

**UNIVERSITI TEKNOLOGI MARA**

**THE DEVELOPMENT OF HALAL  
CRITICAL CONTROL POINT RISK  
MANAGEMENT PLAN IN HALAL  
FROZEN MEAT SUPPLY CHAIN  
OPERATIONS**

**TEH ZAHARAH BINTI YAACOB**

Thesis submitted in fulfillment  
of the requirements for the degree of

**Doctor of Philosophy  
(Transport and Logistics)**

**Malaysia Institute of Transport**

**October 2019**

## **ABSTRACT**

Halal frozen meat supply chains include the process of genuine Halal sources and ingredients to the food processing, logistics process until the delivery of final Halal frozen meat products to the final customers. It was very important to identify the critical control point in Halal frozen meat supply chain operation to prevent the contamination risks. Hence, this study determines the critical control point of Halal frozen meat that attributed to “Halal compliance” throughout the Halal frozen meat supply chain operation. This study adopted the qualitative research methodology based on observation and in-depth interviews with 15 informants in the chain. The factors of operational contamination risks and Halal critical control point (HCCP) were identified and analysed through the interview and observation conducted. Findings from the study revealed the current scenario and the flow of activities of Halal frozen meat supply chain operation. Halal critical control points (HCCP) was identified based on the factors of operational contamination risks developed from the findings of the interview and observation at the selected premises. The proposed model of Halal Critical Control Point Risk Management Plan (HCCPRMP) was developed with the establishment of the Stakeholder Theory that has been proven as the strong model to measure the stakeholder relationship as to avoid the disruption risks in the chain. Subsequently, the approach of Quality Assurance Management model has been adopted in the proposed model to ensure the element of quality and safety management of food system. The model of Stakeholder theory measured the ethics and integrity among all the parties involved in the chain. At the end, the model of Halal critical control point risk management can be a guideline for the preparation of company internal and external auditing for Halal and quality certification.

## ACKNOWLEDGEMENT

Firstly, I would like to express my sincere gratitude to my advisor and my co-advisor Dr. Harlina Suzana Jaafar and Dr. Fadilah Abd. Rahman for the continuous support throughout the Ph.D study and related research. Thank you very much for your patience, motivation and immense knowledge. Your guidance had helped me through the journey of research and writing of this thesis. I could not have imagined having a better advisor and mentor for my Ph.D study. Thank you very much to both of you.

Besides my advisors, I would like to thank the rest of my thesis committee, Associate Professor Dr. Adibah Shuib, Dr. Shahrin Nasir, Professor Dr. Rika Ampuh Hadiguna and Associate Professor Dr. Mohd Rizal Razalli for their insightful comments and encouragement, but also for the hard questions which inspired me to widen my research from various perspectives.

My appreciation goes to the Head of Postgraduate and staffs of MITRANS who have provided the facilities and assistance throughout the study. Special thanks to my colleagues and friends of the Faculty for helping me with this thesis. To name a few good friends Hanini, Madiha, Hezlin, Nur Hima, Nor Bakhriah, Noraznira and the rest. I really appreciate all your concerns, care and advised to me throughout this endless journey.

My special dedication and thanks to my family members. Words cannot express how grateful I am to my mother-in-law Maimanah Hasbullah, my father-in-law Zainal Abidin Mokhri, my Umi Rokiah Dahalan, my husband Maizarul Shahardi, my daughter Maisarah Anisah Maizarul Shahardi for all the sacrifices, encouragement and love. Indeed, I would like to thank all my dear brothers and sisters, Firdaus, Muhammad Faisal, Ahmad Fahmi, Dr. Siti Zaharah Ishak, Fatimah Azzahra, Rapizah and Siti Rusila for all the support, understanding and encouragement for me during the study. My special thanks also to my relatives, my sister and brother-in-laws for their continuous support and understanding. Your prayers for me was what sustained me thus far.

