CONTENTS

	Page
Acknowledgement	iii
Abstract in English	vi
Abstract in Thai	vii
List of Tables	xiii
List of Figures	xiv
List of Abbreviations	XV
List of Symbols	xvi
Statement of Originality in English	xviii
Statement of Originality in Thai	xix
Chapter 1 Introduction	1
1.1 Problems of the Performance Measurement in Supply Chair	in 3
1.2 Problem in Food Supply Chain and the Motivation of Choo	
the Thai Frozen Shrimp Supply Chain	7 · · · · · · · · · · · · · · · · · · ·
1.3 Rational of the study	9
1.4. Soons of the study	11
1.5 Research Questions	12
1.6 Research Objectives	12
1.7 Outline of the Thesis	10
Chapter2 Literature Reviews, Principles and Theory	14
2.1 Literature Review	14
2.2 Models and Methods to Assess Supply Chain Performance	24
2.3 Principles and Theory	29
2.4 The Case Study	39
2.5 Conclusion	44

CONTENTS (continued)

			Page
Chapter 3	Res	earch Methodology	46
	3.1	Development and Confirming a New Performance Measurement	
		Model (Model Specification in CFA process)	49
	3.2	Data Collection and Data Preparation	51
	3.3	Data Analysis	52
	3.4	Select estimation methods for parameter estimation	52
	3.5	Assessing measurement model validity	54
	3.6	Determine Relative Weightage Score for Applying in	
		AHP Process	57
	3.7	Synthesize the New Performance Measurement and Prioritizing	
		Performance Measurement Indicators	58
	3.8	Conclusion	61
Chapter 4	Test	ting and Confirming of the New Performance Measurement Framework	64
	4.1	Integrating Conceptual Performance Measurement Model	64
	4.2	Analysis Results to Answer the Research Objectives	67
	4.3	Conclusion	77
Chapter 5	Syn	thesized the New Performance Measurement Model	
(Using the New Integrated Method	78
	5.1	Relative Weight Calculation from SEM	78
/		Relative Weight Calculation from AHP	79
	5.3	The Prioritizing of Criteria Based on BSC	80
	5.4	The New Performance Measurement Model	81
	5.5	Conclusions	83

CONTENTS (continued)

		Page
Chapter 6	Discussions and Conclusion	84
	6.1 Discussion of Results	85
	6.2 Conclusion	91
	6.3 Research Contributions	92
	6.4 Limitations	93
	6.5 Recommendations	94
References		95
Appendices	(3)	105
Apj	pendix A Questionnaires for The Thai Frozen Shrimp Supply Chain	106
App	pendix B 2 nd CFA results	119
App	pendix C Integrated Weight Calculation in the AHP process	140
Curriculum	Vitae VINIVERSIII	143



LIST OF TABLES

		Page
Table 1.1	Summary of the berries to develop performance measurement model	
	from scholars	6
Table 2.1	The overall dimensions of supply chain performance measurement	19
Table 2.2	Number of performance measurement articles	24
Table 2.3	Similarities and differences between CFA and EFA	33
Table 3.1	The observed variables and the latent variables in the performance	
	measurement model	50
Table 4.1	The observed variables and the latent variables in the performance	
	measurement model	65
Table 4.2	KMO and Bartlett's Test	67
Table 4.3	Assessment of normality	68
Table 4.4	Reliability testing in a pilot	70
Table 4.5	Standardized Factor Loadings, Average Variance Extracted and	
	Reliability Estimates of standardized total effect of ETA on Y	71
Table 4.6	CFA Goodness-fit-statistics indices	73
Table 5.1	Relative Weightage of Criteria from Y model	79
Table 5.2	Relative Weight Calculation from AHP	80
Table 5.3	The prioritizing of criteria	81
Table 5.4	the new performance measurement model to evaluate	
	the Thai frozen shrimp chain	82
	All rights reserved	

LIST OF FIGURES

		Page
Figure 1.1	The relationship of members of the Thai's frozen shrimp supply chain	11
Figure 2.1	Example of Hypothesized structural equation model. Boldface arrows	
	indicate structural component (e = error)	32
Figure 2.2	Example of a confirmatory factor analysis (e = error)	34
Figure 2.3	Multiple criteria decision making	36
Figure 2.4	The hierarchy of the single - layer attribute structure and complete	
	comparisons	37
Figure 2.5	The Thai frozen shrimp supply chain and shrimp logistics	
	from Thailand to Japan	42
Figure 3.1	The new Performance Measurement Model	46
Figure 3.2	Research Methodology	48
Figure 3.3	CFA process	49
Figure 3.4	Breakdown a Decision Problem	60
Figure 3.5	Summary of the connection between literature reviews (Chapter 2)	
	and research methodology (Chapter 3)	62
Figure 4.1	The first construction of CFA model	66
Figure 4.2	The 2 nd order CFA of the performance measurement model	75
	ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่	
	Copyright [©] by Chiang Mai University	
	All rights reserved	

