seafood processing industry.

There are several challenges for promoting food safety culture in the fishery sector. Some of these challenges include:

Limited resources: Small and medium-sized fisheries businesses may have limited resources to invest in food safety culture. This can make it difficult to implement robust food safety practices, train employees, and ensure compliance with regulations.

Complexity of the supply chain: The fishery sector involves a complex supply chain that includes fishing vessels, processing plants, and retailers. Each stage of the supply chain presents unique challenges for ensuring food safety, and coordination and communication between stakeholders can be challenging.

Cultural factors: Different cultures may have different attitudes and practices related to food safety. It is important to consider cultural factors when promoting food safety culture in the fishery sector to ensure that messages and strategies are effective.

Lack of awareness: Some stakeholders may not be aware of the importance of food safety culture or may not fully understand the risks associated with unsafe food. This can make it challenging to gain buy-in and support for food safety culture initiatives.

Limited regulatory oversight: In some regions, there may be limited regulatory oversight of the fishery sector, which can make it difficult to enforce food safety regulations and ensure compliance with best practices

Overall, it is clear that economic development and food safety culture are closely intertwined in the seafood processing industry. To be successful in exporting fishery products, countries and companies must invest in both infrastructure and food safety culture to ensure that their products are safe, meet regulatory standards, and are trusted by consumers in the global marketplace.

A strong food safety culture is essential for ensuring that food products are safe for consumption and that the reputation of the company is protected. By studying the food safety culture of seafood processing factories, it is possible to identify areas where improvements can be made to prevent incidents like destroyed containers or product recalls. For example, if the company has a weak food safety culture, employees may not prioritize proper food handling practices or may not report potential food safety issues to management. In contrast, if the company has a strong food safety culture, employees will be more likely to prioritize food safety and report issues to management, leading to a safer and more reliable food production process. Additionally, a strong food safety culture can

help prevent future incidents, reducing the risk of legal and financial liabilities, as well as damage to the company's reputation.

Overall, the study of food safety culture is essential for seafood processing factories to ensure the safety and quality of their products, protect the company's reputation, and avoid legal and financial liabilities. This study focuses on food safety culture of sea food processing industry in Yangon. A food safety culture is the values of a business with regard to food safety. It means food business operator is committed to providing to safe food and staffs need to be aware their actions are critical.

1.2 Objective of the Study

The main objectives of this study are -

- To identify regulatory environment for fisheries sector.
- To examine the food safety culture in sea food processing industry.

1.3 Method of Study

It used descriptive method and based on primary and secondary data. The primary data were collected through survey with questionnaire for food processor's awareness of food-safety culture for sea food-processing industry in Yangon. In this study, two-stage stratified random sampling was used to carry out a sample survey. In the first stage, six factories were selected from 33 factories in Yangon Region. In the second stage, 120 respondents or staff were selected from six factories.

Based on the proposed sampling design, sample respondents from each factory were randomly taken in a number proportional to the stratum's size compared with the population. The analysis was used by five-point Likert Scale. Secondary data were from Ministry of Agriculture, Livestock and Irrigation, Ministry of Commerce, MPEA, Journals, websites and Newspapers.

1.4 Scope and Limitation of the Study

The study focuses on analyzing the food safety culture for the sea food processing industry in Myanmar. The scope of the study includes providing an overview of the fishery industry in Yangon and the food safety environment. The study period covers from August 2022 to November 2022. The study examines identifying the regulatory environment for the fisheries sector and examining the food safety culture in sea food processing industry for food-processors in Yangon. The study covers 6 sea food processing factories in Yangon and 120 sea food operators and processors in sea food processing factories in Yangon.

1.5 Organization of the Study

There are five chapters in this study. Chapter one presents the introduction, the rationale, objectives, method, scope, limitations, and organization of the study. Chapter two is the literature review including food safety culture, food safety standard and international trade for sea food processing industry. Chapter three states overview of sea food processing industry in Yangon. Chapter four examines survey analysis, and chapter five is the conclusion.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction and Definitions of Food Safety Culture

Food safety refers to the measures and practices that are put in place to ensure that food is free from harmful contaminants, such as bacteria, viruses, and other harmful substances that could cause illness or disease. It involves the control of various aspects of food production, including storage, handling, processing, and distribution, to prevent contamination and ensure that food is safe for consumption. On the other hand, food safety culture is the shared values, beliefs, and practices that are related to food safety within an organization or community. It refers to the way in which food safety is prioritized, communicated, and integrated into everyday practices and behaviors.

Food safety and food safety culture are closely related, but they focus on different aspects of safe food production. Food safety involves measures and practices that prevent contamination and ensure that food is safe for consumption, while food safety culture is the shared values, beliefs, and practices related to food safety within an organization or community. The measurement indicators used for assessing each concept are distinct, reflecting the different aspects of each concept. Food safety measurement indicators include testing, inspection, and analysis of food and food production facilities, while food safety culture measurement indicators include employee training and education, communication and teamwork evaluation, observation and assessment of employee behavior, and surveys or interviews to gauge employee attitudes and perceptions. A strong food safety culture is important for ensuring that safe practices are consistently followed, even when there are no immediate risks or threats. Overall, by fostering a strong food safety culture, organizations can help ensure safer food for consumers.

2.2 Indicators for Food Safety Culture Assessment

There are six indicators for organizational factors contributing to food safety cultures. They are Management systems, Style and Processes, Leadership, Team Work, Communication, Commitment with risk concern and Environment of safety culture are identified as applicable to studying food safety culture.

i. Management Systems, Style and Processes

The effective and efficient planning, staffing, organizing, directing, and control of organizational resources are key components of systems for managing food safety, which enable businesses to achieve their safety goals and protect consumers from foodborne illnesses. All the practices, operating processes, and written procedures that have an impact on food safety.

Consisting ideally of three levels are policy, procedures, and record forms. For smaller, less developed enterprises, systems can be built on HACCP (Hazard Analysis and Critical Control Points.) principles and basic hygiene standards. It is a food safety management system that is designed to identify and control potential hazards in the food production process. Only management engagement can indicate how actively supervisors and managers participate in activities that may have an impact on food safety and how much food handlers believe these individuals care about it. Participation of managers in food safety-related training, examinations, and other activities.

ii. Team Work

To ensure the production of safe and high-quality food products, it is essential to establish a culture of food safety that involves the cooperation of all members of an organization, from top-level management to line workers. Teamwork is the fundamental principle that involves working together towards a common objective, which is to produce safe and high-quality food products. Effective communication, collaboration, and cooperation among all individuals in the organization are necessary to achieve this goal. To create an efficient food safety team, it is crucial to define the roles and responsibilities of each team member, set expectations for their behavior and performance, and work towards a common objective. By working together, food safety teams can identify potential

hazards, prevent errors, and continuously improve the production of safe and high-quality food products. Hence, teamwork is a critical factor in establishing a strong food safety culture that guarantees the production of safe and high-quality food products.

iii. Leadership

Effective leadership is crucial for any organization as it leads to increased productivity, competitiveness, and engagement of employees. The terms "leadership" and "management" are often used interchangeably, but they refer to two different but related processes. Leadership is more about influencing people whilst management is about control and creating predictable results. However, in the field of food safety, management is commonly discussed while leadership is rarely addressed. Leadership is often observed but not fully understood. Leaders have distinct tasks and responsibilities based on their position in the organization. A vision for food safety with specific targets and requirements is crucial for effective leadership. The organization must have a foundational vision for leaders to align food handlers with the company's values and objectives.

iv. Communication

Communication plays a vital role in the functioning of any organization, and small businesses may have more informal communication channels. The level of communication within a company is indicative of its food safety culture, according to Yiannas (2009). Communication serves the purpose of transferring knowledge from one individual to another and can involve several stages. Employees require communication to understand their job duties and the goals of the company, including those related to food safety. Communication is a business process that involves sharing information within and outside of organizations. The quality of interaction between leaders and staff can be measured by Leader-Member Exchange (LMX), which can impact organizational culture (Flin and Yule, 2004). Managers may not communicate in the same way with every subordinate, and each subordinate may form a unique relationship with their boss over time (Bauer and Green, 1996).

v. Commitment including Risk Concern

Food safety commitment refers to the degree to which employees and supervisors in a food handling organization share similar values and beliefs concerning food safety. Those who remain committed to an organization do so due to they lack the ability to find alternative employment. In the context of food safety culture, a commitment with risk concern involves actively identifying and assessing potential food safety risks, developing strategies to mitigate those risks, and regularly monitoring and reviewing the effectiveness of those strategies to ensure ongoing improvement. Normative commitment refers to staying to work for a company despite peer pressure to leave. Those that stick with a company because they like it and want to stay there are said to have an affective commitment. When hiring new employees, it is possible to gauge each applicant's commitment to food safety during the interview process. However, it is more challenging to maintain this commitment across the entire workforce, particularly in times of economic difficulty and in the face of multiple financial imperatives.

vi. Environment of Food Safety Culture

Organizational circumstances can be influenced by a variety of factors, including physical elements such as the availability of hand washing stations and sufficient staff to carry out safety procedures, according to Clayton et al. (2002). This can have positive or negative effects on food safety practices. When there are adequate resources, food safety is supported, but if not, it can be perceived as less important. Perceived organizational support measures employees' perception of the level of support they receive from the company, including access to resources, their value, and safety precautions taken. Employees are more likely to engage in safety-related behaviors when they feel their company provides more support.

