

This item is held in Loughborough University's Institutional Repository (<https://dspace.lboro.ac.uk/>) and was harvested from the British Library's EThOS service (<http://www.ethos.bl.uk/>). It is made available under the following Creative Commons Licence conditions.



For the full text of this licence, please go to:
<http://creativecommons.org/licenses/by-nc-nd/2.5/>

Logistics Service Quality and Relationship Quality in Third Party Relationships

by

Harlina Suzana Jaafar

A Doctoral Thesis

Submitted in partial fulfilment of the requirements
for the award of Doctor of Philosophy of the
Loughborough University

March 2006

© by Harlina Suzana Jaafar (2006)

Acknowledgements

In the name of ALLah s.w.t., the most Beneficient, the most Merciful

This thesis would not have been possible without the support of many individuals and organisations. There is nothing within my capacity that could ever repay them.

First and foremost, I would like to express my gratitude to the MARA University of Technology, Malaysia and the Public Service Department, Government of Malaysia for awarding me a full scholarship to complete this research. This thesis would not have been possible without their funding.

My warmest appreciation goes to my supervisor, Dr. Mohammed Rafiq. I am indebted to him so much for introducing me to the borderless world of research and teaching me to think critically. His critics and remarks have always been stimulating and constructive. His guidance, comments, commitment, knowledge and endless time spent on the discussions and reviews have led me to continuous improvement of the quality of the study, produced ten publications and most importantly the production of this thesis. I am also indebted to my panel members, Prof. Paul Dobson as the Director of Research and Dr. Dave Coates as the independent panel members for their constructive comments and valuable ideas in every panel assessment. I would also like to thank Prof. John W. Cadogan and Mrs. Cathryn Hart of the Loughborough Business School, Prof. Herbert Kotzab of the Copenhagen Business School and Dr. David Grant of the Heriott-Watt University for the detailed comments and suggestions aimed at improving the analysis and questionnaires. Without these supports, my progress would not have gone this far.

My sincere appreciation is also extended to the Mr. Jan Szymankiewics, the Chairman of the External & International Relations Committee and Publications & Knowledge Management Committee for his recognition on the importance of this research and thus giving way for the support gained from the Chartered Institute of Logistics and Transport (CILT), UK by allowing the use of their logo on the cover letter of the questionnaire. I must also thank him for reviewing and offer invaluable suggestions on every single question of the questionnaire. Special thanks also go to Mr. Jonathan Bullock and Mr. Jim Rowley for making this support possible. I also owe special thanks to numerous logistics managers across the industries throughout the UK especially those who willingly shared their invaluable experiences and contributing their knowledge to this research in the interviews. This information brought me closer to an understanding of the real research problems and most importantly the data to analyse.

I am also indebted to Dr. Fiona Ellis-Chadwick for giving me good advice on preparing for the viva. I would also wish to express my sincere thanks to Miss Tracey Preston, the Postgraduate Research Programmes Secretary for her continuous support and assistance during my study period in the Loughborough Business School. A special word of thanks also goes to Azli for the use of VISIO software, which really made my model drawing a lot easier. And especially to my friend Norhalimah, thanks for sharing our PhD life.

Last but not least, to my husband, Nasruddin, no words can express how thankful I am for his countless help and inspiration throughout, especially in the provision of necessary support and keeping up the patience during relatively long process of accomplishing this thesis. I am grateful for my children, Najibah, Zaid and Aisyah for giving me strength to carry on with their everlasting love, patience and understanding, which obviously were the essential input for the study. To my mother, Habibah, thank you very much for her patience in my absence and encouragement all the way through the duration.

Abstract

The market for third party logistics (TPL) service has expanded hugely over the past few years as its total revenue has reached \$333 billion globally. It is expected that the industry will grow substantially, and become increasingly complex. As the industry matures, a number of authors have recognised that logistics service quality is becoming a vital tool for delivering superior logistics service performance and thus creating customer satisfaction. Concurrently, considerable evidence has been accumulated that shows relationship quality is useful in the marketing channel context in driving customer loyalty. However, empirical research investigating the effects of the relationships among logistics service quality, customer satisfaction, relationship quality and customer loyalty has received relatively little attention in the literature. This study attempts to fill this void by investigating customers' satisfaction with TPL providers' services across industrial sectors in the UK and the relationship quality they have with them. It empirically tests the validity of Mentzer et al's (2001) Logistics Service Quality (LSQ) scale for measuring logistics service quality and the LSQ process model that underpins it. A disaggregated model of relationship quality is also used to assess its impact on customer loyalty.

Structural equation modelling analysis of the data collected by mail survey of 183 logistics-related managers confirms that LSQ measures are generalisable across industrial sectors in the UK. The results show that technical quality dimensions of logistics service do not drive customers' satisfaction, but serve as the order qualifiers while the functional quality dimensions act as order winning criteria that differentiates TPL providers' service excellence for customer satisfaction. It also supports existing theoretical studies that suggest that relationship quality produces loyal customers. The research contributes to both marketing and logistics discipline in that it empirically demonstrates the positive link between logistics service quality and customer satisfaction as well as customer satisfaction, relationship quality and customer loyalty.

TABLE OF CONTENTS

Acknowledgement..... iv
Abstract..... vi
Table of Contents vii
List of Tables xiii
List of Figures..... xv
List of Appendices..... xvii

Chapter 1: Introduction to the Research Problem

1.1 Introduction1
1.2 Background of the Research1
 1.2.1 Developments in Logistics Outsourcing1
 1.2.2 The Development of Third Party Logistics (TPL) providers
 Definitions5
 1.2.3 Theoretical Developments8
1.3 Research Problem and Research Questions..... 11
1.4 Justifications for the Research 14
 1.4.1 Importance of Research..... 14
 1.4.2 Conceptual and Empirical Shortcomings of Existing Research 16
1.5 Delimitations of the Research Scope..... 18
 1.5.1 Research Setting..... 18
 1.5.1.1 United Kingdom..... 18
 1.5.1.2 Across Industries 19
 1.5.1.3 Unit of Analysis 19
1.6 Structure of the Thesis 20
1.7 Conclusion..... 22

