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**THE IMPLEMENTATION OF HAZARD ANALYSIS CRITICAL CONTROL
POINT (HACCP) IN SMALL AND MEDIUM MALAYSIAN FOOD
INDUSTRIES CONTEXT FOR BETTER BUSINESS PERFORMANCE**

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**Laporan ini dikemukakan sebagai memenuhi syarat penganugerahan Ijazah Sarjana
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“Saya akui bahawa ini adalah kerja saya sendiri kecuali ringkasan dan petikan yang
tiap-tiap satunya saya telah jelaskan sumbernya”

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ABSTRACT

HACCP is stands for Hazard Analysis Critical Control Point. It is a scientific, rational and systematic approach for the identification, assessment and control of hazard. It is applicable to all food businesses involve preparation, processing, manufacturing, packaging, storage, distribution and handling for sale or supplies of foodstuff in any sector in the food chain. Some Malaysian food industry does not applied HACCP in their company and do not understand about it. This is because they do not know the impact and the effectiveness of HACCP system towards their company. Implementation of HACCP system by food businesses will go a long way towards ensuring that food products are safe for consumption. In this research, the important of HACCP can be determined for better business performance in Malaysian food industry especially in Small and Medium Industry (SMI). A series of interview and questionnaire survey was conducted to collect respondents' answers, while data collected was analysed and quantitatively and qualitatively. For the result, this research will provide valuable information regarding the HACCP theory and the advantages of HACCP. The conclusion is HACCP system can increase the effectiveness and give a good impact towards the company.

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LIST OF SYMBOLS

HACCP	= Hazard Analysis Critical Control Point
GHP	= Good Hygiene Practice
GMP	= Good Manufacturing Practice
MOH	= Ministry of Health
SMI	= Small and Medium Industry
SME	= Small and Medium Enterprise
RM	= Ringgit Malaysia
CARs	= Corrective Action Requests

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CHAPTER 1

1.0 INTRODUCTION

1.1 Introduction of study

World becoming more advance and grow rapidly with different evolution, transformation and invention of the technology. In this situation, consumers become smarter which is becoming more high taste in all aspects of the determination of the products or items of their choice. Moreover, consumer place great emphasis about quality, hygiene and security features towards the product.

Quality is one of the important aspects in producing a product. In manufacturing, quality can be defined as a measure of excellence or a state of the product being free from defect and satisfied specific customer or other requirement. Now a day, consumer is very smart in order to choose their product especially regarding to the food. Food is very important for human in the world which is the nutrient substance that people eat or drinks in order to maintain life and growth.

Competition in the Malaysian food industries has increased significantly. To ensure that the food industries can complete successfully, it requires a change in the food security system to maintain cleanliness and increase productivity. In order to maintain the hygiene of the food, a new system of Hazard Analysis Critical Control Point or HACCP was first introduced in the late 1960s (Zamanhuri, 2011).

HACCP is not new and introduce by Pillsbury Company to produce the safest and highest quality food for astronauts in the space program. HACCP is a scientific, rational and systematic approach for the identification, assessment and control of

hazard (SIRIM, 2010). HACCP is very applicable to all food businesses involve in the preparation, processing, manufacturing, packaging, storage, transportation, distribution, handling or offering for sale or supply of food stuff in any sector in the food chain.

In Malaysia, Food Safety and Quality Division, Ministry of Health is working to required application of the HACCP system in the food industry. In the simple word, the HACCP system can be applied throughout the food chain from the primary producer to the final consumer. The successful application of HACCP requires the full commitment and involvement of management and the workforce and also required a team approach (FAO, 2012).

1.2 Research Background

This research is about to study the effectiveness of HACCP system in Malaysian food industries performance especially in Small and Medium food industry. Malaysian food industries consist of 5,565 food manufacturers and 172,252 food services entities. Over the past 5 years, there has been an increase in the number of Malaysian food industries with HACCP certification.

Further study will be done to find out the important of HACCP in business performance of Malaysian food industries and this research will focus more on the semi and medium Malaysian food industries performance. This research will attempt to determine whether there is a link between the adoption of HACCP among Malaysian food industries and improved performance especially in business performance.

Besides that, this research will study about the perception of SMI in HACCP implementation towards the company. In this study, the researcher will find out whether the HACCP implementation is easier to handle and implement in their company. Furthermore, the researcher can identify whether there are big involvement of government or not in the HACCP implementation.

1.3 Research Question

This research was conducted to answers the question that have been proposed related to the impact of HACCP system implementation in Malaysian food industries. The questions are:

- i. What do SMI perceive in HACCP implementation towards the company?
- ii. How far the effectiveness of HACCP implementation in Small and Medium Industry (SMI)?
- iii. Why HACCP is important for better business performance?

1.4 Research Objective

In addressing answering the research question, this research seeks to achieve some research objectives which are:

- i. To identify the Small and Medium Industry (SMI) perception in HACCP implementation towards the company.
- ii. To investigate the effectiveness of HACCP implementation in Small and Medium Industry (SMI).
- iii. To evaluate the important of HACCP for better business performance.