2.3 Overview of Food Safety culture for Fisheries Sector in other Selected Countries

Food safety culture refers to the values, beliefs, and practices within an organization or sector that influence the way food safety is prioritized and managed. Below is the overview of food safety culture for the fisheries sector in the other countries. They are-

EU: In 2017, the European Food Safety Authority (EFSA) published a report on the state of food safety culture in the EU. The report focused on the need for a culture of food safety in the entire food chain, including the fisheries sector. The report highlighted the importance of communication and training to promote food safety culture among all stakeholders, including fish farmers, processors, and retailers.

Japan: Ministry of Agriculture, Forestry and Fisheries (MAFF) has been promoting food safety culture in the fisheries sector since the 1990s. MAFF has developed a food safety culture framework that includes elements such as leadership, communication, and risk management. In recent years, MAFF has also been working to promote food safety culture among small and medium-sized fisheries businesses.

US: The US Food and Drug Administration (FDA) has also been promoting food safety culture in the fisheries sector. In 2015, the FDA launched a program called the Voluntary Qualified Importer Program (VQIP), which requires importers to have a food safety plan that includes a strong food safety culture. The FDA has also published guidance documents on how to develop a strong food safety culture in the seafood industry.

Based on the information, it is clear that food safety culture is a significant issue in the fisheries sector in countries such as the EU, Japan, the US. Governments and industry associations in these countries have been actively promoting food safety culture through various initiatives and programs, such as developing food safety culture frameworks, implementing regulations and guidelines, promoting communication and training, and encouraging the use of technology to improve food safety.

2.4 Food Safety Requirements for Sea Food Processing Industry in other Selected Countries

In EU, the European Food Safety Authority (EFSA) is responsible for assessing and managing risks to food safety. The EU has also established various regulations and standards, such as the General Food Law Regulation, to ensure that food products are safe for consumption. In addition, the EU has implemented a comprehensive traceability system that tracks food products from the farm to the table.

In Japan, the Ministry of Health, Labor and Welfare (MHLW) is responsible for ensuring the safety of food products. The MHLW has established the Food Safety Basic Law, which provides a legal framework for food safety management, and various guidelines and standards to regulate food products. Japan has also implemented a system for inspecting and certifying food products, known as the Japanese Agricultural Standards (JAS).

In US, the Food and Drug Administration (FDA) is responsible for ensuring the safety of food products. FDA has established various regulations and guidelines, such as the Food Safety Modernization Act (FSMA), which aims to prevent foodborne illness by improving the safety of the food supply chain. US also has a comprehensive food safety inspection system that monitors food products throughout the supply chain. Overall, food safety culture is taken seriously in the EU, Japan, and the US, and there are various regulations and efforts in place to ensure the safety of food products.

ASEAN countries: The Codex Alimentarius (in short: Codex) was first developed by FAO and WHO in 1963 and sets the standards for food safety globally. Its application in member states is voluntary, yet it is commonly adopted and guides the formulation of national legislation. Sanitary and phytosanitary measures, regulated through the WTO's agreements, apply the Codex Standards as well.

Myanmar joined the Codex Commission in 1997. The Codex ASEAN Expert Group on Food Safety (AEGFS) facilitates and coordinates food safety activities and ensures oversight in countries of the ASEAN region, including Myanmar. The ASEAN Food Safety Policy and Plan of Action has been developed and presented as part of the ASEAN Food Safety Improvement Plan. In 2003, the first global Codex Alimentarius, a

Code of Practice for Fish and Fishery Products was developed and has been updated regularly.

In 2004, One of the eleven sectors for integration that ASEAN leaders have prioritized is the fishing industry, and consequently a road map aiming for the desired integration was developed. Food safety issues are one of the four focus areas of the road map. Food safety issues pertain to SPS, TBT, compliance with international good practices and standards, testing facilities, recognition of testing results and certification.

Myanmar became an active member of the ASEAN member states' Codex Committee and boosted its efforts to develop policies, supervision and controlling mechanisms, and reinforcing inter-ministerial cooperation to ensure that a consistent and effective system is in place.

i. EUROPEAN UNION

To export fishery products to the European Union (EU), establishments must meet the overall hygiene standards outlined in Regulation (EC) 852/2004 and the specific hygiene requirements specified in Regulation (EC) 853/2004. Requirements for labeling frozen fishery products can be found in Annex II, section IV of Regulation (EC) 853/2004, and hygiene criteria for fishery product production are listed in Annex III section VIII, which includes hygiene requirements for fishing vessels, landing sites, and fishery product processing. In addition to these standards, other EU regulations also contain significant requirements for fishery products exported to the EU, such as microbial criteria in Regulation (EC) 2073/2005, maximum levels of environmental contaminants in Regulation (EC) 1881/2006, regulations for the use of food additives in Regulation (EC) 1333/2008, and labeling requirements for products intended for the final consumer in Regulation (EC) 1169/2011.

ii. JAPAN

Japanese government has regulations for the presence of agricultural chemical residues, including pesticides and veterinary medicine substances, in foods. The permissible substances and their corresponding maximum residue limits can be found on

the Database of Japanese Chemical Research Foundation. Residues of certain pesticides are allowed in aquatic products, but certain pharmacological substances derived from veterinary medicines are prohibited in all food, including fishery products. The Ministry of Health and Welfare in Japan has established regulations for the approval and use of food additives, and information on approved additives for products intended for export to Japan is published on the Japanese Chemical Research Foundation. JETRO provides a comprehensive guide for those who intend to export food to Japan, including information on the types of additives that are permitted to be used in fishery products.

iii. UNITED STATES OF AMERICA

To export fishery products to the US, establishments must comply with regulations on Good Manufacturing Practices and HACCP in seafood. Additives are classified as generally recognized as safe and have specific guidelines for use outlined in various sections of the US Code of Federal Regulations. The "Fish and Fishery Products Hazards and Controls Guidance" document provides comprehensive guidance on meeting US requirements, including microbial and chemical criteria outlined in Annex 5. A summary of these criteria can be found in the "Summary of Microbiological and Chemical Criteria" document.

iv. ASEAN GUIDELINES FOR SEAFOOD PROCESSING INDUSTRY

The ASEAN (Association of Southeast Asian Nations) has established a food safety standard for fishery products known as the ASEAN Guidelines on Food Safety for Fish and Fishery Products. These guidelines were developed to ensure the safety and quality of fish and fishery products in the ASEAN region, which includes Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. The guidelines cover a wide range of topics related to food safety, including hygiene and sanitation, quality assurance, hazard analysis and critical control points (HACCP), and traceability. They also provide recommendations for the handling, processing, and storage of fish and fishery products to ensure their safety and quality.

The ASEAN Guidelines for Fishery Products cover all aspects of the seafood supply chain, including harvesting, handling, processing, packaging, and distribution, to

ensure their safety and quality. The ASEAN Guidelines for Fishery Products provide requirements for hygiene and sanitation, hazard analysis and critical control points (HACCP), traceability, chemical and microbiological testing, and labeling to ensure the safety and quality of fishery products in the region.

These guidelines aim to ensure that fishery products are processed in facilities that meet strict hygiene and sanitation standards, that potential hazards are identified and controlled through HACCP-based food safety management systems, that fishery products are traceable throughout the supply chain, that they are regularly tested for contaminants, and that they are accurately labeled according to local regulations.

2.5 International Trade for Fishery Sector

The global trade in fisheries has given rise to a wide range of international concerns, including those relating to fisheries management and sustainability, fish industry subsidization, and technical solutions like rules governing food safety, labeling laws, and norms for quality and composition. Technical measures are turning into a particularly crucial issue for exports from developing countries as the traditional trade barriers, like tariffs and quantitative restrictions, have been partially liberalized by the General Agreement on Tariffs and Trade (GATT) and, more recently, the World Trade Organization (WTO). Technical measures are becoming more and more widespread, especially in industrialized nations. Techno measures can come in many different shapes and can be both risk- and non-risk-reducing. Sanitary and phytosanitary (SPS) controls are risk-reducing practices that aim to maintain the natural environment, plant and animal health, and food safety.

According to the definition of HACCP, it is "a method, or a set of operating systems, that identify the crucial points in the manufacturing system where risks may emerge for continuous monitoring of those critical points. As many tariffs in the USA and Japan offer comparatively high levels of protection, many people think that these countries' systems are not very clear. However, compared to the development of industrialized nations, the rate of trade liberalization in emerging nations is modest. Because of structural

rigidities and, more crucially, out of a concern of losing market share for their fish and fish products on both home and foreign markets, implementation has been gradual. The WTO has extended the deadline for developing nations (such as Bangladesh, India, and China) to completely comply with the aims of tariff reduction to 2005 in acknowledgment of the difficulties these nations face. The WTO has enhanced market access for nations that produce fish by establishing tariff bindings that guarantee legally protected market access in addition to lowering tariff barriers.

Two WTO agreements pertain to issues of food quality and safety: (a) the SPS Agreement and (b) the Agreement on Technical Barriers to Trade (TBT Agreement). Even though the SPS and TBT accords have similar goals, their scopes differ in terms of implementation and enforcement. Measures to safeguard the health or welfare of people, animals, or plants are covered by the SPS agreement. It attempts to safeguard the health of people and animals from pests, infections, and risks associated with foodborne hazards (Khan, 2002). The TBT agreement includes all technical rules, voluntary standards, and procedures and may include everything from automobile safety to energy-saving technology, the design of food containers, and the prevention of human disease (unless carried by plants or animals). Regulations pertaining to quality and packaging, nutrition claims and concerns, labeling standards, and TBT agreements are also covered (Musonda & Mbowe, 2002).