LIST OF ABBREVIATIONS

X	Observed exogenous variable
Y	Observed endogenous variable
ξ	Latent exogenous variable, the BSC perspectives in equation 3.3
η	Latent endogenous variable
δ	Measurement error in observed exogenous variable
\mathcal{E}	Measurement error in observed endogenous variable
5	Error term associated with Latent endogenous variable
Γ	The second order the factor loading
Γ_j	The second order factor loading at j is 1,2,5
$\Sigma arGamma_j$	The sum of all the second order factor loadings.
BSC_i	The preference BSC perspectives (BSC) for i=1 to 4
b_{ij}	Relative weightage for BSCi with respect to jth criterion
RW_j	Relative weightage for criterion
W_i	The relative weights of criteria
a_{ij}	Pair-wise comparison score in each criterion with respect to BSC
	perspectives
λ_{ij}	Factor loadings
λ_{max}	A reference index to screen information for a consistency ratio (CR)
ดบ	calculation of the estimated vector
χ^2 Co	Chi-square Chi-square
df	Degree of freedom

LIST OF SYMBOLS

ABC Activity Base Costing

AGFI Adjusted Goodness-of-Fit-Index

AHP Analytic hierarchy process

AHP-PGP Analytical network process and Preemptive Goal Programming

AVE Average Variance Extracted

BSC Balance Scorecard

C.I. Confidence Interval

CFA Confirmatory Factor Analysis

CFI The Comparative Fit Index

CR Consistency Ratio

DEA Data Envelopment Analysis

EVA Economic Value Added

EFA Exploratory factor analysis

FA Factor Analysis

Fuzzy-AHP Fuzzy Analytical Hierarchy Process

FMCDM Fuzzy Multiple Criteria Decision Method

GFI Goodness-of-Fit-Index

KPIs Key Performance measurement Indicators

LISREL Linear Structure Relationship

MADM Multiple Attribute Decision Method

MCDM Multiple Criteria Decision Method

MCDA Multiple Criteria Decision Analysis

MODM Multiple Objective Decision Method

NFI Normed Fit Index

NNFI Non-Normed Fit Index

LIST OF SYMBOLS(continued)

PNFI Parimony Fit Index

PM Performance Measurement

PMS Performance Measurement System

RFI Relative Fit Index

RMSEA Root Mean Square Error of Approximation

RMR Root Mean Square Residual

SCM Supply Chain Management

SCPM Supply Chain Performance Measurement

SCOR model Supply chain Operation Reference Model

SEM Structural Equation Modeling

SRMR Standard Root Mean Square Residual



STATEMENT OF ORIGINALITY

1. Conceptual ideas to develop a new performance measurement modelwhich is able to use as the standard model for evaluating a performance of this chain., the new model is composed of aspects of the performance measurement in supply chain and environmental aspect that all aspect is identified fromnecessary dimensions of the Thai frozen shrimp performance measurement supply chain. In addition, the new model is combined with the five dimensions; Efficiency, Flexibility, Responsiveness, Quality with including environmental aspect and Innovativeness.

2. In order to construct the new model from the integrating of conceptual ideas, the combination methods between the confirming and the testing of the model and the multiple decision making method are used to evaluate a supply chain performance.

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่ Copyright[©] by Chiang Mai University All rights reserved

ข้อความแห่งการริเริ่ม

- 1. แนวคิดในการพัฒนาโมเดลการวัดประสิทธิภาพสำหรับใช้เป็นเครื่องมือในการประเมิน ประสิทธิภาพของโซ่อุปทานกุ้งแช่แข็งโมเดลนี้ประกอบด้วยมิติต่างในการวัดประสิทธิภาพของโซ่ อุปทานและมุมมองด้านสิ่งแวดล้อมเข้าด้วยกัน ซึ่งมิติที่ระบุใช้เป็นมิติที่สำคัญต่อโซ่อุปทานกุ้งแช่แข็ง ตัวแบบโมเดลตัวใหม่ประกอบด้วยการวัดประสิทธิภาพที่สำคัญห้ามิติ คือ ประสิทธิภาพด้านการเงิน. ความยืดหยุ่นในการดำเนินงาน, การตอบสนองต่อการเปลี่ยนแปลง, คุณภาพอันรวมถึงมุมมองด้าน สิ่งแวดล้อม และด้านนวัตกรรม
- 2. เพื่อสร้างโมเคลใหม่ที่ใช้ในการวัดประสิทธิภาพจากแนวความคิด โดยวิธีการที่ใช้เป็นวิธีที่รวมการ ยืนยันและทดสอบโครงสร้างโมเคลกับวิธีการตัดสินใจในหลายทางเลือกเข้าด้วยกันเพื่อใช้ในการ ประเมินประสิทธิภาพของโซ่อุปทาน

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่ Copyright[©] by Chiang Mai University All rights reserved