

# Contents

ABSTRACT.....	II
摘要.....	III
謝辭.....	IV
Contents.....	V
List of Figures.....	VIII
List of Tables.....	X
Chapter 1 Introduction	<b>1</b>
1.1 Research Background.....	1
1.2 Research Motivation.....	2
1.3 Research Objectives.....	4
Chapter 2 Related Works	<b>6</b>
2.1 Collaboration.....	6
2.2 Collaborative Supply Chain.....	9
2.2.1 The Evolution of Supply Chain.....	9
2.2.2 CPFR.....	13
2.3 Partner Selection in Supply Chain.....	15
2.4 Inter-Organizational Trust.....	17
2.5 Initial Trust and Reputation.....	21
2.6 Reputation System and Referral System.....	22
Chapter 3 A Reputation-Based Partner Selection Model (RBPS model)	<b>26</b>
3.1 Overview.....	26
3.2 Assumption.....	29
3.3 Discovery Phase.....	30
3.4 Selection Phase.....	32
3.4.1 Testimony Definition Step.....	33
3.4.1.1 Competence Trust.....	34
3.4.1.2 Goodwill Trust.....	35

3.4.1.3 Predictability Trust.....	36
3.4.2 Testimony Propagation Step.....	37
3.4.2.1 Propagate the Testimonies.....	39
3.4.2.2 To Construct the Referral Networks.....	42
3.4.2.3 Weighting the Nodes.....	43
3.4.3 Testimony Aggregation Step.....	45
3.4.3.1 To Aggregate the Initial Trust of Competence.....	48
3.4.3.2 To Aggregate the Initial Trust of Goodwill.....	51
3.4.3.3 To Derive the Predictability Initial Trust.....	54
3.4.3.4 To Obtain the Initial Trust Score.....	55
3.4.4 Collaboration Threshold.....	56
3.5 Numerical Example.....	57
3.5.1 To Obtain Competence Initial Trust.....	58
3.5.2 To Obtain Goodwill Initial Trust.....	62
3.5.3 To Obtain Predictability Initial Trust.....	64
3.5.4 To Derive the Initial Trust Score.....	65
<b>Chapter 4 Experiment</b>	<b>66</b>
4.1 Experiment Design.....	66
4.1.1 Partner Selection.....	66
4.1.1.1 Environment Setting Step.....	67
4.1.1.2 Partner Selection Step.....	70
4.1.2 To Identify the Critical Factors.....	76
4.1.3 To Identify the Critical Values of the Critical Factors.....	78
4.1.4 To Identify the Critical Trust Type.....	78
4.2 Experiment Results.....	78
4.2.1 Partner Selection.....	79
4.2.2 Critical Factors.....	86
4.2.3 Critical Values of the Critical Factors.....	88
4.2.4 Critical Trust Type.....	92
<b>Chapter 5 Conclusions</b>	<b>94</b>

5.1 Overview.....	94
5.2 Key Findings.....	95
5.3 Research Contributions.....	96
5.4 Limitations.....	99
5.5 Future Research Directions.....	100
Bibliography.....	102

## List of Figures

Fig. 2.1 The collaboration phases.....	7
Fig. 2.2 The evolution of supply chain.....	10
Fig. 2.3 Three levels of CPFR.....	13
Fig. 2.4 VE breeding environment (VBE).....	16
Fig. 2.5 The framework of centralized reputation system.....	23
Fig. 2.6 The framework of distributed reputation system.....	23
Fig. 2.7 Trust derived from referral system.....	24
Fig. 3.1 The reputation-based partner selection model (RBPS model)..	27
Fig. 3.2 Partner selection lifecycle.....	28
Fig. 3.3 The process of the discovery phase.....	31
Fig. 3.4 Three steps to select trusted partner.....	33
Fig. 3.5 Three types of inter-organizational trust.....	34
Fig. 3.6 The example of indicators of competence trust.....	35
Fig. 3.7 The process to obtain the parties and testimonies.....	38
Fig. 3.8 The process of testimony propagation.....	39
Fig. 3.9 The referral networks.....	43
Fig. 3.10 Multiple referrals to one node.....	44
Fig. 3.11 An example of weighted referral networks.....	44
Fig. 3.12 To aggregate the initial trust score.....	46
Fig. 4.1 The process of Collaborative Partner Selection (CPS).....	71
Fig. 4.2 The life cycle of a searching path.....	72
Fig. 4.3 Two searching paths initiated by trustor agent.....	73
Fig. 4.4 To weight the identified rater.....	74
Fig. 4.5 The results of PS1.....	80
Fig. 4.6 The results of PS2.....	81
Fig. 4.7 The result of PS3.....	82
Fig. 4.8 The results of PS4.....	83
Fig. 4.9 The results of MPS1.....	84

Fig. 4.10 The results of MPS2.....	84
Fig. 4.11 The results of MPS3.....	85
Fig. 4.12 The results of MPS4.....	85
Fig. 4.13 Group Statistics of two factor combinations.....	91
Fig. 4.14 Independent sample test for two factor combinations.....	91
Fig 4.15 The result of factor combination of '3366'.....	92
Fig. 4.16 The experiment results for critical trust type.....	93

## List of Tables

Table 2.1	The supply network relationships.....	12
Table 2.2	Types of trust in business relationships.....	19
Table 2.3	The definitions of three types of inter-organization trust.....	20
Table 3.1	The constructs and indicators of goodwill trust.....	36
Table 3.2	The description of messages.....	41
Table 3.3	The notation list.....	46
Table 3.4	The goodwill reputation over time periods.....	53
Table 3.5	The raw objective testimonies.....	59
Table 3.6	The conformance of two raters.....	60
Table 3.7	The normalized conformance of two raters.....	61
Table 3.8	The summary of $Ind_s^{R_i}$ and $z^{R_i}$ .....	61
Table 3.9	The raw subjective testimonies.....	62
Table 3.10	The changeable goodwill reputation.....	63
Table 3.11	The predictability of competence.....	64
Table 3.12	To obtain the predictability of goodwill.....	64
Table 4.1	The performance level of various trust types.....	68
Table 4.2	The factors in the simulation.....	76
Table 4.3	$2^k$ factorial design.....	77
Table 4.4	The test of between-subject effects.....	87
Table 4.5	The homogeneous subset.....	89