2.6 Review on Previous Studies

Griffith, C. J (2010), conducted a thesis of “The assessment of food safety Culture” and focused on the concept of an organizational culture that prioritizes food safety, which has recently gained more attention. The objective of the study was to identify a potential framework for evaluating an organization's food safety culture. By examining previous research on organizational culture and health and safety culture, the author identified six categories that could impact food safety performance: food safety management style, food safety leadership, food safety communication, food safety commitment, food safety environment, and risk perception. This study provides a practical guide to assessing food safety culture and promoting a positive culture of food safety, which could help companies

comply with hygiene standards and prevent incidents of foodborne illnesses. The paper also highlights the importance of food safety leadership, which is distinct from food safety management. This study offers a valuable tool for auditors, environmental health practitioners, and the food industry. By implementing the suggestions outlined in the paper, organizations can improve compliance with external hygiene standards and reduce the risk of food poisoning.

Ungku Zainal Abidin, U. F. (2013) examined a study of “Measuring food safety culture”. This study aimed to construct a measurement system to evaluate the culture of food safety has to be more aware of organizational culture and tested this scale in two types of onsite foodservice, namely hospitals and schools. Many researchers and practitioners have recently suggested that food safety has to be more aware of organizational culture Interventions more likely to increase food safety to be effective if greater attention towards how an organization does food safety is considered. A concept called “food safety culture” has been introduced to understand how an organization does food safety. Researchers have adapted measurements from other research fields to evaluate factors that shape the culture of organizational food safety yet, culture is context specific and it is not clear if these measurements are relevant for onsite foodservice, a specific segment of the foodservice industry.

A mixed method data collection approach was used and included two research phases. In phase one, four focus groups were conducted with foodservice employees, who held non-supervisory positions, to explore factors that influence safe food handling practices. Participants were asked during the focus groups to describe the workplace's factors that helped and prevented them from following food safety practices. Nine themes emerged and the findings were used in items' scale development: 1) leadership, 2) communication, 3) self-commitment, 4) management system and style, 5) environment support, 6) teamwork, 7) accountability, 8) work pressure, and 9) risk perceptions.

In to assess and validate the created measuring scale, foodservice personnel were surveyed during phase two. Six elements, including support from management and coworkers, communication, self-commitment, environment support, job pressure, and risk judgment, were retrieved from a total of 582 usable survey responses. The six-factor model of food safety culture demonstrated a satisfactory level of validity and reliability. Further

examination of the survey data revealed that employees' perceptions of specific aspects of the food safety culture varied significantly by gender, age group, years of experience in the foodservice industry, length of time spent at the current job, employment status, and whether or not they had received food safety training. According to their workplace management system, operation type, and size, significant disparities in employee attitudes were also discovered.

This study identified areas of the food safety culture's strength and those with the opportunity for improvement. The creation of treatments that support safe food handling procedures in on-site foodservices can be guided by significant disparities in employees' views. The implementation of the food safety culture measure in different kinds of site foodservice operations needs to be confirmed and validated through additional study.

Jespersen, L. (2014) conducted a thesis for a study of "Measuring Food Safety Culture in Food Manufacturing. This introduces five competence areas that food makers ought to be aware of and open to being evaluated against in order to understand the strengths and weaknesses of their food safety culture. The theories underlying the capacity areas include those related to social cognitive science, food science, and organizational culture. The study advises adopting a food safety maturity scale to define, assess, and forecast performance within each competency area. Leading food safety practitioners from the U.S, Canada, and the UK provided content input and helped analyze the results when the capability areas and maturity metrics were evaluated in a Canadian food manufacturing company. Two measurements were made to assess the strength of the food safety culture at the test company: strength in comparison to performance requirements and strength in comparison to a behavior-based maturity model. For eight distinct plants, the test revealed agreement between the two metrics.

Nyarugwe, S. P. (2020) conducted a thesis for a study of "Influence of food safety culture on food handler behavior and food safety performance of food processing organizations". Although food safety procedures exist, outbreaks still occur, indicating limitations in the current approach. Therefore, the study aimed to identify the factors that impact food safety culture through a methodical review of national, organizational, and safety culture literature using a systems approach. The analysis showed that the culture of food safety is complex and involves numerous interrelated factors, such as national culture,

hierarchical levels, underlying mechanisms, food risks, and context factors. Other factors that influence food safety culture include organizational and administrative characteristics, technical facilities or resources, employee characteristics, group characteristics, essential food safety management system (FSMS) characteristics, and actual food safety performance. To study food safety culture, a systems approach, quantifiable indicators, categorization systems, and multiple methodologies are required to increase research validity. The identified factors provide a solid foundation and a starting point for future food safety culture research. Overall, this study suggests that addressing food safety culture may be a key factor in improving food safety performance and reducing foodborne outbreaks.

Van Der Linde, K. (2021) conducted "An evaluation of food safety culture in food manufacturing organizations of South Africa". This research examined four South African food processing companies of different sizes and food safety cultures, and discussed the factors that influence organizational culture. The researchers used a cross-sectional, descriptive, and comparative approach, and developed a Food Safety and Quality Culture Survey to evaluate the organizations' food safety culture. The survey contained 23 food safety culture dimensions, divided into five categories called the five P's: People, Product, Process, Purpose, and Premises. The survey was conducted on 739 employees at the four companies' locations. This methodology enabled the researchers to identify the strengths and weaknesses of the companies, the specific factors that affect their food safety culture, and their overall food safety culture, which was generally considered healthy based on the survey results.

CHAPTER III

OVERVIEW OF FISHERY PROCESSING INDUSTRY IN MYANMAR

3.1 Food Safety Regulatory Environment in Myanmar

Basic elements of a food safety and control system in Myanmar started as early as 1927. An inspection system was established in the past. It focused, predominantly, on providing health recommendations for local food manufacturing plants. However, these recommendations were poorly enforced. Furthermore, although controls on imports and the control and certification of exports were in place, they were inadequate for the given context and therefore not effective. There are many different parties involved in ensuring the quality and safety of food in Myanmar, as there are in many other countries.

Public sector institutions responsible for food safety and controlling are mainly Ministry of Agriculture, Livestock and Irrigation (MoALI), Ministry of Health and Sports (MoHS), Ministry of Commerce (MoC) and the Ministry of Science and Technology (MoST), City Development Committees, supported by their executing Departments at the National and Sub-national level. External influencers are buyers and possibly accreditation and standard setting agencies, but the latter two are appear less prominent in Myanmar.

The private sector plays an important role as it carries responsibility for ensuring full compliance with regulations and best practices associated with food processing, distribution and marketing, including consumer information (for example through proper labeling and creating awareness among consumers). Civil society organizations are important actors supporting the interest of the consumers, ensuring transparency, protecting consumers and creating awareness. National Health Laboratory (NHL) and its Food and Drug Control Section under MoALI Ministry of Agriculture, Livestock and Irrigation) has been established to generate more effective supervision throughout the country. Certificates for produced and imported food products' food safety and suitability for human consumption are specified and permitted by the NHL. Such certificates for food safety are compulsory for all food manufactured in Myanmar.

3.2 Food Safety Regulatory Authority for Fisheries Sector in Myanmar

DOF is the primary agency responsible for fisheries management and collection of fish production related statistics. DOF is one of the 11 departments within the MOALI that was created in 2016 by merging the Ministry of Livestock, Fisheries and Rural Development with the MOALI. DOF is administered by 365 officers and 2,104 staff - a total number of 2,469 people working at the central, regional, district, and township levels.

The Myanmar Marine Fisheries Law 1990, empowers QCRS to order the examination or sampling of products if there is reason to believe that fish or fishery products are in non-compliance with relevant legislation, to search premises and records if there is reason to believe that fish or fishery products are in non-compliance with relevant legislation, to refrain from signing Health Certificates and / or withdraw the Approval status of an establishment, vessel or other component part of the supply chain if it is reasonably concluded that fish or fishery products are in non-compliance with relevant legislation and that product may be injurious to health, to declare a production halt if it is determined that consumer safety is in danger.

Fisheries management and food safety in Myanmar are under the authority of the Myanmar Department of Fisheries (DoF). DoF has four divisions: capture fisheries, aquaculture, research, and administration. The Department of Fisheries and Aquaculture (DoF) has a wide variety of responsibilities and functions as a regulatory authority to ensure that fisheries and aquaculture are conducted in accordance with applicable laws and regulations.

Inspections, license issuance, performance evaluation and implementation of standards relevant to fishing equipment, sites and goods are some of its primary responsibilities, which are geared toward commercial production, trade and export. The primary responsibility of DoF, in addition to carrying out inspections and managing the production and trade of fingerlings, is to inform farmers, processors, and neighborhood organizations involved in processing and marketing, and to customers.

The Inspection and Certification Unit (ICU) of the Quality Control and Research Section (QCRS) of Department of Fisheries (DOF), Ministry of Agriculture, Livestock and

Irrigation is the National Competent Authority (QCRS) designated to verify that fish and fishery products aimed for export from Myanmar complies with relevant food safety regulatory requirements in Myanmar and in the relevant export markets. These verification activities are hereafter called official controls. Only employees directly appointed under QCRS or others carry out official controls.

All businesses authorized to produce or store fisheries goods for export from Myanmar are subject to routine inspection and audit. Along with the degree of compliance and the risk to food safety posed by the products, risk determines number of times audits and inspections are conducted annually for each operator. A list of businesses authorized to export is kept up to date by QCRS. Licensed processing factories should maintain their facilities in good hygienic conditions and apply HACCP based food safety management systems adequate to ensure efficient control of hazards related with the operation and products.

3.3 Institutional Framework for Fisheries Sector in Myanmar

The DOF is organized into four divisions dealing with (a) capture fisheries, (b) aquaculture, (c) research and development, and (d) administration. Only 0.8 percent of the recurrent budget of MOALI is allocated to the DOF (Tezzo et al. 2018). Partly as a result, the DOF capacity to conduct research and extension, or otherwise engage substantively in the development of the sector, is extremely limited.

