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**SERVICE INNOVATION AND SERVICE
RESPONSIVENESS:
MODERATING EFFECT OF INFORMATION
TECHNOLOGY CAPABILITY**



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Universiti Utara Malaysia

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**DOCTOR OF PHILOSOPHY
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**SERVICE INNOVATION AND SERVICE RESPONSIVENESS:
MODERATING EFFECT OF INFORMATION TECHNOLOGY
CAPABILITY**



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**Thesis Submitted to
Othman Yeop Abdullah Graduate School of Business
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in Fulfillment of the Requirement for the Degree of Doctor of Philosophy**



Kolej Perniagaan
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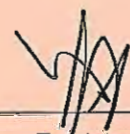
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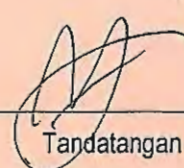
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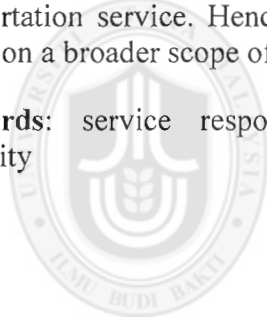
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ABSTRACT

Economic growth of a country highly depends on the development of its service sector. The logistic or transportation industry in Malaysia has significantly contributed towards the national economy and has also provided the employment opportunities. The industry has undergone a radical change due to the rapid evolution of information technology. The need to have efficient services is undeniable because of the increase in e-commerce applications which demands for service companies to innovate. Nevertheless, unlike the manufacturing sector, the innovation models in the service sector are still under developed. Hence, this requires further investigation in understanding the service innovation, especially in the area of transportation industry. This study aims to develop a model that links four main variables which are relevant to the industry, namely the determinants of service innovation, service innovation, information technology capability, and service responsiveness. A survey has been conducted on postal, courier, and freight forwarding companies. Data from respondents were analyzed by using PLS-SEM. The result of the study provides a meaningful insight on the service innovation and ultimately, contributes towards enhancing the responsiveness of the postal services, courier, and freight forwarding companies. The study limits its scope only on selected transportation service. Hence, it is recommended for the future studies to investigate further on a broader scope of transportation service or even on other industries.

Keywords: service responsiveness, service innovation, information technology capability



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ABSTRAK

Pertumbuhan ekonomi negara amat bergantung kepada perkembangan sektor perkhidmatan. Industri logistik atau pengangkutan di Malaysia telah memberikan sumbangan yang signifikan kepada ekonomi negara dan telah menyediakan peluang pekerjaan. Industri ini telah mengalami perubahan yang radikal berikutan evolusi pesat yang berlaku dalam bidang teknologi maklumat. Tidak dinafikan keperluan untuk mempunyai perkhidmatan yang cekap amat diperlukan memandangkan terdapat peningkatan dalam aplikasi e-dagang yang menuntut syarikat-syarikat perkhidmatan untuk berinovasi. Walau bagaimanapun, tidak seperti sektor pembuatan, model inovasi dalam sektor perkhidmatan masih kurang dibangunkan. Oleh itu, kajian lanjut diperlukan dalam memahami inovasi perkhidmatan, terutamanya dalam industri pengangkutan. Kajian ini bertujuan untuk membangunkan sebuah model yang mengandungi pautan empat pembolehubah utama yang berkaitan dengan industri, iaitu penentu inovasi perkhidmatan, inovasi perkhidmatan, keupayaan teknologi maklumat, dan tindak balas perkhidmatan. Kajian ini telah dijalankan ke atas syarikat-syarikat pos, kurier dan penghantaran barang. Data daripada responden telah dianalisis dengan menggunakan PLS-SEM. Hasil kajian memberikan perspektif yang bermakna kepada inovasi perkhidmatan dan seterusnya boleh menyumbang ke arah peningkatan tindak balas atau responsif daripada syarikat-syarikat perkhidmatan pos, kurier, dan penghantaran barang. Kajian ini menghadkan skop kepada perkhidmatan pengangkutan yang terpilih sahaja. Oleh yang demikian, adalah dicadangkan supaya penyelidikan pada masa akan datang mengkaji tentang bidang perkhidmatan dengan lebih lanjut dalam skop yang lebih luas, ataupun dalam industri yang lain.