PART I: THEORETICAL FRAMEWORK

Chapter 2: Customer Service, Satisfaction and Service Quality in Logistics

2.1 Introduction 23
2.2 The Importance of Customer Service and Satisfaction in Logistics..... 24
 2.2.1 Logistics Lead to Competitive Advantage..... 24
 2.2.2 Logistics Add Time and Place Utility 26
2.3 Measuring Logistics Service Performance..... 28
2.4 Logistics Service Quality 33
 2.4.1 Personnel Contact Quality..... 35
 2.4.2 Order Release Quantities 35

2.4.3	Information Quality	36
2.4.4	Ordering Procedures	36
2.4.5	Order Accuracy.....	36
2.4.6	Order Condition.....	36
2.4.7	Order Quality	37
2.4.8	Order Discrepancy Handling.....	37
2.4.9	Timeliness	37
2.4.10	Customer Satisfaction.....	38
2.5	Concluding remarks	39

Chapter 3: Relationship Quality in Logistics

3.1	Introduction	40
3.2	The Importance of Relationship Quality	40
3.3	Types and Range of Relationships	44
3.4	TPL Positions in the Supply Chain	50
3.5	Existing Studies on TPL Relationships	51
3.6	The Concept of Relationships Quality	53
3.6.1	The Definition of Relationship Quality	53
3.6.2	Relationship Satisfaction	56
3.6.2.1	Definition of Relationship Satisfaction	56
3.6.2.2	Importance of Relationship Satisfaction.....	58
3.6.2.3	Relationship Satisfaction as a Relationship Quality Construct.....	58
3.6.3	Trust.....	59
3.6.3.1	Definition of Trust.....	59
3.6.3.2	Importance of Trust	61
3.6.3.3	Trust as a Relationship Quality Construct.....	61
3.6.4	Perceived Opportunism.....	62
3.6.4.1	Definition of Perceived Opportunism.....	62
3.6.4.2	The Importance of Deterring Perceived Opportunism In Preserving Relationship Quality	63
3.6.5	The Concept of Commitment	64
3.6.5.1	Affective Commitment	68
3.6.5.2	Calculative Commitment	69
3.6.5.3	Importance of Affective and Calculative Commitment.....	69
3.6.5.4	Commitment as a Relationship Quality Construct	70
3.7	Attitudinal and Behavioural Consequences of Relationships Quality	71
3.7.1	Customer Loyalty and Intention to Exit.....	71
3.7.2	The Concept of Customer Loyalty and Intention to Exit.....	72
3.7.2.1	Definition of Customer Loyalty and Intention to Exit.....	72
3.7.2.2	The Importance of Customer Loyalty and Intention to Exit.....	75

3.8	Concluding remarks	76
-----	--------------------------	----

Chapter 4: Research Models and Hypotheses

4.1	Introduction	77
4.2	The Strengths of the Hypothesised Model.....	77
4.3	The Components of the Hypothesised Model	79
4.4	Logistics Service Quality and Replicated Hypotheses	81
4.4.1	Order Placement and Order Receipt.....	81
4.4.2	Order Receipt and Order Discrepancy Handling	82
4.4.3	Order Completeness (Order Accuracy, Order Condition, Order Quality) and Timeliness.....	84
4.4.4	Personnel Contact Quality, Ordering Procedures, Timeliness, Order Discrepancy Handling and Satisfaction	84
4.5	Relationship Quality and Related Hypotheses.....	85
4.5.1	Satisfaction and Relationship Quality	86
4.5.2	Relationship Satisfaction and Trust	88
4.5.3	Relationship Satisfaction and Perceived Opportunism.....	88
4.5.4	Perceived Opportunism and Trust	89
4.5.5	Trust and Affective Commitment.....	89
4.5.6	Trust and Calculative Commitment.....	90
4.5.7	Trust and Customer Loyalty.....	91
4.5.8	Commitment and Customer Loyalty	91
4.6	Alternative Hypotheses	93
4.6.1	Trust and Intention to Exit	93
4.6.2	Commitment and Intention to Exit.....	94
4.7	Concluding remarks	95

PART II: EMPIRICAL RESEARCH

Chapter 5: Research Methodology and Item Development

5.1	Introduction	96
5.2	Research Design	96
5.2.1	Data Collection Method.....	96
5.2.1.1	Strengths and Weaknesses of Mail Questionnaire	97
5.2.1.2	Solutions for Overcoming Weaknesses in Questionnaire	98
5.2.2	Research Setting.....	99
5.2.2.1	Single Industry vs. Multiple Industry	99
5.2.2.2	Unit of Analysis	100
5.2.3	Item Development.....	100
5.2.3.1	Specification of Construct Domain	101

5.2.3.2	Item Generation	102
5.2.4	Mail Survey Design	105
5.2.4.1	The Process of Instrumentation.....	105
5.2.4.2	The Format of Attitude Measurement.....	109
5.2.5	Sampling Frame Development.....	113
5.2.5.1	The Third Party Logistics (TPL) providers' Websites.....	113
5.2.5.2	The Institute of Logistics and Transport (ILT) Members' Directory 2000	113
5.2.6	Survey Pre-testing.....	114
5.2.7	Mail Survey Implementation	120
5.3	Concluding remarks	123

Chapter 6: Empirical Analysis and Results – Data Examination and Descriptive Data

6.1	Introduction	124
6.2	Data Examination	124
6.2.1	Accuracy of Input.....	124
6.2.1.1	Profile of the Respondents	125
6.2.1.2	Length of Relationships	126
6.2.1.3	Length and Types of Logistics Contract.....	126
6.2.1.4	Logistics Expenditures Spent on TPL providers	126
6.2.1.5	Types of Services Outsourced	128
6.2.1.6	Inbound/Outbound Movement of Product/Materials ...	128
6.2.2	Data Screening.....	129
6.2.3	Examination of Multivariate Normality and Absence of Outliers..	130
6.2.3.1	Examination of Outliers	131
6.2.3.2	Examination of Normality.....	132
6.2.4	Solutions for Outliers and Non-Normality Problems.....	133
6.3	Test for Non-Response Bias	133
6.4	Concluding remarks	138