The DOF operates three training centers for the promotion of knowledge dissemination and capacity building for DOF staff, fishers, and fish farmers. These are as follows: (a) Institute of Fisheries Technology, Yangon; (b) Upper Myanmar Fisheries Training Center, Sagaing; and (c) Pyapon Fisheries Training Center, Ayeyarwady. The facilities deliver training to private sector stakeholders and DOF staff, but the number of courses and trainees is limited, and it is unclear whether course content is of practical use to those trained. There is little, if any, other government aquaculture extension and research. 19 53. Other government departments involved in fisheries management and rural development include the following: • Department of Rural Development (DRD) was established within MOALI to focus on assistance for rural areas—rural development committees established at the township level DRD could assist in ecomanagement but the

coordination between the DOF and DRD would need to be improved. • General Administration Department (GAD). Under the 2008 Constitution, the GAD has custodial rights to natural resources on behalf of the State and is obligated by law to maximize their value to the nation's citizens. For decades, however, the value maximized has been extractive and not necessarily for all citizens of Myanmar. This poses substantial challenges to both equitable benefits and sustainability in Myanmar and highlights the need to reform the GAD. This need is recognized by the government, which plans to move the GAD under civilian control by transferring it out of the Ministry of Home Affairs to the Ministry of Union Government.

3.4 Export of Fish and Fisheries Products in Myanmar

There are two ways to trade such as normal and border trade. Normal Trade refers to all types of trades that are considered standard and routine, and does not include trades such as special crossings, those that occur before or after the normal trading hours, or those involving overseas transactions. Additionally, trades that involve the exercise of options over Shares or other types of trades that the Directors deem to be outside the scope of normal trading in Shares are also excluded. Border trade can be defined as the exchange of goods and services between different jurisdictions that share a common border. It should be noted that this type of trade falls under the larger category of normal trade, which involves the regular export and import activities carried out within the legal and logistical frameworks of nations and smaller jurisdictions.

Myanmar fishery exports included freshwater and marine fish, prawn and other marine products. The major export items consisted of sea water shrimp, sea water fish (frozen), sea water fish (chilled), dried fish, lobster, threadfin and live fish. Other marine products were lobster, squid, cattle fish, crab, sea cucumber, jelly and fish fillet. Most of the exportable fishery products normally come from marine fisheries. Most of the fishery products were block type (frozen with water) and Individual Quick Frozen (IQF) type.

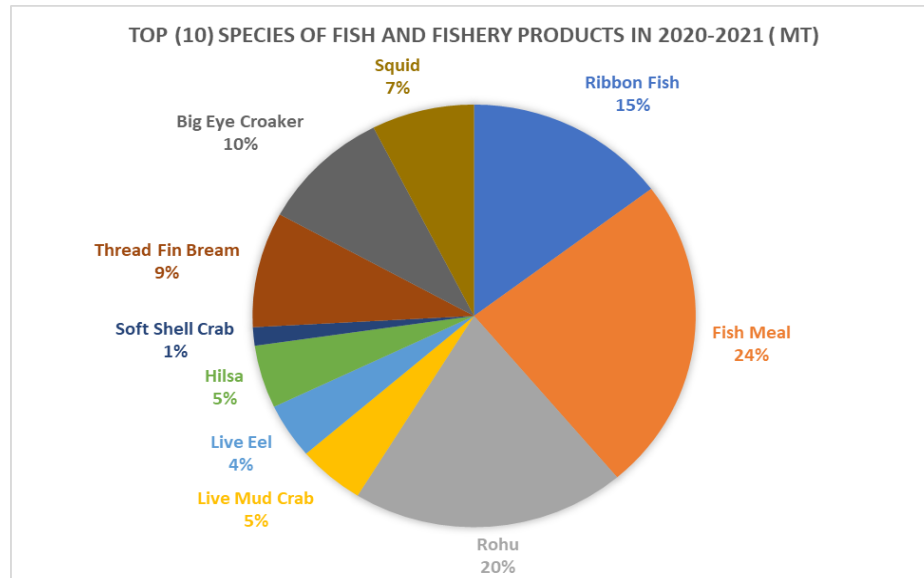
According to Department of Fishery records, about 311 species of fish were processed and exported to seafood market. Among these species, most popular species

were fishes such as rohu, ayer, gowl, hilsa, pam gush, mirka or cat fish, calta, marigal, yellow croaker, barramundi-fillet, squid, pomfret, red snapper, eel, crab and prawns such as fresh water prawn, tiger, pink, white. The semi processed wet, dried fish and shrimp, fillets and fish balls are exported to Asia, Middle East, Europe, Canada and Australia. The main exported culture species of freshwater fish were rohu, mirgal, katla, pomgush (filled), tilapia, etc. The main exported species are Fresh water fish capture and culture, Sea water fish, sea water prawn (capture, culture), (other -live) and other species.

There are a number of options for transporting the fish and fisheries products to the market, including auction, wholesale and retail sales, as well as processing and exportation. At Shwe Yaw Hein and Annawa Aung in Yangon are the two EU-approved jetty locations. The Shwe Yaw Hein jetty serves as the primary source of raw materials for export and can accommodate over 180 vessels while adhering to GMPs and HACCPs.

There are 368 sea food processing firms in Myanmar and some are joint venture company and produce raw and value added. These companies export to EU, Japan, US, Vietnam, China and some countries. According to export market requirements, they follow the general hygiene requirement and specific requirements in Technical Regulation 2/2018. There are 10 border check point such as Myawaddy, Kawthaung, Sittwe, Muse, Maungtaw, Tamue, Chin Shwe Haw, Htee Kee and Ree. Moreover, there are 11 countries for fish and fishery products export (live) in 2020-2021 are China, Singapore, Thailand, Korea, Hong Kong, Malaysia, Japan, Indonesia, Vietnam, Taiwan and India.

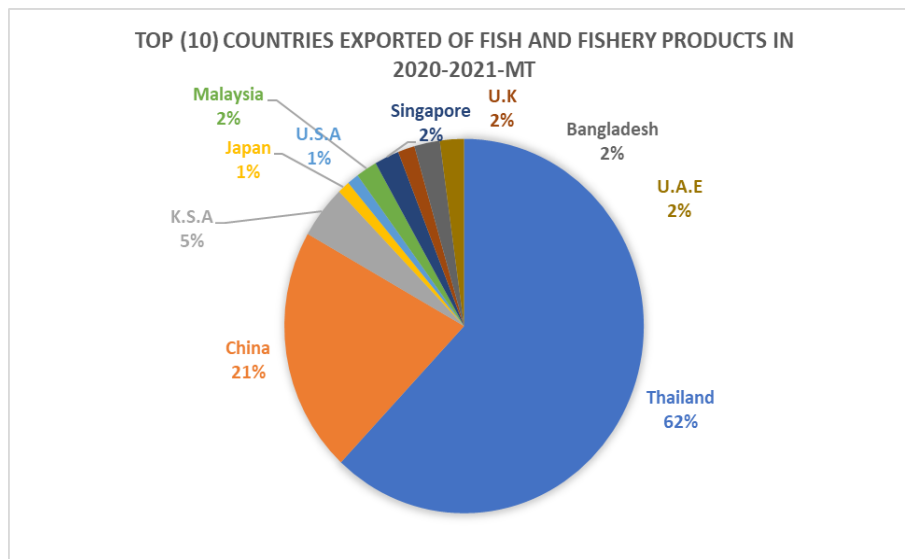
Figure (3.1) Top 10 Species of Fish and Fishery Products in 2020-2021 (Metric Ton)



Source: Fishery Export Statistics 2020-2021

According to figure 3.1 and 3.2, the most exported species, fish meal, is mainly exported to Thailand, which is Myanmar's largest trading partner for fish and fishery products. Rohu, which is the second most exported species, is mainly exported to Thailand, China, and K.S.A. Ribbon fish, the third most exported species, is mainly exported to China, K.S.A, and Singapore. Big eye croaker is mainly exported to Thailand and China. Live eel is mainly exported to Japan, while live mud crab is mainly exported to Thailand, Singapore, and China. Soft-shell crab is mainly exported to Thailand and Singapore.

Figure (3.2) Top 10 Countries Exported of Fish and Fishery Products in 2020-2021 (Metric Ton).



Source: Fishery Export Statistics 2020-2021

Based on the above data in terms of major exporting countries, Thailand is the largest market for Myanmar's fish and fisheries products, accounting for 62% of exports, followed by China at 21%. The remaining 17% of exports were shared by several countries including K.S.A, Singapore, U.K, Bangladesh, U.A.E, Japan, Malaysia, and U.S.A. Overall, Myanmar's fishery industry is largely dependent on exports to neighboring countries, particularly Thailand and China.

Table 3.3 Total Exports of Fish and Fishery Products (Metric Ton)

Year	Fish (MT)	Prawn (MT)	Other Species(MT)	Total (MT)
2010-2011	273043.745	19142.905	81706.061	373892.711
2011-2012	283688.763	17995.027	85297.534	386981.324
2012-2013	266464.973	17267.930	93112.786	376845.689
2013-2014	237142.318	16508.966	91616.079	345267.363
2014-2015	225974.926	17527.328	94788.332	338290.586
2015-2016	246970.933	13673.488	108326.475	368970.896
2016-2017	290580.039	13082.461	135044.005	438706.505
2017-2018	394135.792	15905.444	158186.091	568227.327
2018-2019				
April -September	147802.627	7206.925	66064.918	221074.470
2018-2019	382135.956	13979.309	187561.089	583676.354
2019-2020	427969.184	13965.216	227750.891	669685.291
2020-2021	379993.079	11882.664	166350.394	558226.137

Source – Fishery Export Statistics 2020-2021

According to table (3.3), country export was 669685.291 metric ton in 2019-2020 as highest as Myanmar has more opportunities to export in 2019-2020. However, Export was decrease to 558226.137 in 2020-2021 because COVID-19 pandemic has a significant impact on global seafood markets due to lockdowns, travel restrictions, and other measures implemented to control the spread of the virus may have disrupted supply chains and reduced demand for prawns in importing countries.