Kata kunci: tindak balas perkhidmatan, inovasi perkhidmatan, keupayaan teknologi maklumat

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TABLE OF CONTENTS

TITLE PAGE	i
CERTIFICATION OF THESIS WORK	ii
PERMISSION TO USE	iii
ABSTRACT	iv
ABSTRAK	vi
ACKNOWLEDGEMENTS	vii
TABLE OF CONTENTS	viii
LIST OF TABLES	xiii
LIST OF FIGURES	xiv
LIST OF ABBREVIATIONS	xv
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the Study	1
1.1.1 Malaysia Innovation-led Service Industry and Logistics Service Providers	4
1.1.1.1 Postal and Courier Services	7
1.1.1.2 Freight Forwarder	9
1.2 Problem Statement	10
1.3 Research Questions	14
1.4 Research Objectives	14
1.5 Significance of the Study	15
1.5.1 Theoretical Contributions	15
1.5.2 Practical Contributions	16
1.6 Scope of Study	17
1.7 Definition of Key Terms	18
1.7.1 Service Innovation Determinants	18
1.7.2 Service Innovation	18
1.7.3 Service Responsiveness	19
1.7.4 Information Technology Capability	20
1.8 Organization of the Thesis	20

CHAPTER TWO: LITERATURE REVIEW	22
2.1 Introduction	22
2.2 Service Definition	22
2.2.1 Service Cycle	23
2.3 Service Responsiveness	24
2.3.1 Service Responsiveness in Logistics	27
2.4 Innovation	30
2.4.1 Types of Innovation	34
2.4.2 New Product Development (NPD) vs New Service Development (NSD)	35
2.4.3 The Service Sector and Distribution Logistics	37
2.4.4 Innovation in Service/Service Innovation	45
2.4.4.1 Service Technology	60
2.4.4.2 Service Delivery System	60
2.4.4.3 Service Concept	60
2.4.4.4 Customer Service Interface	61
2.5 Determinants of Service Innovation	62
2.5.1 Business Intelligence	64
2.5.2 Market Intelligence	67
2.6 Information Technology	71
2.6.1 The Importance of Information Technology	76
2.6.2 Information Technology Capability	82
2.7 Moderating Effect of Information Technology Capability	83
2.8 Underpinning Theory: Resource-based View (RBV)	84
2.9 Research Framework	86
2.10 Postulated Hypothesis	88
2.10.1 The Determinants and Service Innovation	88
2.10.2 Service Innovation and Service Responsiveness	89
2.10.3 Moderating Effect of Information Technology Capability	90
2.11 Chapter Summary	91

CHAPTER THREE: METHODOLOGY	92
3.1 Introduction	92
3.2 Philosophical Justification	93
3.3 Research Design	95
3.4 Measurement of Variables/Instrumentation	96
3.4.1 Measures of Service Innovation Determinants	97
3.4.2 Service Innovation Measures	98
3.4.3 Information Technology Capability Measures	100
3.4.4 Service Responsiveness Measure	101
3.4.5 Validity and Reliability of Instrument Measures	103
3.5 Data Collection	105
3.5.1 Unit of Analysis	105
3.5.2 Sampling	106
3.5.3 Data Collection Procedures	107
3.6 Techniques of Data Analysis	108
3.6.1 Descriptive Statistics	108
3.6.2 Factor and Reliability Analysis	109
3.6.3 Data Analysis using SEM	110
3.6.4 Hypotheses Testing	111
3.7 Analyzing Measurement Model	113
3.7.1 Content Validity	113
3.7.2 Discriminant Validity	114
3.7.3 Convergent Validity	114
3.7.4 Construct Validity	115
3.8 Chapter Summary	116
CHAPTER FOUR: ANALYSIS AND RESULTS	117
4.1 Introduction	117
4.2 Response Rate	117
4.3 Profile of the Company	118
4.4 Data Screening	121
4.4.1 Data Normality	122