1.5 Scope of study

This research is focus on the important and effectiveness of HACCP implementation in Malaysian food industries performance. In order to complete this research, the researcher will explore the theory and practice of HACCP system and also focus more on the small and medium Malaysian food industries that already have the HACCP system. From the questionnaire survey and interview, the

performance of the small and medium industries that have HACCP can be determined.

1.6 Significance of the study

Research about the impact of HACCP system implementation is very important and useful. This study is expected to contribute to the theory and practice of HACCP system. From this study, it will show that the theory and practice of HACCP is reliability and will produce consistent findings. This is because; there are many researchers study the issue that connected to the HACCP system and it also show that HACCP is very important in all Malaysian food industries.

Furthermore, the impact of HACCP implementation through small and medium Malaysian food industries performance can be determined through the several interview techniques towards the company that already apply HACCP system in the company. Besides that, a study on Malaysian food industries can provide a clearer understanding of the important of HACCP system on the quality in the productivity or manufacturing.

Result of this project will give useful information for the HACCP system and the connection to the Malaysian food industries especially in small and medium industries. It will help business leader, quality practitioner and government authorities to determine the future planning of HACCP adoption and certification in Malaysia and its relevance in enhancing the productivity. Therefore, this study could be contribution to the accumulated knowledge on quality control system in the food manufacturing industries.

1.7 Summary

In this chapter, researcher has stated about the introduction and research background about this research. In order to maintain the hygiene of the food, Hazard Analysis Critical Control Point (HACCP) has chosen by some company to protect their product and ensure that food is safe at the time of human consumption. Further study will be done to find out about the performance of Malaysian food industries with the implementation of HACCP system. In this chapter also the researcher has been proposed three research questions and three research objective related to the impact of HACCP implementation. The scope of this study focuses more on the small and medium Malaysian food industries. At the end of this chapter, the researcher has mention about the important of this study. One of the significant is this research will give depth knowledge about theory and practice of HACCP system. Besides that, this research can be determined the impact of HACCP implementation in small and medium Malaysian food industries.

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 Introduction

The purpose of this chapter is to explore and summarize the literature review on theory and practice of HACCP system and also impact HACCP implementation in Malaysian food industries. This literature review provided the basis for developing the research instruments and analysis. The initial sources for this chapter came from books, journals, articles and information from the internet.

In this chapter, the literature review focus on HACCP background, Malaysian food industries and HACCP implementation. In the HACCP background, this literature review will describe about HACCP history since 1960 and the theory of HACCP system. Besides that, in the Malaysian food industries literature review will discuss about more on the small and medium food industries in Malaysia. The achievement of Malaysian food industries also have included in this part.

2.1 Background on HACCP

According to the Pierson and Corlett, in the 1960s, the Pillsbury Company in cooperation with the National Aeronautic and Space Administration (NASA) first constructed HACCP to describe the systematic approach to food safety. The goal of the programme was to come as close to 100 percent assurance as possible that the food produced for space use would not be contaminated with bacteria or viral pathogens, toxins, chemical or physical hazard that could cause an illness or injury (Pierson and Corlett, 1992).

The HACCP concept was first presented at the first National Conference on Food Protection in 1971. In 1985, USA National Academy of Science (NAS) recommended the HACCP system in the publication Evolution of the role of microbiological criteria for food and food ingredients (Pierson and Corlett, 1992). According to Huss, in 1990, the Codex Alimentations Commission (CAC) on Food Hygiene started to prepare a guideline for the application of HACCP system. In the last ten years, HACCP has become widely used. It is now a legislative requirement in USA, Canada and Europe country. Some countries such as Australia, New Zealand, Canada, Japan, Egypt, South Africa and many others have also adopted or are considering food safety control systems based on HACCP (Huss, 1994).

According to Satin, the HACCP concept involves the identification of specific hazards throughout the entire process involved in the production of a food product and focuses on the preventive measures for their control to assure the quality and safety of the food. This includes analysis of raw materials sources and usage, processing equipment, operating practice, packaging and storage, together with marketing and conditions for intended use. There is less reliance on the traditional system of end product testing and food safety is built into the product from conception through design and distribution (Satin, 2005).

Codex Alimentarius states that the HACCP system is science based and systematic, identifies specific hazards and measures for their control to ensure the safety of food. HACCP is a tool to assess hazards and establish control system by focusing on prevention rather than relying mainly on end product testing (Codex, 1997).

According to Whitehead and Orris, the HACCP system as applied food safety management uses the approach of controlling critical points in food handling to prevent food safety problems. It is a system for identifying specific hazard and preventive measures for their control. The system comprises seven principles which are:

- i. Principle 1: identifying the potential hazard associated with food production at all stages from growth, processing, manufacture and distribution to the point consumption.
- ii. Principle 2: Determine the point procedures and operational steps that can be control to eliminate the hazard. This is the critical point CCP's.
- iii. Principle 3: Establish critical limits which must be met to ensure that the CCP's are under control.
- iv. Principle 4: Establish a system to monitor control for CCP's by scheduled testing or observations.
- v. Principle 5: Establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control.
- vi. Principle 6: Establish procedure for verification which includes supplementary test and procedures to confirm that the HACCP system is working effectively.
- vii. Principle 7: Establish documentation concerning all procedures and records appropriate to these implementation and their applications.