CHAPTER IV

SURVEY ANALYSIS

4.1 Research Design

There are 33 sea food processing factories that can export to European countries. 6 seafood processing factories such as Crab World, Twin Brother, Annawa Davi, Golden Bay, Universal and ANN among 33 which are located in Yangon and 120 food processors and operators were asked for awareness of seafood safety culture. It focuses on specific service quality attributes, which consist of the seven parts of seafood safety culture. It consists of the demographic characteristics of food processors or operators, the management system, style, and process, teamwork, leadership, communication, commitment, and working environment. Data were collected by using a questionnaire, the most common tool to evaluate overall awareness of sea food processing in the Yangon region.

4.1.1 Sample Design

These studies analyzed the food safety culture of seafood processing factories with primary data and secondary data obtained from the Department of Fisheries Statistics. The primary data used to analyze the awareness of food processors or food operators was collected from August to November 2022. The survey was primarily conducted during the weekdays, except for the weekend. Using quantitative data analysis and to measure five-point Likert Scale for food processors or operator's awareness and practices. The survey result shows descriptive methods, frequency statistics and percentage, graphs, reliability for food safety culture of sea food processing in Yangon.

This survey had a total of 63 questions covering the following seven parts: Part one is about the demographic characteristics of food processors or operators and their workplace; part two is about management system, style, and process; part three presents the teamwork of an organization; part four describes leadership; part five is about communication; part six is about commitment; and part seven represents the environment. 120 food processors of operators were asked for their perception on these services measuring on a Five-Point Likert Scale ranging from 1 to 5 (where 1 for strongly disagree,

2 for disagree, 3 for neither agree nor disagree (Neither), 4 for agree and 5 for strongly agree). This study focused on 120 respondents with 68 questions, including seven parts about their perceptions of food safety.

4.1.2 Questionnaire Design

The questionnaire was divided into seven parts. Part one is about the demographic characteristics of food operators, and it has 11 questions whose items correspond to gender, age, educational level, position, total services, department, happiness, etc. Part two is the management system, style, and process including (7) questions with beneficial of training/education, objectives and goals, working condition between departments, incentive, regulation, standard, motivation of management of systems, style and process of food handlers.

Part three is team work of seafood processing factories including (6) questions with supportive of coworkers, priority, guidance, behavior, effort of food processors and operator. Part four is about leadership of food operators including (7) questions with involvement, following the regulation, demonstration, ensuring of procedure, understanding of practices and inspire of management.

Part five is about communication between food operator and processor including (6) questions indicating with freedom of speak, encouragement of providing suggestion, sharing information, communication with accurate manner, correcting staff with respect. Part six is about commitment for Food Safety from food operator and processor and including major concern, essential of regulation, adherence of regulation and following of protocols. Part seven is about working environment and consist of handling method, availability of equipment, sufficient quality of facilities, implementing by using high quality and enough resources availability.

Respondents were asked to rate their awareness to the item of overall awareness and practices. Five Point Likert- Scale rate ranged from strongly disagree, disagree, neither agree nor disagree (neutral), agree and strongly agree. This research uses descriptive analysis and graph, percentage and their correlation are used in this study. The data represents awareness with food safety culture in sea food processing factories in Yangon.

4.1.3 Target Population

The target population of this study is the age of 18 and above who working the seafood processing factories in Yangon region. The age group of 18 to 65 years old was chosen since individuals in this group typically commute and most likely are working sea food processing factories. Most food operators have typically attended the training.

4.1.4 Sample Size Determination

In this study, two-stage stratified random sampling was used to carry out a sample survey. In the first stage, six factories were selected from 33 factories in Yangon Region. In the second stage, 120 respondents or staff were selected from six factories. In line with the proposed sampling design, sample respondents from each factory were randomly taken in a number proportional to the stratum's size compared with the population. The required minimum sample size was calculated using the following formula (Cochran, 1977).

The staff were 1210 and the selected staff were 120. Since sample size exceeds 5% of the population ($1210 \times 0.05 = 61$ respondents), the final sample size was calculated. Therefore, the final sample size becomes 102.

In many education and social research surveys, the response rates are normally well below 100%. In this study, the response rate was assumed 95%. The minimum sample size was ($102 \div 0.85 = 120$). Therefore, the required minimum sample size was 120 staff.

Table (4.1) Sample Size Allocation

No	Factories	Number of Staff	Number of Selected Staff
1	Crab World	150	15
2	Twin Brother	200	20
3	Annawa Davi	150	15
4	Golden Bay	350	34
5	Universal	300	30
6	ANN	60	6
Total		1210	120

4.2 Reliability Analysis

When measurements are performed by numerous times, a scale's reliability is the degree to which the results are consistent. Reliability analysis is the degree to which a test consistently measures whatever it measures. Reliability in the context of repeated measurements refers to the consistency of the results. A reliability analysis determines the extent to which a test accurately measures what it is intended to measure, consistently over time. The reliability analysis determines the percentage of a systematic variance in a scale by analyzing the correlation between the results from various scale administrations. As a result, if the correlation in the reliability analysis is high, the scale produces reliable outcomes and is thus reliable. If the alpha is 0.70 or greater, the instrument is regarded as being reliable.

Table (4.2) Cronbach Alpha Analysis

No.	Variable	No. of item	Cronbach Alpha
1	Management systems, style and processes	7	0.616
2	Team Work	7	0.895
3	Leadership	7	0.662
4	Communication	6	0.745
5	Commitment	8	0.861
6	Working Environment	7	0.831

Source: Survey Data (August -November, 2022)

Table (4.2) shows that internal consistency is measured by Cronbach Alpha, which indicates how closely linked a group of items are to one another. The lowest related range is 0.65 and 0.66 which are near 0.7. They are acceptable of 0.700 because a minimum correlation coefficient of 0.7 or more is acceptable. The Cronbach Alpha value of Management systems, style and processes is with 0.616, Team Work with 0.895, Leadership with 0.662, Communication with 0.745, Commitment with 0.861, Working Environment with 0.831. The Cronbach Alphas' value for all variable are at 0.7 and more except Management system, style and process and Leadership. So that this result is acceptable.

4.3 Data Analysis

The aim of the research is to measure overall of agreement of the related food safety culture that influence the most. Questionnaire is the most common tool to investigate the similar aim. The data that were collected will be analyzed degree of agreement. Statistical tools (SPSS) were used for data input and analysis. Data analysis was conducted in two steps; first statistics analysis was undertaken to measure frequency and percentage. The Second is overall agreement analysis was performed with the aim to measure five variables. Data analysis were carried out and is to measure all data collected to investigate food safety

culture for sea food processing in Yangon city. The key concepts in quantitative methods are reliability, overall agreed.

Data was collected from the reliable sources, from respondents who working in sea food processing. Survey question were made based on literature review. Reliability refers to the consistency of a measure. SPSS software offers “reliability analysis statistics”, Reliability analysis allows to study the properties of measurement scales and the item that make them up. The reliability analysis procedure calculates a number of commonly used measures of scale reliability and also provides information about the relationships between individual items in the scale.

4.4 Demographic Characteristics of Sea Food Operators

Table (4.3) Demographic Characteristics of Respondents

No	Name	Particular	Frequency	Percentage (%)
1.	Gender	"Female"	70	58.3
		"Male"	50	41.7
		Total	120	100.0
2.	Age	"18-25"	43	35.8
		"26-35"	45	37.5
		"36-45"	21	17.5
		46-55"	9	7.5
		"56-65"	2	1.7
		Total	120	100.0
3.	Educational Level	"Primary"	14	11.7
		"Middle"	25	20.8
		"High School"	34	28.3
		"Diploma"	4	3.3
		"undergraduate"	13	10.8
		"Graduate"	29	24.2
		"Master"	1	.8
		Total	120	100.0
4.	Position	"Normal"	61	50.8
		"Leader"	20	16.7
		"Supervisor"	28	23.3
		"Manager"	11	9.2
		Total	120	100.0
5.	Total services	"one year and below"	27	22.5
		"Two to three year"	32	26.7
		"Four to five year"	20	16.7

		"six to ten year"	27	22.5
		"Above ten year"	14	11.7
Total			120	100.0
6.	Department	"Production"	68	56.7
		"QC and QA"	25	20.8
		"Admin and HR"	7	5.8
		"Export and Shipping"	7	5.8
		"Finance"	8	6.7
		"Others"	5	4.2
Total			120	100.0
7.	Satisfied with Current Job	Yes	112	93.3
		No	8	6.7
Total			120	100.0
8.	Types of export products	"Fish"	57	47.5
		"Prawn"	1	.8
		"Value-added"	44	36.7
		"Others"	18	15.0
Total			120	100.0
9.	Source	"Wild catch"	97	80.8
		"Aquaculture"	23	19.2
Total			120	100.0
10.	Name of Certification	"HACCP (By DOF)"	3	2.5
		"HACCP"	77	64.2
		FSSC22000	20	16.7
		BRC	20	16.7
Total			120	100.0
11.	Training	Training	117	97.5
		No Training	3	2.5
Total			120	100.0

Source: Survey Data (August -November, 2022)

Table 4.3 shows the demographic characteristics of food operators in the seafood processing industry in the Yangon region. The questionnaire's first part collected demographic data from six seafood processing plants. These characteristics offer valuable insights into the industry. The predominance of female respondents, with 58.3%, implies that the industry employs a significant number of women. Additionally, the high percentage of respondents between the ages of 26 and 35, at 37.5%, which is the most productive age range, indicates a relatively young workforce.