4.4.2	Missing Data	123
4.5	Goodness of Measure: Factor Analysis and Reliability	123
4.5.1	Construct Validity	124
4.5.2	Convergent Validity	124
4.5.3	Discriminant Validity	127
4.6	Assessment of PLS-SEM Structural Model	128
4.6.1	Assessing the Significance and Relevancy of the Structural Model Relationship	130
4.6.2	Business Intelligence and Service Innovation	131
4.6.3	Market Intelligence and Service Innovation	131
4.6.4	Service Innovation and Service Responsiveness	131
4.6.5	Moderating Effect of Information Technology Capability	133
4.7	Summary of Results	134
CHAPTER FIVE:DISCUSSION AND CONCLUSION		135
5.1	Introduction	135
5.2	Recapitulation of the Study	136
5.2.1	Hypothesis 1 and Research Question 1	136
5.2.2	Hypothesis 2 and Research Question 2	137
5.2.3	Hypothesis 3 and Research Question 3	137
5.2.4	Hypothesis 4 and Research Question 4	138
5.3	Discussion on Findings	139
5.4	Contributions of the Study	141
5.4.1	Practical Contributions	141
5.4.2	Methodological Contributions	142
5.4.3	Theoretical Contributions	142
5.5	Limitations of the Study	143
5.6	Directions for Future Research	144
5.7	Conclusion	145
REFERENCES		148

APPENDICES	180
Appendix 1: 17 Services Sub-sectors Foreign Equity Participation for 2012	180
Appendix 2: Survey Cover Letter	181
Appendix 3: Questionnaire	182
Appendix 4: Cross Loadings of Constructs	187



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LIST OF TABLES

Table 2.1:	Summary of Selected Studies on Responsiveness	29
Table 2.2:	Definitions for Postal and Courier Services	42
Table 2.3:	Logistics Services vs General Services	59
Table 2.4:	IT Application in Logistics and Freight Transportation	74
Table 2.5:	Supply Chain Information Technology Applications	80
Table 2.6:	Technologies in Logistics	80
Table 3.1:	Features of Post-positivist Ontology	94
Table 3.2:	Summary of Variables and Measurement of Instruments	102
Table 3.3:	SEM terminology for studied variables	111
Table 3.4:	Acceptable Level for SEM Analysis	115
Table 4.1:	Company Ownership	118
Table 4.2:	Number of Employees	119
Table 4.3:	Company's Core Activities	119
Table 4.4:	Position in Company	120
Table 4.5:	Years of Operations	121
Table 4.6:	Quality of Measurement Model	126
Table 4.7:	Discriminant Validity of Constructs	128
Table 4.8:	Path Analysis Result	133
Table 5.1:	Summary of Findings	138

LIST OF FIGURES

Figure 1.1: Malaysia Economic Transformation	5
Figure 2.1: Phases of Interaction Between Service Requesting and Providing Activities	24
Figure 2.2: The Ladder of Abstraction for the Responsiveness Construct in Operations Management	26
Figure 2.3: The Diversity of the Service Sector	39
Figure 2.4: Dimensions in Service Innovation	56
Figure 2.5: An Integrated Service Innovation Model	57
Figure 2.6: Drivers of Innovation	62
Figure 2.7: Service Organizations Innovation Model	66
Figure 2.8: Innovation Process for Services	68
Figure 2.9: Theoretical Framework of the Study	87
Figure 4.1: Model depicted from Smart PLS after Removing Low Loading Items	129
Figure 4.2: The Hypothesized Research Model	130
Figure 4.3: Analysis of outcome of hypotheses	132

LIST OF ABBREVIATIONS

BI	Business Intelligence
FMFF	Federation of Malaysian Freight Forwarders
GDP	Gross Domestic Product
ITC	Information Technology Capability
MI	Market Intelligence
OECD	Organisation for Economic Co-operation Development
PLS	Partial Least Squares
R&D	Research and Development
SEM	Structural Equation Modeling
SI	Service Innovation
SR	Service Responsiveness



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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Service industry plays a significant role as one of the important sources for the gross national product (GNP) and total employment of a country. The service industries has accounted for over 70 percent of the global GNP in 2010 and has been progressing at faster rate than agricultural and manufacturing sectors (Wirtz, Tuzovic, & Ehret, 2015). The employment rate also has significantly shifted from agricultural and manufacturing-based sectors to the service-based industries (WTO, 2012).

Due to the growth of the service industry, the market has become highly competitive. Hence, the service companies should search for the vital factors that enable them to deliver a value-added service. The key to become successfully competitive is to determine what customers want and then directing efforts toward meeting or even exceeding the customer expectation. In other words, service companies should be able to provide service responsiveness as their key for competitive advantage.