Chapter 7: Empirical Analysis and Results – Logistics Service Quality

7.1	Introduction	139
7.2	What is Structural Equation Modelling?	139
7.3	Analytical Choices – Why Structural Equation Modelling?	140
7.3.1	Why Structural Equation Modelling?	140
7.3.2	Issues Related to the Procedures in Using Structural Equation Modelling	142
7.3.2.1	Sample size.....	142
7.3.2.2	Missing Data and Estimation Method	142
7.3.2.3	Covariances versus Correlations.....	146

7.3.2.4	Number of Indicators per Construct.....	147
7.3.2.5	Statistical Program used for the Analysis.....	148
7.4	The Logistics Service Quality (LSQ) Process Model.....	148
7.5	Overall Model Evaluation.....	150
7.6	Measurement Model Evaluation	153
7.6.1	Unidimensionality and Consistency.....	154
7.6.2	Reliability.....	157
7.6.3	Validity.....	157
7.6.3.1	Convergent validity	158
7.6.3.2	Discriminant validity	158
7.7	Structural Model Evaluation	159
7.8	Concluding remarks	169

Chapter 8: Empirical Analysis and Results – Relationship Quality

8.1	Introduction	171
8.2	Overall Model Evaluation.....	171
8.3	The Measurement Model Evaluation.....	172
8.3.1	Unidimensionality and Consistency.....	172
8.3.2	Reliability.....	174
8.3.3	Validity.....	174
8.3.3.1	Convergent validity	174
8.3.3.2	Discriminant validity	175
8.4	Structural Model Evaluation	175
8.4.1	Structural Evaluation of the Hypothesised Model.....	177
8.4.2	Evaluation of an Alternative Model.....	181
8.4.2.1	The Measurement Evaluation of the Alternative Model.....	182
8.4.2.2	The Structural Evaluation of the Alternative Model	183
8.5	Concluding remarks	186

Chapter 9: Discussions

9.1	Introduction	187
9.2	Discussion of Model Estimation and Hypotheses Tests Results.....	187
9.2.1	Logistics Service Quality	187
9.2.1.1	The Generalisability of LSQ Measures	188
9.2.1.2	The Structure of Effects among Order Placement, Order Receipt and Satisfaction Constructs.....	189
9.2.1.3	The Effects of Service Quality Components (Functional and Technical Quality) in Predicting Satisfaction.....	192
9.2.2	Relationship Quality.....	194
9.2.2.1	The Interaction between LSQ Satisfaction and Relationship Satisfaction and Their Effects on Relationship Quality...	194

9.2.2.2	The Structure of Effects among Relationship Quality Constructs	196
9.2.2.3	The Effect of Perceived Opportunism in Deteriorating the Quality of Relationships	198
9.2.2.4	The Effects of Relationship Quality on the Behavioural Relationship Outcomes (Customer Loyalty and Intention to Exit).....	199
9.3	Concluding remarks	200

Chapter 10: Conclusions

10.1	Introduction	202
10.2	Research Questions Addressed	202
10.2.1	What are the Effects of Technical Quality Dimensions in LSQ on Customer Satisfaction?	204
10.2.2	What are the Effects of Functional Quality Dimensions in LSQ on Customer Satisfaction?	204
10.2.3	What are the Effects of LSQ Satisfaction on Relationship Quality?.....	205
10.2.4	What are the Effects of Relationship Quality Dimensions on Customer Loyalty and Exit Intention?	205
10.3	Significance for Theory and Practice	206
10.3.1	Theoretical Implications	206
10.3.2	Managerial Implications	212
10.4	Limitations of the Study and Directions for Future Research.....	215
	References	219

LIST OF TABLES

Tables	Page
Table 3.1	Propensity to Partner Matrix..... 46
Table 5.1	Literature Sources of the Constructs and Measures of the Study... 103
Table 5.2	Item Changes in Information Quality and Ordering Procedures ... 117
Table 5.3	List of Constructs and Items for Logistics Service Quality 118
Table 5.4	List of Constructs and Items for Relationship Quality 119
Table 5.5	Total Questionnaires Sent Out and Responses from each Mailing 122
Table 5.6	Response Rates 122
Table 6.1	Distribution of Survey Respondents among Industrial Sectors 125
Table 6.2	Profile of the Respondents 125
Table 6.3	Length of Relationships with the TPL provider 127
Table 6.4	Logistics Expenditure of the Respondents 128
Table 6.5	The Movement of Products/Materials 129
Table 6.6	Test for Non-Response Bias on Relationship Quality Items 135
Table 6.7	Test for Non-Response Bias on Logistics Service Quality Items ... 136
Table 7.1	Comparison of Methodologies between the Current Study and Mentzer, Flint and Hult’s (2001) Study..... 150
Table 7.2	The Measurement Model of Logistics Service Quality 155

Table 7.3	The Overall Model Fit Statistics of Logistics Service Quality	156
Table 7.4	The Inter-Correlations among Logistics Service Quality (LSQ) Constructs.....	159
Table 7.5	Correlation Matrix among Logistics Service Quality (LSQ) Items.	160
Table 7.6	Summary of Hypotheses Supported for Logistics Service Quality.	163
Table 7.7	Un-standardised Coefficients of Causal Paths to Satisfaction.....	169
Table 8.1	The Measurement Model of Relationship Quality (Customer Loyalty as Outcome Variable)	173
Table 8.2	Correlation Matrix among Items of Relationship Quality (Customer Loyalty as Outcome).....	176
Table 8.3	Structural Parameters of Relationship Quality (Customer Loyalty as Outcome).....	179
Table 8.4	Total Variance Explained in the Causal Paths to Affective and Calculative Commitment	181
Table 8.5	The Measurement Model of Exit Intention as Outcome Variable.	183
Table 8.6	Structural Parameters of Relationship Quality (Exit Intention as Outcome).....	184
Table 8.7	Total Variance Explained in the Causal Paths to Exit Intention	185
Table 9.1	Correlation Matrix among Relationship Quality Constructs	198