Regarding education, the majority of respondents, with 28.3%, had a high school

education, implying that the industry does not demand advanced educational levels. This highlights the necessity of industry-specific training programs to enhance the workers' knowledge and skills.

Most respondents, at 56.7%, worked in the production department and had been employed for two to three years, with 26.7%, suggesting a stable workforce with job experience. Furthermore, 93.3% of respondents reported satisfaction with their current job, indicating a positive working environment in the industry.

With regards to exports and raw materials, the majority of respondents, with 47.5%, worked in fish exporting processing and used wild catch, accounting for 80.8% of raw material sources, indicating the significance of sustainable fishing practices in the seafood industry in Yangon.

Lastly, the majority of respondents worked in HACCP certified processing plants, at 64.2%, that were certified by external accreditation, indicating the industry's commitment to ensuring food safety standards. The high percentage of respondents, at 97.5%, who received training, this commit to continuous improvement and upskilling of the workforce.

4.5 Descriptive Analysis of Food Safety Culture

Six indicators can be measured by food safety culture such as food operators of Management systems, style and processes, team work, leadership, communication, commitments with risk concern and environments.

4.5.1 Management systems, style and processes

Food operator of Management systems, style and processes can be measured by training, objectives and policy, departmental cooperation, Incentives, Assessment, Standard and positive feedback.

Table (4.4) Awareness on Management Systems, Style and Processes

No.	Statements	Mean	Std. Deviation
Q1	The management-provided food safety education and training is beneficial in helping me improve my procedures.	4.32	.470
Q2	In my sector, we have objectives, goals that helps us to improve conformity and reduce FS risk.	4.52	.518
Q3	In order to guarantee the safety of the food served, departments work together effectively.	4.44	.658
Q4	Employees who adhere to company policies regarding safe food handling receive incentives,	3.78	.864
Q5	My annual evaluation is based on how well I adhere to food safety regulations.	4.27	.635
Q6	My supervisors motivate me to adhere to proper food handling procedures.	4.32	.550
Q7	I get feedback if I don't adhere to food safety standards of conduct	4.49	.580
Over all mean		4.31	0.6107

Source: Survey Data (August -November, 2022)

As above table 4.4 shown as overall mean value is 4.3. It means that most of the respondents agreed the awareness of management system, style and process is essential for food safety culture because management can provide food safety education and training that reducing food safety risk. Moreover, goal and objectives of the sea food industry is encouraged food safety culture. Then attractive incentive can promote to obey rules and regulation of food safety. Evaluation of food safety regulation can support Food Safety culture. As last, receiving of positive feedback can promote food safety culture. The achievement of an effective and efficient way of organizational food safety culture is based on management of system, style and process of organization.

4.5.2 Food Operators' Team Work

Food operator of team work can be measured by helping each other, priority, guidance with procedure, obey the rules and discipline, guarantee, believing with food safety and changing behavior with standard.

Table (4.5) Awareness on Food Operator's Team Work

No.	Statements	Mean	Std. Deviation
Q1	Coworkers support each other in maintaining a safe workplace regarding food safety concerns.	4.46	.500
Q2	Colleagues are fully committed to prioritizing food safety in the organization and put in dedicated effort towards it.	4.42	.560
Q3	Colleagues within the sector provide guidance based on food safety norms and procedures to address unsafe behavior.	4.40	.541
Q4	Colleagues from different sectors are always willing to help to ensure food safety standards are met.	4.42	.617
Q5	Colleagues within the department exhibit cooperative behavior towards the common goal of ensuring food safety.	4.45	.620
Q6	Colleagues are highly respected and trusted for their dedication and effort in ensuring food safety within the company.	4.52	.579
Q7	Colleagues within the sector provide guidance based on established food safety norms and procedures when correcting unsafe behavior.	4.45	.532
Over all mean		4.45	0.5641

Source: Survey Data (August -November, 2022)

As above table 4.5 shown as overall mean value is 4.45. It means that the majority of respondents agreed that teamwork is important to food safety culture because it allows employees to support one another in the workplace. Ensures that food safety is a priority for the food operator. Food operator can guide each other for norms and procedure to prevent unsafe behavior. In order to guarantee food safety, colleagues in the same sector

or not can assist each other. By following food safety practices, a person working in the same place or not can believe that their efforts are excellent to ensure food safety. As a result, working as a team for food safety can reduce unsafe behavior in order to avoid risk.

4.5.3 Food Operators' Leadership

Food operator of leadership can be measured by motivation, management by obey the rules, supervisors' leading action, regular monitoring or auditing, clear vision, motivate Food Safety culture and value.

Table (4.6) Awareness on Food Safety Leadership

No.	Statements	Mean	Std. Deviation
Q1	Because of my supervisor's active involvement in ensuring that proper food handling is being practiced,	4.50	.580
Q2	Supervisor adheres strictly to all regulations pertaining to food safety.	4.45	.592
Q3	Managers' actions demonstrate that customers' safety when it comes to food is a high priority.	4.53	.565
Q4	My manager regularly monitors employees to ensure that they are following proper food safety handling procedures.	4.50	.550
Q5	The significance of food safety management practices is well understood by the management of my company	4.25	.523
Q6	The leadership within my company motivates me in regards to the importance of adhering to food safety practices.	4.21	.548
Q7	The leadership of my company considers food safety to be an essential value that is not up for negotiation.	3.65	1.164
Over all mean		4.29	0.646

Source: Survey Data (August -November, 2022)

As shown in Table 4.6, the overall mean value for leadership is 4.29. This reveals that the majority of respondents agreed that supervisors' activities on proper and correct

food handling practices can ensure the safety of food. Besides, supervisors can lead others to adhere to food safety standards by following regulations to maintain food safety. Supervisors or managers can illustrate food safety culture as a priority by regularly monitoring employees to ensure that they are following proper food safety handling procedures. Company leadership can inspire employees about the importance of food safety practices. The roles and responsibilities of leaders may differ depending on their position within an organization, but leadership can influence and play an important role in aligning food safety goals. Furthermore, a clear and deep understanding of the goal of food safety by management makes food safety significant. When company leadership views food safety as a high priority and giving as a positive feedback that makes the company has a strong commitment to ensuring the safety. Showing that food safety is not a negotiable value by leaders is important in building a strong food safety culture within an organization. This indicates that passionate leadership on food safety is likely to promote a culture of safety and compliance within the company. Therefore, organizational leaders can make significant contributions to food safety practices by valuing them and making it clear that food safety is not negotiable.

4.5.4 Food Operators' Communication

Food operator of communication can be measured by Free to Talk, Clear understanding, Positive feedback, Sharing information and Proper way.

Table (4.7) Awareness on Food Operator Communication

No.	Statements	Mean	Std. Deviation
Q1	I have the freedom to speak out if I see something that could jeopardize the safety of food.	4.47	.608
Q2	The risks related with poor food handling techniques are clearly understood.	4.52	.594
Q3	Encouragement to provide suggestions for better food safety measures has been received positively.	4.02	.756
Q4	Food safety information is shared by all supervisors.	4.51	.534
Q5	Updated Food safety standards and regulations are communicated in a timely and accurate manner by supervisors	4.46	.548
Q6	While correcting staff for food-handling infractions, my manager treats them with utmost respect.	4.48	.579
	Over all mean	4.41	0.6031

Source: Survey Data (August -November, 2022)

As shown in Table 4.7, the overall mean value is 4.41. This indicates that the majority of respondents agreed that communication is essential to a food safety culture, and there must be a practice of freely reporting any unsafe activities that could affect food safety. Staff who handle food should understand the risks related to food handling techniques. Sharing positive feedback can improve food safety practices. An important aspect is that management arranges for timely and accurate communication of any updated food safety standards and regulations. Moreover, supervisors should share any relevant food safety information to maintain food safety. Correcting issues should be done respectfully to staff. Without communication, people would not know their roles and

duties, procedures, guidance, or the organization’s objectives and goals concerning food safety. Based on this, it is clear that communication is essential to the functioning of an organization to maintain updated food safety practices.

4.5.5 Food Operators’ Commitment including Risk Concern

Food operator of commitment can be measured by high priority, fully trust, full responsibilities, fully commitment, follow SOP and rule, follow legality, competent and proud.

Table (4.8) Awareness on Food Operator’s Commitment

No.	Statements	Mean	Std. Deviation
Q1	Food safety is a major concern for me.	4.55	.754
Q2	Believe that food safety regulations are essential	4.53	.673
Q3	As it is my duty, I comply with all regulations concerning food safety.	4.58	.528
Q4	My intention is to strictly by all laws that are relevant to ensuring food safety.	4.59	.542
Q5	Workspace is always clean because don’t enjoy a cluttered environment	4.27	.608
Q6	Safety is never jeopardized when it comes to handling food.	4.40	.715
Q7	I’m fine for even audit such as external and internal.	4.52	.608
Q8	I take ownership of food safety and am proud of the company's positive record in this area.	4.40	.556
	Over all mean	4.48	0.623

Source: Survey Data (August -November, 2022)

As shown in Table 4.8, the overall mean value is 4.48. This indicates that the majority of respondents agreed that everybody involved in the organization should trust that food safety is a major concern and following food safety rules is important. Following regulations is the main responsibility of food operators, and it shows as self-commitment. Adhering to safe food handling activities is crucial for ensuring health and well-being, and should be prioritized. Keeping the workspace clean can help maintain a productive and

stress-free environment. With a tidy workspace, individuals can focus on tasks for food safety concern and complete them efficiently, without distractions or unnecessary clutter. Believing that food safety should never be jeopardized is important for every person, even during busy working schedules. There is should be always time and ready for audits, and this shows a strong commitment to food safety culture. As someone responsible for food safety, taking great pride in the company's strong food safety profile reflects a commitment to providing high-quality and safe food to customers. Therefore, commitments can help create and sustain a strong organizational food safety culture. With time, implementing good practices for ensuring food safety will become a routine and a source of individual satisfaction.