A HACCP plan is specific to a particular food and processing application. The HACCP system is capable of accommodating change such as advance in equipment design, processing procedures or technology development. Besides enhancing food safety, other benefits in applying HACCP include more effective use of resources and more timely response to food safety problem.

2.2 Malaysian food industries

Malaysian food industries can be described as benchmark to show the multi cultures of Malaysia. The Malaysian food industry is dominated by small and medium scale companies. The major sub-sectors are the fish product, livestock products, fruits, vegetables and cocoa (MIDA, 2012). The SMIDP defines SMEs in the manufacturing and manufacturing related services as small and medium enterprise (SMEs) with annual sales turnover not exceeding RM 25 million or full time employees not exceeding 150 peoples (SMIDP, 2002).

According to Ndubisi, SMEs form a large part of the Malaysian economy and it was created to bring the economic growth of Malaysian for the next five years in the Ninth Malaysian Plan which is from 2006 until 2010. Over the years, institutions have joints to support the government's efforts by providing financial assistance, advisory services and training programs to enhance the technical capability, innovativeness and quality of product and services of SME's (Ndubsi, 2008).

In 1996, 15.3 percent or 2,904 of small and medium enterprise in the manufacturing sectors are involved in the food manufacturing. The SMEs are prime found in meat and seafood processing, vegetable and fruit canning, biscuits manufacturing, bakeries and frozen fruit pastries industries (SMIDP, 2002).

According to Satin, all new and promising concepts including HACCP have a greater chance of adoption when the benefits are quantified and presented in monetary terms. As business basically revolves around money no amount of persuasion by harping upon social responsibility, statutory obligation and public health would succeed in convincing the SMEs to implement HACCP. This means HACCP campaigns with a judicious mix of technical and financial advantages can penetrate SMEs at a faster rate than the conventional ones. A coherent and proactive policy is perhaps the most critical factor that separates the success of HACCP from failure. The government's commitment sends the right signals to the food industry about the implementation of HACCP (Satin, 2005).

Another researcher which is Eunice Taylor reported about HACCP in small companies. In Taylor research, Taylor state that United Kingdom and Europe which have found that small companies are less likely to invest in hygiene and food safety

than larger companies and are less like to have HACCP in place (Taylor, 2001). Motarjemi also state that the problems of implementing HACCP in small industries and in developing countries have been the subject of extensive discussion at meeting of the Codex Committee on Food Hygiene (CCFH) (Motarjemi, 1999).

According to the SMIDP, opportunities for SME's to be suppliers to large scale industries and multinational cooperation especially the food sector, SME need to upgrade their productivity on a continuous basis through automation in order to increase efficiency and lower product cost. Cost competitiveness and quality will remain a prime consideration in the sourcing decision of multinational cooperation.

2.3 HACCP Implementation

Brian Loo Soon Hua reported similar findings for the study on the HACCP implementation. Brian Loo Soon Hua states that HACCP is becoming a major issue in the Malaysian food industries primarily due to demands from importing countries such as the United State and European Union (Brian, 2206).

Lynn D. Riggins state that the safety of food served in college, school and university food services should be major concern to university or school official, food service operators, parents, students and community. In a university setting, where thousand are served daily, a food safety outbreak could cause sickness or death (Riggins, 2205).

According to Jervis, the HACCP system implementation offer a structured approached to the control of hazards in the food processing and properly applied, identifies areas of concern and appropriate control measures before failure is experienced (Jervis, 2002). More interesting is Fritz Kaferstein state that HACCP system provides food industries and public health authorities with a powerful tool to cure the food bone illness (Kaferstein, 1999).

According to Brian Loo Soon Hua, the increasing globalisation of the food supply the transparency of short market chains may be lost and consumers are increasingly dependent on specialized services to guarantee safe food. For

international trade, the HACCP system has now firmly established itself as an important component of safety assurance for food products sold in the worldwide market (Brian, 2006).

According to Daniele Giovannucci, HACCP significantly reduce the risk of food contamination in two ways. First, it anticipates potential problems or failures and does not depend only a final inspection. Second, resolving the problem at hand as opposed to pursuing a product recall.

2.4 Summary

Overall this chapter have discussed about the literature review about HACCP background, Malaysian food industries and HACCP implementation. HACCP have introduced in 1960's by Pillsbury Company with NASA. This chapter also describe the literature review about HACCP which is HACCP concept involves the identification of specific hazards throughout the entire process.

Besides that, this chapter also discuss about the small and medium food industries in Malaysia. SME's is the small and medium enterprise with annual sales turnover not exceeding RM 25 million or full time employees not exceeding 150 peoples. The SME are primes found in meat and seafood processing, bakeries and fruit canning.

Furthermore, the HACCP implementation literature review have describe about some significant of HACCP implementation. HACCP system has becoming a major issue in Malaysian food industries. Besides that, HACCP also became powerful tool to cure the food bone illness.