LIST OF FIGURES

Figures	Page
Figure 1.1 Goods Moved by Mode of Working in the UK (billion tonnes kilometres) 1980-2003	3
Figure 1.2 Main Elements of the Conceptual Model.....	12
Figure 1.3 Structure of the Thesis	21
Figure 2.1 Cost Trade-offs in Marketing and Logistics.....	25
Figure 2.2 Customer Service as the Binding and Unifying Factor for All the Logistics Management Activities	26
Figure 2.3 Hypothesised Model of LSQ as a Process	34
Figure 3.1 Key Drivers of Long-term Profitability	42
Figure 3.2 The Position of the TPL Terms along the Relationship Continuum	48
Figure 3.3 Three Dyadic Relationships among Seller, Buyer and Third Party Logistics (TPL) provider.....	50
Figure 3.4 Third Party Logistics (TPL) providers’ Positions in the Supply Chain	51
Figure 4.1 The Hypothesised Model Consisting both the Logistics Service Quality and Relationship Quality Model.....	80
Figure 4.2 The Hypothesised Logistics Service Quality Model.....	83
Figure 4.3 The Hypothesised Relationship Quality Model.....	86

Figure 5.1	Overview of the Research Methodology	101
Figure 6.1	Types of Services Outsourced	129
Figure 7.1	Standardised Significant Paths in the Current Study	165
Figure 7.2	Significant Paths in Mentzer et al's (2001) Study and the Current Study	167
Figure 7.3	Significant Paths in Mentzer et al's (2001) Study and the Current Study	168
Figure 8.1	The Structural Results of the Hypothesised Model (Customer Loyalty as the Outcome Variable).....	177
Figure 8.2	The Structural Results of the Alternative Model (Exit Intention as the Outcome Variable).....	185

LIST OF APPENDICES

Appendices

App. 1	List of Publications
App. 2-a	Mail Survey Questionnaire
App. 2-b	Pre-notification Letter
App. 2-c	Cover Letter of the First Wave Questionnaire Mailing
App. 2-d	Postcard Reminder
App. 2-e	Cover Letter of the Second Wave Questionnaire Mailing
App. 2-f	Cover Letter of the Third Wave Questionnaire Mailing
App. 3	Testing the Effects of the Hypothesised Model Consisting of Both the Logistics Service Quality and Relationship Quality

Chapter 1

INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Introduction

This chapter introduces the research topic and lays the theoretical foundation of the thesis. It reveals the motivation for conducting the study of logistics service quality and relationship quality in third party relationships. Section 1.2 presents the background of the research and positions the study in the context of third party logistics (TPL) industry in the United Kingdom (UK). Next, the research problem and research questions are presented. Section 1.4 provides the justifications for conducting the research based on the importance and shortcomings of the existing research. Section 1.5 describes the delimitation of the research scope. Finally, section 1.6 gives a brief overview of the structure of the thesis.

1.2 Background of the Research

This section positions the theories in the context of TPL industry in the UK, thus emphasise the need for the study.

1.2.1 Developments in Logistics Outsourcing

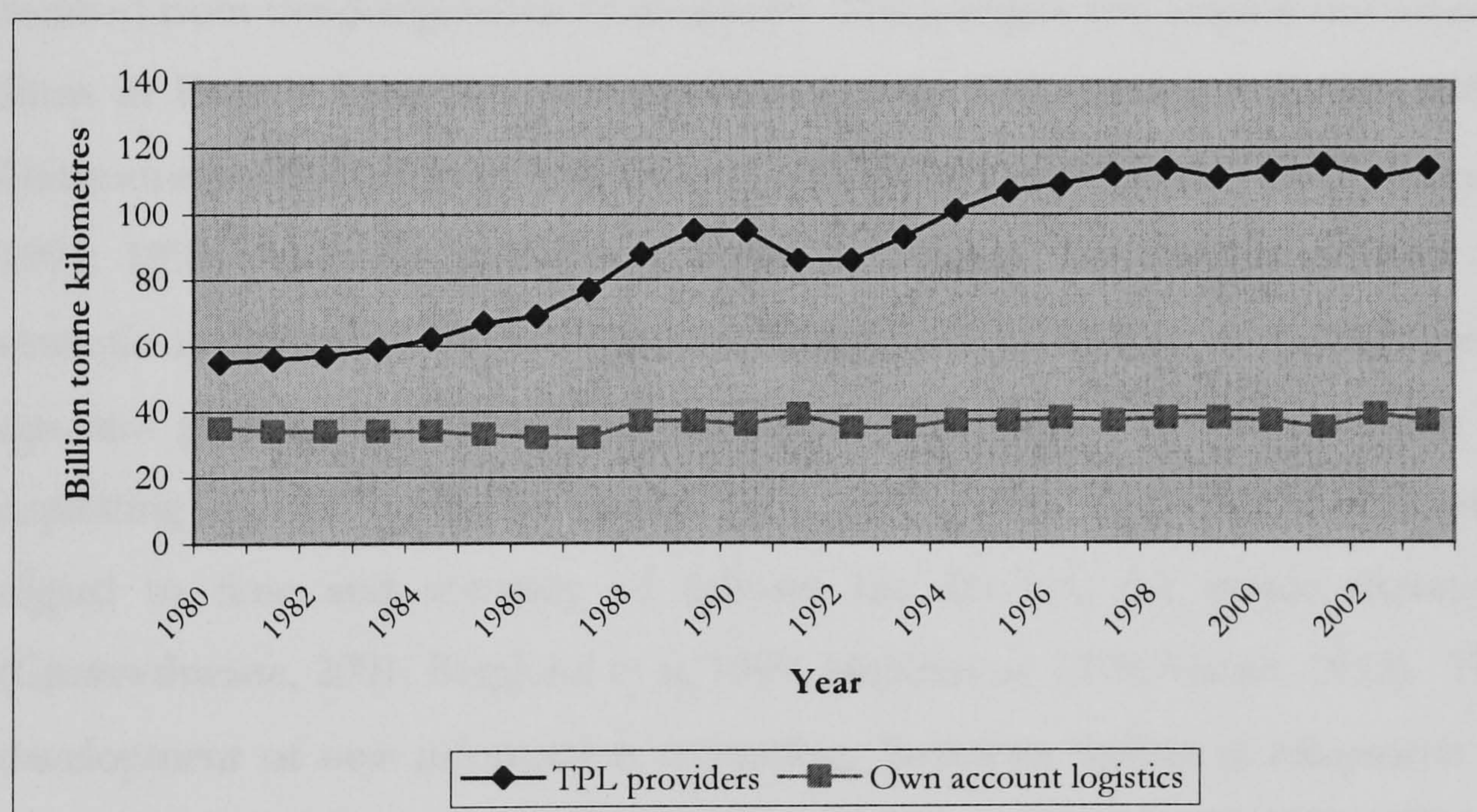
Logistics outsourcing emerged as a significant topic in the mid 1980s following the deregulation of freight transportation industries (Bask, 2001; Laarhoven et al, 2000; Berglund et al, 1999; McKinnon, 1999; Menon et al, 1998; Razzaque and Sheng, 1998; Lieb, 1992). This was due to the fact that outsourcing was widely regarded as a useful approach to lowering costs and gaining competitive advantage (e.g. McKinnon, 2001; Elmuti et al, 1998; Razzaque and Sheng, 1998; Crouse, 1991). Besides that, the Outsourcing Institute highlighted that