4.5.6 Food Operators' Environment

Food operator of environment can be measured by enough support of resources, basic resources, quality of resources, easy to obey by using qualified resources, enough resources, capacity and enough management for resources.

Table (4.9) Awareness on Food Operator's Environment

No.	Statements	Mean	Std. Deviation
Q1	Safe food handling methods can be carried out with sufficient resources (e.g., equipment)	4.53	.634
Q2	Hand washing sinks, for example, are commonly available and accessible equipment needed to safely prepare food.	4.48	.594
Q3	Facilities (such as freezers, warmers, etc.) are of sufficient quality to adhere to safe food handling guidelines.	4.44	.591
Q4	Using the high-quality supplies provided to me, I am able to easily adhere to safe food handling procedures.	4.17	.491
Q5	There are enough resources (infrastructure and financial) available to prepare food safe	4.37	.609
Q6	My job schedule doesn't interfere with my capacity to adhere to safe food handling guidelines and regulations.	4.18	.518
Q7	As many employees as are scheduled for each shift is sufficient for me to complete my tasks and properly handle food.	4.36	.646
Over all mean		4.36	0.5832

Source: Survey Data (August -November, 2022)

As shown in the above Table 4.9, the overall mean value is 4.36. This indicates that the majority of respondents agreed that a good working environment is necessary because there should be enough resources to handle safe food. Support resources should be accessible and of sufficient quality to implement food safety. There should be sufficient and necessary resources available to support food safety practices. By using high-quality supplies provided, it is easier to adhere to safe food handling procedures, ensuring the safety of the food being prepared and served to customers. The availability of enough resources to prepare food safely allows for following proper procedures. Having a

sufficient number of employees on each shift allows for collaboration with others to complete tasks, reducing the risk of cross-contamination and ensuring that food is handled properly throughout the preparation and serving process. Therefore, providing resources with sufficient quantity and quality demonstrates a high food safety standard.

4.5.7 Overall Mean Value of Food Safety Culture

Table (4.10) Overall Mean Value of Food Safety Culture

There are six factors to support sea food safety culture. They are measurement system, style and process, Team Work, Leadership, Communication, Commitment with risk concern and Environment.

No.	Indicators	Mean	Std. Deviation
1	Management systems, style and processes	4.31	0.6107
2	Team Work	4.45	0.5641
3	Leadership	4.29	0.646
4	Communication	4.41	0.6031
5	Commitment	4.48	0.623
6	Environment	4.36	0.5832

Source: Survey Data (August -November, 2022)

As above table **4.10** shown as overall mean value of food safety culture are over 4 and its means that all respondents agreed on all indicators above.

CHAPTER V

CONCLUSION

5.1 Findings

The study is an overview of food safety culture of sea food processing in Yangon for 120 respondents from six processing under the Demographic Characteristics, management system, style and process, team work, leadership, communication, comments and environments. The information on the demographics characteristics of the respondents provides context for understanding the condition of commitment, team work, and communication as key factors influencing food safety culture.

The majority of respondents worked in the production department, and the highest percentage were female, with two to three years of employment and 26.7% holding normal positions, reveals a stable workforce with job experience. This shows that women are more likely to be employed in production-related roles, which may have implications for promoting gender equity in food safety culture. Furthermore, the majority of respondents were satisfied with their current job and worked in organizations certified with HACCP certification by external accreditation, indicating a positive work environment that values food safety. This may contribute to the high mean value for commitment, teamwork, and communication as critical factors in ensuring a strong food safety culture. The high percentage of respondents between the ages of 26 and 35, at 37.5%, which is the most productive age range, indicates a relatively young workforce. The majority of the respondents were involved in fish exporting, and the vast majority of the raw material used in processing came from wild catch rather than aquaculture. The respondents have a strong commitment to continuous improvement and upskilling of their workforce, as demonstrated by the high percentage, with 97% of respondents receiving training. This commitment to training and development can have several benefits for the seafood industry, including improved productivity, increased efficiency, and better-quality control.

Top 10 countries exported of fish and fishery products in 2020-2021 Myanmar exported fish and fishery products are Thailand, China, KSA, Japan, Malaysia, Singapore, UK, Bangladesh and U.A.E. In terms of major exporting countries, Thailand was the

largest market for Myanmar's fish and fisheries products, accounting for 62% of exports, followed by China at 21%. The remaining 17% of exports were shared by several countries including K.S.A, Singapore, U.K, Bangladesh, U.A.E, Japan, Malaysia, and U.S.A. Overall, Myanmar's fishery industry is largely dependent on exports to neighboring countries, particularly Thailand and China. Country total export was 669685.291 metric ton in 2019-2020 as highest as Myanmar has more opportunities to export in 2019-2020. However, Export was decrease in 2020-2021 due to COVID-19 pandemic has a significant impact on global seafood markets due to lockdowns, travel restrictions, and other measures implemented to control the spread of the virus may have disrupted supply chains and reduced demand for prawns in importing countries.

Regarding with food safety culture for fisheries sector in this study, found that commitment, teamwork, and communication were important factors.

According to the management system, style and process, it is clear that there is a strong consensus that the awareness of management systems, style, and processes is crucial for the development and maintenance of a strong food safety culture within an organization. Successful achievement of an effective and efficient way of organizational food safety culture is primarily based on the management of the system, style, and processes of the organization. This indicates that the implementation of effective management systems, leadership styles, and appropriate processes is essential in establishing a strong culture of food safety within an organization. Overall, the study highlights the critical role of management systems, style, and processes in promoting and maintaining a culture of food safety within an organization.

The result for team work shows as the majority of respondents agreed that teamwork is important to food safety culture because it allows employees to support one another in the workplace and working as a team for food safety can reduce unsafe behavior in order to avoid risk. And it indicates that there is a strong consensus among respondents that teamwork plays a vital role in promoting and maintaining a culture of food safety within an organization.

When employees work together as a team, they are better able to support one another in the workplace, identify and address potential food safety hazards, and reduce the occurrence of unsafe behavior. The importance of teamwork in promoting food safety

culture is further emphasized by the fact that it can help to avoid risk. By working collaboratively, team members can share knowledge and skills, which can improve their ability to identify and respond to food safety issues effectively. This can ultimately lead to a safer and healthier food supply for consumers.

Regarding with result with leadership analysis, effective leadership is a critical component of promoting and maintaining a culture of food safety within an organization. The majority of respondents agreed that supervisors' activities, including proper and correct food handling practices, can help to ensure the safety of the food. Furthermore, the results suggest that organizational leadership plays a crucial role in establishing food safety practices as a core value and ensuring that food safety is not negotiable. The result indicates that effective leaders should be visible, approachable, and provide guidance and support to their teams. By doing so, good leadership can promote a culture of food safety within the organization, which is embraced by all employees. This can lead to improved awareness of food safety issues, better adherence to food safety protocols, and ultimately, a safer and healthier food supply for consumers. Overall, it highlights the importance of effective leadership in promoting and maintaining a culture of food safety within an organization.

According to communication's results, it indicates that effective communication is a critical component of promoting and maintaining a culture of food safety within an organization. The majority of respondents agreed that communication is essential to food safety culture and that there should be a practice of responding freely if someone sees any unsafe activities that could affect food safety. The survey results also suggest that without effective communication, people may not be aware of their roles and responsibilities or the organization's objectives and goals concerning food safety. Effective communication should include open channels for feedback and suggestions, which can improve the overall food safety system. The importance of communication in promoting food safety culture is further emphasized by the fact that it is essential to the functioning of the organization to maintain updated food safety practices. Effective communication channels can help to ensure that all employees are aware of any changes to food safety practices or protocols and can quickly address any potential issues or concerns.

The results for commitments show that the majority of respondents agreed that everybody involved in the organization should believe that food safety is major concern

and following food safety rules is important. Therefore, commitments can help to create and sustain a strong organizational food safety culture. Over time, good food safety practices will become the normal way of doing things and a source of personal pride. With the passage of time, implementing good practices for ensuring food safety will become a routine and a reason for individual satisfaction. Strong commitment to food safety helps to ensure that everyone in the organization is working towards the same goal of providing safe food to consumer.

According to environment, the majority of respondents agreed that a good working environment is necessary because there should be enough resources to handle safe food. Therefore, providing resources with sufficient quantity and quality can demonstrates a high food safety standard. Providing resources with sufficient quantity and quality can demonstrate a high food safety standard. This includes providing employees with the necessary equipment, tools, and materials to safely handle and prepare food. Additionally, a clean and well-maintained working environment can help to prevent cross-contamination and other potential food safety hazards. The importance of a good working environment in promoting food safety culture is further highlighted by the fact that it can contribute to employee morale and motivation. When employees feel that they have the necessary resources to perform their jobs safely and effectively, they are more likely to be engaged and committed to promoting a culture of food safety within the organization.