Service responsiveness refers to the capability of an organization to respond to their customers' needs (Razalli, 2008). Service responsiveness can only be achieved through gaining more knowledge of the customers and having consistent engagement with them. A responsive company may use the combination of its marketing, production and

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APPENDICES


Appendix 1: 17 Services Sub-sectors Foreign Equity Participation for 2012

Liberalisation of the 17 services sub-sectors announced in the 2012 budget speech		
No.	Sector/Subsector	Foreign Equity Participation
1	Telecommunications Services <i>Applications Service Provider (ASP) licence.</i>	100% April 2012
2	Telecommunications Services <i>Network Facilities Provider (NFP) and Network Service Provider (NSP) licences.</i>	70% April 2012
3	Courier Services	100% January 2012
4	Private Higher Education Services with University status	100% Pending amendments to the relevant Acts.
5	International Schools	100% March 2012
6	Technical and Vocational Secondary Education Services	100% January 2012
7	Technical and Vocational Secondary Education Services <i>for students with special needs</i>	100% January 2012
8	Skills Training Services	100% January 2012
9	Private Hospitals Services <i>Foreign medical specialists/experts of any specialty and foreign dental specialists are also allowed to practise in private hospitals.</i>	100% Pending amendments to the relevant Acts.
10	Stand alone specialised medical clinic services	100% Pending amendments to the relevant Acts.
11	Stand alone specialised dental clinic services	100% Pending amendments to the relevant Acts.
12	Departmental Stores and Specialty Stores	100% January 2012
13	Incineration Services	100% January 2012
14	Accounting and Taxation Services	100% January 2012
15	Architectural services	100% Pending amendments to the relevant Acts.
16	Engineering services	100% Pending amendments to the relevant Acts.
17	Legal Services	International joint venture for permitted areas of practice. Pending amendments to the relevant Acts. The liberalisation initiative is only applicable to Peninsular Malaysia.

Note: Liberalisation of the 17 sub sectors is subjected to existing Malaysian laws and regulations.

Source: <http://www.btimes.com.my/articles/top1/Article/>

Appendix 2: Survey Cover Letter



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Pusat Pengajian Pengurusan Teknologi dan Logistik
Kolej Perniagaan
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman, Malaysia
Tel : (604) 928 6857/6858
Faks : (604) 928 6860
www.uum.edu.my

Dear Sir/Madam,

A Study on Service Innovation and Responsiveness

We are conducting a research on service innovation and service responsiveness in logistic companies. In addition, this study also tries to seek the role of information technology capability in the service innovation and service responsiveness.

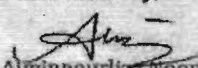
Please complete ALL questions in the survey. Your survey responses will be strictly confidential and data from this research will be reported only in the aggregate. After the completion of the research, identifying information will be destroyed and the data will be completely anonymous in the analyses and reports of the research.

This survey will only take 10 minute of your time. Your cooperation will be valuable to continuous improvement effort in the service industry in Malaysia. Please provide necessary information at the back of the questions if you need a copy of the executive report.


If you have questions at any time about the survey or the procedures, you may contact Alminnourliza Noordin at 017-4977781 or by email (alminnourliza@uum.edu.my).

Thank you very much for your time and support.

Yours sincerely,



Alminnourliza Noordin
PhD Candidate
School of Technology Management and Logistic
Universiti Utara Malaysia
06010 Sintok
Kedah
Email: alminnourliza@uum.edu.my
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Appendix 3: Questionnaire

SECTION A

General Information of Company & Respondent's Profile

Maklumat Am Syarikat & Profil Responden

Please (/) the appropriate answer and fill in the blanks to describe your company in general.
Sila (/) jawapan yang bersesuaian dan isikan ruang kosong untuk menggambarkan syarikat anda secara am.

1. Company ownership (*Pemilikan syarikat*):

<input type="checkbox"/>	Malaysia
<input type="checkbox"/>	Foreign

2. Number of employees (*Bilangan pekerja*):

<input type="checkbox"/>	Less than 50 (<i>Kurang dari 50</i>)
<input type="checkbox"/>	Between 50 to 100 (<i>Antara 50 ke 100</i>)
<input type="checkbox"/>	More than 100 (<i>Lebih daripada 100</i>)

3. Years of operations (*Bilangan tahun operasi*):

_____ years (*tahun*).

4. Company location (*Lokasi syarikat*):

5. Core activities of the company (*Aktiviti-aktiviti utama syarikat*):
(May tick more than one/*Boleh tanda lebih daripada satu*)