companies gain a nine percent cost saving and a fifteen percent increase in capacity and quality, on average, through outsourcing (Elmuti et al, 1998). Consequently, there has been considerable and growing interest among consultants, academics and researchers worldwide on logistics outsourcing and this is indicated by the increased volume of articles on the subject in trade publications and scholarly journals (e.g. Lieb and Bentz, 2005; Knemeyer et al, 2003; Bolumole, 2001; Bask, 2001; Laarhoven et al, 2000; McKinnon, 1999; Fernie, 1999; Berglund et al, 1999; Bagchi and Virum, 1998).

Over the past few years, the market for third party logistics (TPL) service has experienced fast growth as the total revenue for outsourced logistics globally has reached \$333 billion (Foster and Armstrong, 2005). Such expansion includes both Europe (Berglund et al, 1999; Peters et al, 1998; Sink et al, 1996) and the United States (Lieb and Bentz, 2005; Lieb and Miller, 2002). The European logistics outsourcing market is set to reach 59 billion euro by 2006 (Smart Packaging, 2003) while in the United States, the annual TPL expenditures are reaching \$80 billion representing a growth of approximately 700 percent since 1993 (Knemeyer and Murphy, 2005; Gecker, 2004;). Similarly, the usage rates of TPL services increased from approximately 40 percent in the early 1990s (Lieb, 1992) to approximately 80 percent in 2004 (Lieb and Bentz, 2005). Particularly in the UK, the freight logistics industry is one of the critical sectors of the economy, that is responsible for approximately 6 percent of the Gross Domestic Product (GDP) representing approximately £60 billion in 2004 and the employment of some 1 million people (Transport Statistics, 2004). A recent study by the consultant, Analytiqa (2004), reports the UK as the most advanced market for contract logistics in Europe and the industry is rapidly expanding. In fact, UK logistics companies are among the world leaders in the global logistics industry and include companies such as EXEL and P & O Nedlloyd (Foster and Armstrong, 2005). Based on an annual survey report of road goods transport

2004, produced by the Department for Transport, freight moved by TPL providers over the last twenty-four years (1980-2003) period has more than doubled, i.e. from 55 billion tonne kilometres to 114 billion tonne kilometres whilst the freight moved by own account operators remained fairly constant at around 36 billion tonne kilometres (Transport Statistics, 2004, see Figure 1.1). The statistics indicate that between 1993 and 2004, freight moved by TPL providers grew by 23 percent and freight moved by own account operators increased by only 6 percent. In 2003, about three-quarter of the total freight moved on the road was moved by the TPL providers (Transport Statistics, 2004).

Figure 1.1: Goods Moved by Mode of Working in the UK (billion tonne kilometres): 1980 - 2003



Source: Transport Statistic, (2004), "Transport of Goods by Road in Great Britain: 2003", *Transport Statistics Bulletin*, Department for Transport, London.

The fact that the UK has the highest rate of outsourcing among all European countries reflects the level of the industry's development (Anonymous, 1999). In 2002, the TPL market reached a value of approximately GBP 12.5 billion,

doubling its share since 2000 (Datamonitor, 2002). A study by PROTRANS (2002) indicated that the total expenditure outsourced on logistics in Europe would grow annually between 3.5 and 3.8 percent until 2005. This occurs as the TPL companies move away from basic transport services to added value services with higher margins.

The drivers of the performance of logistics providers in Europe depend on many factors, including exposure to certain industry sectors, acquisition integration issues, geographical coverage and client performance (Eastern European Logistics, 2003). Several authors identify the driving forces of logistics outsourcing in Europe. This includes the need for firms to concentrate on core business due to greater service competition and falling profit margins that have resulted from the deregulation of transport. The mergers and acquisitions among firms in Europe have also promoted the use of TPL providers (Smith, 2004; Datamonitor, 2002; Bagchi and Virum, 1998; Bagchi and Larsen, 1995; Cooper, 1991; 1990; Anderson and Narus, 1988) as logistics has become an area of strategic importance and a source for competitive advantage as the economy operates globally (Bagchi and Virum, 1998). The ability of TPL providers in exploiting the customers' increased focus on logistics customer service with regard to time and accuracy of delivery has become the major attraction (Crosswithwaite, 2001; Berglund et al, 1999; McKinnon, 1999; Virum, 1993). The development of new information technology facilitates further development of the industry as it allows faster and better quality of communication. Consequently, TPL providers have become a promising option for expansion and improve long-term returns.