According to over all mean value, the largest overall mean value is Commitment. It shows self-confidence in their work situation and the positive effect of food safety culture on both procedures and consumers. The second largest over all mean value is teamwork. It can encourage and develop a food safety culture. The third largest over all mean value mean communication. It can easily respond in an accurate and timely manner.

Overall, promoting a culture of food safety within an organization requires a multifaceted approach that emphasizes commitment, teamwork, and communication. By prioritizing these factors, organizations can establish a strong culture of food safety that is embraced by all employees and contributes to a safer and healthier food supply for consumers

5.2. Suggestions

A good food safety culture is built on strong management, effective teamwork, dynamic leadership, clear communication, unwavering commitment, and a supportive environment. By integrating these elements, organizations can create a culture of food safety that prioritizes the health and well-being of consumers. Maintaining and developing food safety measures can help to reduce the incidence of foodborne illnesses, and ensure that people have access to safe, nutritious food.

Although the majority of respondents worked in organizations certified with HACCP certification, it is important to continuously train and educate employees on food safety practices to maintain a strong food safety culture. The findings highlight the importance of ongoing investment in these areas to ensure a safe and healthy food supply for consumers.

As the majority of respondents in production-related roles were female, it is important to ensure that women have equal opportunities to advance in their careers and participate in decision-making processes. The high percentage of respondents who received training is a positive finding that suggests a commitment to ongoing improvement and professional development within the seafood industry. It highlights the importance of investing in human capital as a key driver of success in the industry.

Based on the export statics, Myanmar's fishery industry is largely dependent on exports to neighboring countries, particularly Thailand and China, it may be beneficial to explore opportunities to export to other countries in order to reduce dependence on these markets and mitigate the impact of external factors such as pandemics. The COVID-19 pandemic has had a significant impact on global seafood markets, and seafood processors in Yangon should adapt to changing market conditions by implementing measures to ensure the safety of their products and exploring alternative distribution channels.

The study shows that some of the fisheries processing has already identified some key factors in developing a positive food safety culture, there may be opportunities to further strengthen these efforts by adopting best practices from other countries and working collaboratively with stakeholders across the fisheries sector and should to establish food safety frame work for fishery sector.

Good management practices are essential for creating an effective food safety culture. Managers must establish clear policies, procedures, and standards that promote

food safety and ensure that employees have the necessary resources and training to comply with them. They must also be kept for proactive in identifying potential hazards and implementing measures to mitigate them.

A collaborative approach to food safety promotes a culture of accountability, responsibility, and ownership. Effective teamwork should maintain engaging employees in the process of developing, implementing, and monitoring food safety systems. It also includes continuous improvement. organizations should maintain the development of a strong team-based approach to food safety, which includes regular training, open communication channels, and a supportive and collaborative workplace culture. By doing so, organizations can help to establish a culture of food safety that is embraced by all employees, which can ultimately lead to better outcomes for both the organization and its customers.

Strong leadership is essential for creating a food safety culture. Leaders must set the tone by being visible, approachable, and modeling the desired food safety behaviors. They must also provide guidance and support to their teams and actively promote the importance of food safety within the organization. Organizations should sustain for the development of strong leadership practices that emphasize the importance of food safety and provide guidance and support to their teams. By doing so, organizations can establish a culture of food safety that is embraced by all employees and contributes to a safer and healthier food supply for consumers.

Communication is essential for effective food safety culture. Clear and consistent communication between management and employees is necessary to ensure that food safety policies and procedures are understood and followed. Effective communication should also keep the open channels for feedback and suggestions, which can improve the overall food safety system. Organizations should maintain the development of open channels for communication and feedback, which can help to improve food safety practices and ensure that all employees are aware of their roles and responsibilities. By doing so, organizations can establish a culture of food safety that is embraced by all employees and contributes to a safer and healthier food supply for consumers.

A strong commitment to food safety is essential for maintaining a good food safety culture. All employees must be sustained for commitment to follow established protocols,

continuous improvement, and speaking up if something seems unsafe. Good commitments to food safety help ensure that everyone in the organization is working towards the same goal of providing safe food to consumers.

Organizations should continue to sustain the provision of sufficient resources, including equipment, tools, and materials, and ensure that the working environment is clean, well-maintained, and conducive to safe food handling practices. By doing so, organizations can establish a culture of food safety that is embraced by all employees and contributes to a safer and healthier food supply for consumers. A supportive environment is essential for promoting good food safety culture. The physical environment should be kept to maintain the condition to minimize the risk of contamination, while the social environment should promote a culture of food safety.

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This study will not attribute any comments to your personal as responses are confidential. The information gathered from these survey questionnaires will be used merely for EMDevS Thesis only. Participation in this thesis is voluntary. Your open and true answers will be very supportive of this thesis. Thank you very much for your kind contribution.

Part I

I Demographic characteristics of the food handlers and their work place

Demographic profile characteristics of the food handlers		
Gender	Male	
	Female	

Age	15-25 years	
	26-35 years	
	36-45 years	
	46-55 years	
	56-65 years	
Educational Level	Basic Primary school level	
	Basic Middle school level	
	Basic high school level	
	Diploma	
	Undergraduate	
	Graduate	
	Master Degree	
	Doctorate	
Position	Normal	
	Leader	
	Supervisor	
	Manager	
	Senior Management	
Total Services	1 year and below	
	2-3 years	
	4-5 years	
	6-10 years	
	Above 10 years	
Department	Production	
	QC/QA	
	Admin and HR	
	Export/Shipping	
	Finance	
	Other (Please specify)	
Satisfied with Current Job	Happy	
	Not happy	
Contact Phone Number		
Type of export products		
	Fish	
	Prawn	
	Value Added	
	If other please specify	

Source		
	Wild Catch	
	Aquaculture	
Type of certified	HACCP (By DoF)	
	HACCP	
	ISO 9001	
	ISO 22000	
	FSSC 22000	
	BRC	
	If other, please specify.	

Did you attend the Food Safety and hygiene training?

Yes

No

1- Strongly disagree

2- Disagree

3-Neither

4- Agree

5- Strongly agree

PART II

INDICATORS FOR MEASUREMENT OF FOOD SAFETY CULTURE

1. Management systems, style and processes		1	2	3	4	5
1	The management-provided food safety education and training is beneficial in helping me improve my procedures.					
2	In my sector, we have objectives, goals that helps us to improve conformity and reduce FS risk.					
3	In order to guarantee the safety of the food served, departments work together effectively.					

4	Employees who adhere to company policies regarding safe food handling receive incentives,					
5	My annual evaluation is based on how well I adhere to food safety regulations.					
6	My supervisors motivate me to adhere to proper food handling procedures.					
7	I get feedback if I don't adhere to food safety standards of conduct					
2.Team Work		1	2	3	4	5
1	Coworkers support each other in maintaining a safe workplace regarding food safety concerns.					
2	Colleagues are fully committed to prioritizing food safety in the organization and put in dedicated effort towards it.					
3.	Colleagues within the sector provide guidance based on food safety norms and procedures to address unsafe behaviour.					
4	Colleagues from different sectors are always willing to help to ensure food safety standards are met.					
5	Colleagues within the department exhibit cooperative behaviour towards the common goal of ensuring food safety.					
6	Colleagues are highly respected and trusted for their dedication and effort in ensuring food safety within the company.					
7	Colleagues within the sector provide guidance based on established food safety norms and procedures when correcting unsafe behaviour.					
3. Leadership		1	2	3	4	5
1	Because of my supervisor's active involvement in ensuring that proper food handling is being practiced,					
2	Management adheres strictly to all regulations pertaining to food safety.					
3	Managers' actions demonstrate that customers' safety when it comes to food is a high priority.					
4	My manager regularly monitors employees to ensure that they are following proper food safety handling procedures.					
5	The significance of food safety management practices is well understood by the management of my company					
6	The leadership within my company motivates me in regards to the importance of adhering to food safety practices.					
7	The leadership of my company considers food safety to be an essential value that is not up for negotiation.					
4. Communication		1	2	3	4	5

1	I have the freedom to speak out if I see something that could jeopardize the safety of food.					
2	The risks related with poor food handling techniques are clearly understood by management.					
3	Encouragement to provide suggestions for better food safety measures has been received positively.					
4	Food safety information is shared by all supervisors.					
5	Updated Food safety standards and regulations are communicated in a timely and accurate manner by management.					
6	While correcting staff for food-handling infractions, my manager treats them with utmost respect.					
5. Commitment		1	2	3	4	5
1	Food safety is a major concern for me.					
2	Believe that food safety regulations are essential					
3	As it is my duty, I comply with all regulations concerning food safety.					
4	My intention is to strictly abide by all laws that are relevant to ensuring food safety.					
5	Workspace is always clean because don't enjoy a cluttered environment					
6	Safety is never jeopardized when it comes to handling food.					
7	Following safe food handling protocols is never a problem for me, no matter how busy my schedule is.					
8.	I take ownership of food safety and am proud of the company's positive record in this area.					
6. Environment		1	2	3	4	5
1	Safe food handling methods can be carried out with sufficient resources (e.g., gloves, thermometers, etc.).					
2	Hand washing sinks, for example, are commonly available and accessible equipment needed to safely prepare food.					
3	Facilities (such as freezers, warmers, etc.) are of sufficient quality to adhere to safe food handling guidelines.					
4	Using the high-quality supplies provided to me, I am able to easily adhere to safe food handling procedures.					
5	There are enough resources available to prepare food safe					
6	My job schedule doesn't interfere with my capacity to adhere to safe food handling guidelines and regulations. Each shift has a sufficient number of employees for me to finish my duties and handle food properly.					

7	As many employees as are scheduled for each shift are sufficient for me to complete my tasks and properly handle food					
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