<input type="checkbox"/>	Postal/Courier (<i>Pos/Kurier</i>)
<input type="checkbox"/>	Transport and Communication (<i>Pengangkutan dan Komunikasi</i>)
<input type="checkbox"/>	Retailing (<i>Peruncitan</i>)
<input type="checkbox"/>	Construction (<i>Pembinaan</i>)
<input type="checkbox"/>	Warehousing (<i>Pergudangan</i>)
<input type="checkbox"/>	Others (<i>Lain-lain</i>)

6. Your position in company (*Jawatan anda dalam syarikat*):

<input type="checkbox"/>	Top level management (<i>Pengurusan peringkat atasan</i>)
<input type="checkbox"/>	Middle level management (<i>Pengurusan peringkat pertengahan</i>)
<input type="checkbox"/>	Lower level management (<i>Pengurusan peringkat bawahan</i>)
<input type="checkbox"/>	Non managerial (<i>Bukan pengurusan</i>)

For SECTION B to SECTION E, please indicate your level of agreement from 1 to 7 for each statement.
 Untuk BAHAGIAN B ke BAHAGIAN E, sila tentukan tahap persetujuan anda dari 1 hingga 7 untuk setiap pernyataan.

SECTION B		Service Innovation Determinants						
		Penentu-penentu Inovasi Perkhidmatan						
Business Intelligence		Strongly Disagree						Strongly Agree
The employees are valuable to our company. <i>Pekerja adalah berharga kepada syarikat kami.</i>		1	2	3	4	5	6	7
Our company has employees who are knowledgeable on organizations' operation. <i>Syarikat kami mempunyai pekerja yang mempunyai pengetahuan tentang operasi organisasi.</i>		1	2	3	4	5	6	7
Our company has a medium for employees to point out their opinion. <i>Syarikat kami mempunyai medium untuk pekerja menyatakan pendapat mereka.</i>		1	2	3	4	5	6	7
Managers consider the lower level employee opinions for the benefit of our company. <i>Pengurus mempertimbangkan pendapat pekerja bawahan untuk faedah syarikat kami.</i>		1	2	3	4	5	6	7
Market Intelligence		Strongly Disagree						Strongly Agree
Our company meets customers regularly. <i>Syarikat kami bertemu pelanggan dengan kerap.</i>		1	2	3	4	5	6	7
Our company conducts related market research. <i>Syarikat kami menjalankan penyelidikan pasaran yang berkaitan.</i>		1	2	3	4	5	6	7
Our company detects changes in consumers' preferences. <i>Syarikat kami mengesan perubahan dalam minat pengguna.</i>		1	2	3	4	5	6	7
Our company polls customers' opinion at least once a year. <i>Syarikat mengumpul pendapat pelanggan sekurang-kurangnya sekali setahun.</i>		1	2	3	4	5	6	7
Our company detects fundamental shifts in industry. <i>Syarikat kami mengesan perubahan asas dalam industri.</i>		1	2	3	4	5	6	7
Our company frequently reviews the effect of changes in business environment on customers. <i>Syarikat kami sering mengkaji kesan perubahan dalam persekitaran perniagaan terhadap pelanggan.</i>		1	2	3	4	5	6	7
Our customer feedbacks are taken into account for company's innovation plan. <i>Maklumbalas pelanggan kami diambil kira bagi pelan inovasi syarikat.</i>		1	2	3	4	5	6	7
Our suppliers have an influence in company's decision making. <i>Pembekal kami mempunyai pengaruh dalam pembuatan keputusan syarikat.</i>		1	2	3	4	5	6	7