These factors are regarded as the strongest drivers for the emergence of TPL industry in Europe (Berglund et al, 1999; Crosswithwaite, 2001; McKinnon, 1999). With specific reference to the UK, Fernie (1999; 1989) claims that the structural

change in the retail supply system has promoted the use of TPL providers. Some studies indicate that this upward trend will continue as companies give a steadily increasing percentage of their logistics expenditures to TPL providers (Lieb and Bentz, 2005; McKinnon and Forster, 2000; Berglund et al, 1999, McKinnon, 1999).

It is expected that the industry will continue to grow substantially in the coming years (Lieb and Bentz, 2005; Bask, 2001; Berglund et al, 1999; Coyle et al, 1996; Ohmae, 1989; Peters et al, 1998). According to Berglund et al (1999), the TPL industry will soon reach an initial stage of maturity; witness the substantial size of the industry, the emerging market segmentation and the tendency among the TPL providers to focus their activities on one of the market segments. The need for focus has important and far-reaching consequences for TPL providers in terms of customer approach as the vast expansion of the industry has made it increasingly complex.

Since the development of the industry, various terms have been used to describe the logistics-outsourcing phenomenon. Despite the widely used terms, different definitions and meanings are associated with its relevance. The following section discusses the TPL terms that have appeared in the literature since its development in the mid 1980s.

1.2.2 The Development of Third Party Logistics (TPL) providers

Definitions

In the literature, at least six different terms representing the TPL providers are found. First, 'contract distribution' (Wilson & Fathors, 1989), 'dedicated contract distribution' (Christopher, 1990) or 'third party distribution' (Christopher, 1985) are among the earliest terms used representing the TPL industry in the UK. These terms emerged between the middle of 1980s and the early of 1990s, the

period during which the industry was emerging (Rushton et al, 2000; Christopher, 1985), referring to a distribution service that is “tailor-made” to the requirement of the users.

The most common term found in the literature is “third party logistics” (TPL or 3PL) provider (Bask, 2001; Laarhoven et al, 2000; Bhatnagar et al, 1999; Murphy & Poist, 1998; Langley et al., 1997; Lieb & Randall, 1996; Virum, 1993; Lieb, 1992). Typically, it is considered as parties who have “arm’s length” relationships with minimum information exchange. Most authors refer to it as the use of external parties to perform functions that can encompass the entire logistics process or selected activities within the process that have been traditionally performed within the organisation (e.g. Laarhoven et al, 2000; Bagchi and Virum, 1998; Murphy and Poist, 1998; Laarhoven and Sharman, 1994; Lieb, 1992). Murphy and Poist (2000, p. 121), however, include a long-term relationship element by referring to third party logistics as “a relationship between a shipper and third party, which compared with the basic services, has more customised offerings, encompasses a broader number of service functions and characterised by a longer-term, more mutually beneficial relationship”. Another description, which is similar to TPL, is known as “logistics service provider” (LSP). This term is quite common among the practitioners throughout the UK. They refer to it as the specialised organisations that develop time-sensitive and tailored logistics solutions for clients within a wide range of industries (Stone, 2001; Crossthwaite, 2001).

The third term that has been used by researchers to describe TPL providers is “logistics alliances” (Laarhoven et al, 2000; Bagchi & Virum, 1998; Laarhoven & Sharman, 1994; Bowersox, 1990). But, it stresses more toward the relationship of the TPL provider with other parties. Bagchi and Virum (1998) underline that logistics alliance and TPL differ in terms of the length of relationship and the

amount of services being used. A logistics alliance represents a comprehensive partnership arrangement involving a broad range of products and services on a long-term basis, although in some situations, these alliances may start with a narrow range of activities. According to Bagchi and Virum (1998), the term logistical alliances originates from ‘strategic alliances’ which indicates the act of allowing a company to take advantage of what it does well and seek partners who have strengths in other areas. Several studies suggest that successful strategic alliances offer the following benefits (Kanter, 1994; Lorange and Roos, 1991; Bowersox, 1990; LaLonde and Cooper, 1989): (1) enable partner companies to offer an extended product/service range, (2) provide access to an extensive coverage of services, (3) help partners obtain better customer value, (4) give access to wider markets (5) enable partners to share resources and risks, (6) improve competitive position of the partners in the marketplace, (7) allow companies to focus on their core competence.

The fourth term found in the literature is “contract logistics”. Jon Africk of A.T. Kearney consultants defines contract logistics as multiple logistics services provided by a single vendor on a contractual basis, in which a high level of customer service should be provided (Razzaque and Sheng, 1998; Bradley 1994). Similarly, La Londe and Cooper (1989) define contract logistics as “a process whereby the shipper and the third-party/third-parties enter into an agreement for specific services at specific costs over some identifiable time horizon”.

Fifth, in contrast to the terms discussed above, “outsourcing” may be narrow in scope and limited to one or a few types of services (Razzaque and Sheng, 1998; Bagchi and Virum, 1998; Lieb et al, 1993). It represents the act of delegation by an organisation to a third party of the logistics service provision/activity previously carried out within the organisation. In other words, it is the act of buying logistics service.

Finally, one of the terms that has gained much focus in the literature in recent years is 'logistics partnerships' (Lambert et al, 1999; Tate, 1996). It describes the development and success of TPL providers – customer relationships (Bask, 2001; Bhatnagar and Viswanathan, 2000; Berglund et al, 1999; Gentry, 1996; Tate, 1996). According to Gardner and Cooper (1994) the partnership-style relationship which evolves over time extends over a long period of time, involves the sharing of benefits and burdens, involves extensive planning, includes detailed operational information exchange, and allows operating control across firm boundaries. Other researchers include the key characteristics of shared risks/rewards, long-term focus, joint activities, and the concept of trust (e.g. Cooper and Gardner, 1993; Dwyer et al, 1987; Gardner et al, 1994; Noordewier, John and Nevin, 1990) in the definitions. Lambert et al (1999, p.166) provide an extensive definition reflecting, “a tailored business relationship based upon mutual trust, openness, shared risk, and shared rewards that yields a competitive advantage, resulting in business performance greater than would be achieved by the firms individually”.