A very special gratitude goes to the sponsorship, Ministry of Higher Education (KPT), Malaysia through the My Brain 15 scholarship and Halal Supply Chain grant. Thank you for the support, assistance and funding for the Ph.D study.

Finally, this Ph.D thesis is dedicated to the loving memory of my very dear late Ayah and Mak, Allahyarham Tuan Haji Yaacob bin Ismail and Allahyarhamah Hajjah Azizah binti Maamor for the vision and determination to raise and educate me with eternity love. This piece of victory and success would not have happened without their love and blessing. May Allah SWT bless and grant them with Jannah. Al-Fatihah.

# TABLE OF CONTENTS

	<b>Page</b>
<b>CONFIRMATION BY PANEL OF EXAMINERS</b>	<b>ii</b>
<b>AUTHOR'S DECLARATION</b>	<b>iii</b>
<b>ABSTRACT</b>	<b>iv</b>
<b>ACKNOWLEDGEMENT</b>	<b>v</b>
<b>TABLE OF CONTENTS</b>	<b>vi</b>
<b>LIST OF TABLES</b>	<b>xii</b>
<b>LIST OF FIGURES</b>	<b>xv</b>
<b>LIST OF PLATES</b>	<b>xvii</b>
<b>LIST OF ABBREVIATIONS</b>	<b>xviii</b>
<b>CHAPTER ONE: INTRODUCTION</b>	<b>1</b>
1.1 Research Background	1
1.1.1 Halal Food Supply Chain	2
1.1.2 Global Context of Halal Food Industry in Malaysia	5
1.1.3 Contamination Risks in Halal Food Supply Chain	7
1.2 Background of Study	8
1.2.1 Halal Frozen Meat Supply Chain	10
1.2.2 Risks in Halal Frozen Meat Supply Chain Operation	13
1.2.3 Food Safety Management System in Halal Frozen Meat Supply Chain	14
1.3 Problem Statement	15
1.4 Scope of study	19
1.5 Research Questions	20
1.6 Research Objectives	21
1.7 Significance of the Study	22
1.8 Organization of Thesis	23
<b>CHAPTER TWO: LITERATURE REVIEW</b>	<b>26</b>
2.1 Introduction	26

2.2	Halal Food Supply Chain Management	26
2.3	Halal Frozen Meat Supply Chain Operation	30
2.4	Risks in Food Supply Chain Operation	32
2.5	Contamination Risk in Halal Frozen Meat Supply Chain Operation	34
2.5.1	Handling Process	37
2.5.2	Natural Hazard	38
2.5.3	Supply Chain Integration	40
2.5.4	Products Specification	42
2.5.5	Technology Adoption	43
2.6	Quality Assurance Model in Halal Food Supply Chain	44
2.6.1	Food Safety Management System	46
2.6.2	Hazard Analysis Critical Control Point (HACCP)	48
2.6.3	Regulatory Framework in Halal Meat Supply Chain Operation	48
2.6.4	HACCP and Pre-Requisite Food Safety Program in Malaysia	50
2.7	Stakeholder Theory in Halal Meat Supply Chain	51
2.7.1	Stakeholders in Halal Frozen Meat Supply Chain	53
2.8	The Concept of HACCP in Halal Frozen Meat Supply Chain Operation	55
2.8.1	Halal Critical Control Point Risk Management Plan in Halal Meat Supply Chain Operation	57
2.8.2	Halal Integrity in Halal Meat Supply Chain	59
2.8.3	Trustworthy in Halal Meat Supply Chain	61
2.8.4	Halal Assurance System Management System and Practices in Malaysia	62
2.8.5	Dedicated Asset in Halal Meat Supply Chain Operation	63
2.8.6	Previous Study on Halal Critical Control Point Application in Halal Food Supply Chain	64
2.9	Conceptual Framework for the Development of Halal Critical Control Point Risk Management Plan in Halal Meat Supply Chain Operation	66
2.10	Summary of Chapter	68