SECTION C

Service Innovation
Inovasi Perkhidmatan

Service Technology	Strongly Disagree	Moderate	Strongly Agree
The postal/courier service requires the installation of new software to our company. <i>Perkhidmatan pos/kurier memerlukan pemasangan perisian baru kepada syarikat kami.</i>	1	2 3 4 5	6 7
The postal/courier service requires the installation of new hardware to our company. <i>Perkhidmatan pos/kurier memerlukan pemasangan perkakasan baru kepada syarikat kami.</i>	1	2 3 4 5	6 7
Our postal/courier service is supported by innovative technology. <i>Perkhidmatan pos/kurier kami disokong oleh teknologi inovatif.</i>	1	2 3 4 5	6 7
Service Concept	Strongly Disagree	Moderate	Strongly Agree
Our postal/courier service is totally new to the market. <i>Perkhidmatan pos/kurier kami adalah benar-benar baru kepada pasaran.</i>	1	2 3 4 5	6 7
Our postal/courier service has new features. <i>Perkhidmatan pos/kurier kami mempunyai ciri-ciri baru.</i>	1	2 3 4 5	6 7
Our postal/courier service requires a change in customer buying behaviour. <i>Perkhidmatan pos/kurier kami memerlukan perubahan dalam tingkah laku membeli pelanggan.</i>	1	2 3 4 5	6 7
The postal/courier service is totally new to our company. <i>Perkhidmatan pos/kurier adalah benar-benar baru kepada syarikat kami.</i>	1	2 3 4 5	6 7
The postal/courier service allows our company to enter a new market. <i>Perkhidmatan pos/kurier membolehkan syarikat kami memasuki pasaran baru.</i>	1	2 3 4 5	6 7
The postal/courier service supplement on our existing product line. <i>Perkhidmatan pos/kurier melengkapkan barisan produk kami yang sedia ada.</i>	1	2 3 4 5	6 7
The postal/courier service creates a new product line for our company. <i>Perkhidmatan pos/kurier mewujudkan barisan produk baru bagi syarikat kami.</i>	1	2 3 4 5	6 7
Service Delivery System	Strongly Disagree	Moderate	Strongly Agree
Our company sufficiently trains the employees to deal with customers. <i>Syarikat kami melatih pekerja secukupnya untuk berurusan dengan pelanggan.</i>	1	2 3 4 5	6 7

Our company has employees who are able to handle the operations excellently. <i>Syarikat kami mempunyai pekerja yang mampu untuk mengendalikan operasi dengan cemerlang.</i>	1 2 3 4 5 6 7
Our company offers door-to-door courier service. <i>Syarikat kami menawarkan perkhidmatan kurier dari pintu ke pintu.</i>	1 2 3 4 5 6 7
Customer Service Interface	Strongly Disagree Moderate Strongly Agree
Our customers are able to know where their parcel/goods are (track and trace). <i>Pelanggan kami boleh mengetahui di mana bungkusan/barang-barang mereka (jejak dan kesan).</i>	1 2 3 4 5 6 7
Our customers are provided with medium for them to check their parcel status either through online or help desk. <i>Pelanggan kami disediakan dengan medium untuk mereka menyemak status bungkusan mereka sama ada melalui atas talian atau meja bantuan.</i>	1 2 3 4 5 6 7
Our repeating customer will have extra advantage (membership or offering additional service at no cost). <i>Pelanggan kami yang berulang akan mempunyai kelebihan tambahan (keahlian atau menawarkan perkhidmatan tambahan tanpa kos).</i>	1 2 3 4 5 6 7

SECTION D	Information Technology Capability <i>Keupayaan Teknologi Maklumat</i>
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IT Knowledge	Strongly Disagree	Moderate	Strongly Agree
Our operations employees are knowledgeable on IT operations. <i>Kakitangan operasi kami adalah berpengatahuan mengenai operasi IT.</i>	1	2 3 4 5	6 7
Our IT employees are qualified for the job. <i>Kakitangan IT kami berkecualan untuk kerja.</i>	1	2 3 4 5	6 7
Our IT networking engineers are professionally qualified. <i>Juruera-juruera rangkaian IT kami berkecualan profesional.</i>	1	2 3 4 5	6 7
Our employees are proactive in company innovation effort. <i>Kakitangan kami adalah proaktif dalam usaha inovasi syarikat.</i>	1	2 3 4 5	6 7
Our employees attend ICT training courses regularly. <i>Kakitangan kami kerap menghadiri kursus latihan ICT.</i>	1	2 3 4 5	6 7
IT Operations	Strongly Disagree	Moderate	Strongly Agree
Our company is linked to the computer network. <i>Syarikat kami mempunyai pautan kepada rangkaian komputer.</i>	1	2 3 4 5	6 7

Our company's computer system down time is minimal. <i>Masa sistem tergendala bagi komputer syarikat kami adalah minimum.</i>	1	2	3	4	5	6	7
Our company has computerized all of its operations. <i>Syarikat kami menggunakan komputer bagi semua operasinya.</i>	1	2	3	4	5	6	7
Our IT policy is in line with regulatory guidelines. <i>Polisi IT kami adalah selaras dengan garis panduan kawal selia.</i>	1	2	3	4	5	6	7

SECTION E	Service Responsiveness <i>Tindak balas Perkhidmatan</i>
------------------	---