1.2.3 Theoretical Developments

The vast expansion of the TPL industry as well as services offered, particularly in the UK reflect the dynamism and the complexity of the industry. Despite the growth of the industry, the customers' perception of the UK logistics outsourcing has received relatively little attention in the academic literature (Ferne, 1999). According to Murphy and Poist (2000), there has been a limited amount of empirical research on TPL providers. With particular reference to the UK, several sources (Meczes, 2002; Rowat, 1996; PE Consulting, 1996; 1993) indicated a gloomy picture on TPL providers in terms of satisfying their customers. Many customers, in particular the retailers, have recently been expressing dissatisfaction with the services on offer (Meczes, 2002). The main problems identified by the customers are poor service, poor communications and

not being customer-facing. Recently, with the emergence of supply-chain collaboration, the need for strong relationships between the third party and channel members is essential (Fernie, 2004). It is argued that such collaborative arrangements provide a more effective means of satisfying customer requirements, influencing customer loyalty and thus, increase profitability. As such, the collaboration requires a high level of co-operation between organisations in the supply chain network (Christopher, 1997; Mentzer, 2001). Concurrently, considerable evidence has already been accumulated that relationship marketing is useful in industrial and channel contexts (Geyskens et al, 1996; Kumar et al, 1995a; Anderson and Narus, 1990; Berry, 1983; Bitner, 1990; Crosby and Stephens, 1987). A number of scholars have highlighted the importance of enhancing customer relationships as a pre-requisite for effective marketing (Berry, 1995; Goff et al, 1997), particularly relationship quality as one of the most promising approaches that might explain how customer loyalty could be achieved (Hennig-Thurau et al, 2002; Garbarino and Johnson, 1999; Moore, 1998; Smith, 1998; Andaleeb, 1996; Anderson and Weitz, 1992; Dorsch et al, 1998; Tax et al, 1998; Kumar et al, 1995a; 1995b; Morgan and Hunt, 1994; Scheer and Stern, 1992; Crosby, 1991; Crosby et al, 1990).

Several authors demonstrate that a behavioural intention such as customer loyalty is influenced by service quality and is mediated by customer satisfaction (e.g. Olsen, 2002; Brady and Robertson, 2001). However, Hennig-Thurau and Klee (1997) emphasise that customer satisfaction would only drive customer retention/loyalty if these two constructs are mediated by relationship quality, which indirectly explains why some empirical investigations that examine the satisfaction-customer retention relationships indicate a weak or even non-existent relationship between these constructs (e.g. Anderson et al, 1994; Bitner, 1990; Oliver, 1980).

In the logistics literature, a considerable number of authors have recognised the importance of logistics service performance as a tool in creating customer satisfaction (e.g. Dadzie et al, 2005; Mentzer et al, 2001; Bienstock et al, 1997; Mentzer et al, 1989; Perrault and Russ, 1974). Since then, various approaches have been used by researchers demonstrate several ways to satisfy the customers. This includes the application of five dimensions (tangibles, responsiveness, empathy, reliability and assurance) of service quality instrument, SERVQUAL by Parasuraman et al (1985) and the Technical/Functional framework by Gronroos (1984) (Bienstock et al, 1997; Fransceschini and Rafele, 2000; Harding, 1998; Mentzer et al, 2001; 1999; Novack et al, 1994). Although there have been a number of failed attempts either to integrate the SERVQUAL/SERVPERF conceptualisation into new industries or to replicate its conceptual structure (Brady and Cronin, 2001), Bienstock et al (1997) successfully developed an instrument for measuring the industrial customers' perceptions of physical distribution service quality (PDSQ) by focusing mainly on the technical quality of logistics service. Mentzer et al (1999) expanded the service quality domain into the logistics context based on the customer perceptions of a single TPL organisation in the United States. They incorporated both the technical and the functional quality of logistics service in developing the Logistics Service Quality (LSQ) scale, in which it measures logistics service quality. Mentzer et al (2001) conducted further research by investigating how the LSQ process leads to customer satisfaction. However, little independent research has been done to confirm the findings of Mentzer et al (2001). The fact that LSQ process model (Mentzer et al, 2001) was developed based on the customer segments of a single organisation is one of the major limitations of LSQ (Mentzer et al, 2001; 1999).

With increasing emphasis on logistics performance and supply chain partnerships, this study tries to explore and understand the attitudinal and behavioural concepts underlying these issues. It begins with testing the

generalizability of LSQ process model across industries in the UK. Having considered the usefulness of relationship quality in marketing channel context in driving customer loyalty and LSQ lacks of these relational elements, this study adds relationship quality dimensions onto the LSQ model to assess its impact on customer loyalty.

As such, the logistics service quality domain is explored from its nine LSQ process model's dimensions, namely personnel contact quality, order release quantities, information quality, ordering procedures, order accuracy, order condition, order quality, timeliness and order discrepancy handling (Mentzer et al, 2001). The domain of relationship quality, however was investigated from six dimensions, namely, satisfaction with LSQ, relationship satisfaction, trust, perceived opportunism, calculative commitment and affective commitment. As most studies have focused neither on service quality nor relationship quality, the results from this study would provide insights into the effects of relationships among logistics service quality, satisfaction, relationship quality and customer loyalty.