Responsiveness	Strongly Disagree	Moderate	Strongly Agree				
The need of different customer groups drives new service development activities in our company. <i>Keperluan kumpulan pelanggan yang berbeza memandu aktiviti pembangunan perkhidmatan baru dalam syarikat kami.</i>	1	2	3	4	5	6	7
When our customers are unhappy with the quality of products/services, we will take corrective actions immediately. <i>Apabila pelanggan kami tidak berpuas hati dengan kualiti produk / perkhidmatan, kami akan mengambil tindakan pembetulan dengan segera.</i>	1	2	3	4	5	6	7
We use a formal program where we meet with our customers to determine their service needs regularly. <i>Kami menggunakan program formal di mana kami bertemu dengan pelanggan kami untuk menentukan keperluan perkhidmatan mereka secara kerap.</i>	1	2	3	4	5	6	7
We make use of a formal program in which we ask customers for feedback on practices or policies regularly. <i>Kami menggunakan program rasmi di mana kami meminta pelanggan untuk memberi maklum balas mengenai amalan atau dasar secara kerap.</i>	1	2	3	4	5	6	7
Our company involves in a formal internal process in which service and quality levels are examined regularly. <i>Syarikat kami terlibat dalam proses formal dalaman di mana tahap perkhidmatan dan kualiti diteliti secara kerap.</i>	1	2	3	4	5	6	7
We deliver our services on time. <i>Kami menyampaikan perkhidmatan kami tepat pada masanya.</i>	1	2	3	4	5	6	7

This research finding will give valuable information that is relevant to your company. Please indicate if you like to receive the executive summary of the research by providing your email address.

Email address:.....

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE
YOUR PRECIOUS TIME AND COOPERATION IS HIGHLY APPRECIATED.

Appendix 4: Cross Loadings of Constructs

	BI	MI	SI	ITC	SR
BBI1	0.730845	0.521299	0.381678	0.35623	0.455513
BBI2	0.823975	0.436648	0.506286	0.39946	0.503028
BBI3	0.865518	0.52456	0.556366	0.318695	0.483728
BBI4	0.702434	0.320627	0.381421	0.271784	0.186613
BMI1	0.373104	0.693484	0.353454	0.1853	0.50846
BMI2	0.503504	0.74718	0.56459	0.694561	0.50407
BMI3	0.593974	0.855626	0.592198	0.444572	0.660361
BMI4	0.333025	0.649384	0.290838	0.437617	0.387247
BMI5	0.370597	0.805301	0.424711	0.492558	0.565312
BMI6	0.379542	0.857589	0.52356	0.532049	0.722364
BMI7	0.49511	0.778452	0.475984	0.29148	0.699684
SC2	0.212764	0.4254	0.719297	0.341373	0.485401
SC3	0.336885	0.422947	0.738443	0.371333	0.555421
SC6	0.377416	0.192235	0.626524	0.230661	0.413007
SDS1	0.557103	0.578926	0.754214	0.367014	0.650238
SDS2	0.547161	0.597696	0.708433	0.516291	0.686662
ST1	0.403278	0.294418	0.686999	0.516046	0.265681
ST2	0.354298	0.401287	0.736389	0.462543	0.40085
ST3	0.45158	0.383012	0.689439	0.596839	0.418023
ITK1	0.502037	0.497392	0.579106	0.743286	0.540478
ITK2	0.431266	0.541024	0.492142	0.867303	0.421811
ITK3	0.298881	0.495766	0.449435	0.846635	0.36506
ITK4	0.508996	0.552738	0.660696	0.828724	0.630386
ITK5	0.300179	0.386908	0.452854	0.793931	0.31493
ITO1	0.086083	0.329057	0.272125	0.730224	0.247274
ITO2	0.19419	0.4734	0.407316	0.810696	0.39792
ITO3	0.353484	0.388311	0.445489	0.721857	0.408793
ITO4	0.237855	0.483172	0.470606	0.85767	0.41224
ITO5	0.275059	0.440265	0.386552	0.8636	0.353276
SR1	0.502006	0.572393	0.599009	0.493654	0.768091
SR2	0.399971	0.669628	0.490085	0.270494	0.772658
SR3	0.252866	0.600357	0.512964	0.300031	0.77322
SR4	0.222911	0.659576	0.541251	0.505467	0.738733
SR5	0.485734	0.587642	0.499617	0.457251	0.803782
SR6	0.505444	0.584651	0.635887	0.46777	0.831241
SR7	0.514416	0.542096	0.659183	0.426686	0.815622