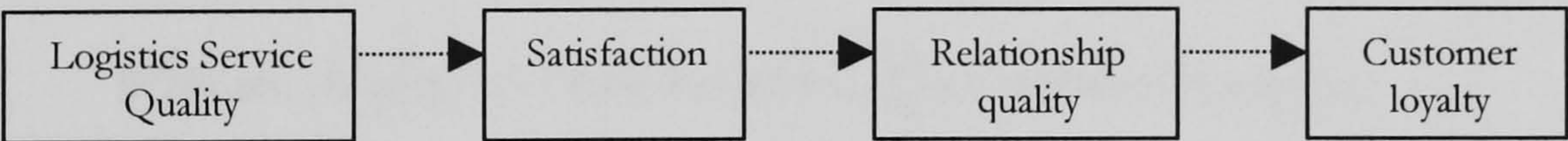
1.3 Research Problem and Research Questions

Recent studies demonstrate the powerful impact of customer loyalty on improving the financial performance of a company. Since then, marketing researchers began to focus on loyalty research as it became obvious that the more a company can retain its customers, the more successfully it can operate. Some researchers demonstrated that profitability is achieved through the building up of a loyal customer base (Christopher, 1997; Reichheld, 1993; Reichheld and Sasser, 1990). In addition, several researchers highlighted the use of relationship quality approach (e.g. Crosby, 1991; Crosby et al, 1990; Dorsch et al, 1998, Smith, 1998) as one of the most promising approaches that can achieve customer loyalty (Hennig-Thurau et al, 2002). Other theoretical studies demonstrated that a

quality relationship could be established (Christopher and Peck, 2004; Hennig-Thurau and Klee, 1997) through efficient and effective customer service programs that are built upon logistics capability (Dadzie et al, 2005; Christopher and Peck, 2004; Daugherty et al, 1998; Innis and La Londe, 1994) (see Figure 1.2). However, little empirical research has been conducted to help understand the effects of relationships among logistics capability, service quality, customer satisfaction, relationship quality and customer loyalty. Most studies have focused neither on service quality (e.g. Brady and Cronin, 2001) nor relationship quality (e.g. Dorsch et al, 1998; Kumar et al, 1995a). An exception is the work of Christopher and Peck (2004), who explicitly theorise the positive effects from logistics capability on long term profitability that work through customer satisfaction, relationship quality and customer retention.

Having considered the importance of customer loyalty as the main emphasis of the recent business strategies and in line with Christopher and Peck (2004), the main elements of the research framework is summarised in Figure 1.2.

Figure 1.2 Main Elements of the Conceptual Model



Thus, the following research problem is examined:

What are the effects of technical and functional quality dimensions of Logistics Service Quality (LSQ) on customer satisfaction; and what are the effects of relationship quality dimensions on customer loyalty in third party relationships context?

The research problem is sub-divided into four research questions:

- (1) *What are the effects of functional quality dimensions in Logistics Service Quality (LSQ) on customer satisfaction?*
- (2) *What are the effects of technical quality dimensions in Logistics Service Quality (LSQ) on customer satisfaction?*

In a study of service quality in third party logistics, Mentzer et al (2001) demonstrate that customers concern about ease and effectiveness of the ordering process and not necessarily about timeliness. Ordering process represents “how” the logistics service is provided while timeliness reflects “what” is provided. They found that there were factors that drove perceptions of timeliness, but timeliness was not a major drive to satisfaction. Their results reflect that the functional quality dimensions such as ordering process are of critical importance rather than the technical quality dimensions such as timeliness. In this study, the impacts of both technical and functional quality dimensions on satisfaction are investigated in an across industrial sector of TPL industry so as to examine the external validity of the model.

- (3) *What are the effects of satisfaction with LSQ on relationship quality?*

In this study, relationship quality is viewed as comprising of relationship satisfaction, trust and commitment. This differentiates this study from many of the previous relationship quality studies, which have treated those three constructs as a global measure (De Wulf et al, 2001; Kumar et al, 1995a). However, some studies demonstrate that satisfaction with past service outcomes would enhance relationship satisfaction, trust and commitment (e.g. Ganesan, 1994). Therefore, it is expected that the level of satisfaction positively affect relationship quality constructs. This study empirically validates this relationship.

(4) *What are the effects of relationship quality dimensions on customer loyalty?*

The goal of relationship marketing activities is ultimately aimed at achieving the company's overall profitability. Customer loyalty has always been associated with companies' profitability and referred to as the key relationship outcome. Consumer disconfirmation theory proposes that customer service evaluation outcomes affect approach behaviours and avoidance behaviours (Bitner, 1990). Both behaviours are simply the opposite of each other, in which the approach behaviours are positively affected while the avoidance behaviours are negatively influenced by the customer service evaluation outcomes. As such, this study investigates two different conceptualisations of customer loyalty. First, the concept relates to the act of remaining silent and confident things will get better (Geyskens and Steenkamp, 2000; Ping 1999; 1993; Hirschman, 1970), which is based on the approach behaviour. Secondly, it views customer loyalty as the customers' intention to leave the service providers, which reflects the avoidance behaviours (Rusbult et al, 1988; 1982). These two concepts of customer loyalty were chosen because obviously, these are the main concepts that have been used by researchers in the industrial marketing studies. This study then, tests the relationships of the relationship quality dimensions on these two concepts of customer loyalty.

1.4 Justifications for the Research

The research problem was developed based on its practical importance as well as the conceptual and empirical shortcomings in the existing literature.

1.4.1 Importance of Research

The paradigm shift to the pursuit of loyalty as a strategic business goal is becoming prominent as researchers and practitioners realise that mere satisfaction is not sufficient enough to produce loyal customers (e.g. Christopher and Peck, 2004; Oliver, 1999; Jones and Sasser, 1995; Stewart, 1997). They realise that an

increasingly strong loyal customer base would encourage higher profits when they take less expense than acquisition of new customers. The costs are saved when the expenses for customer-care decrease during the later phases of the relationship life cycle due to the growing expertise of experienced customers (Reichheld and Sasser, 1990).

Several authors recognise the importance of service quality in driving customer satisfaction (Mentzer et al, 2001; Harding, 2001; Fransceschini and Rafele, 2000; Mentzer et al, 1999; Bienstock et al, 1997; Novack et al, 1994) and relationship quality in influencing customer loyalty (Hennig-Thurau et al, 2002; Garbarino and Johnson, 1999; Dorsch et al, 1998; Moore, 1998; Tax et al, 1998; Andaleeb, 1996; Kumar et al, 1995a; 1995b; Anderson and Weitz, 1992; Scheer and Stern, 1992). Although some researchers theorise the positive links among service quality, customer satisfaction, relationship quality, and customer loyalty (Christopher and Peck, 2004; Hennig-Thurau, 2000), more empirical studies are needed to validate these relationships in order to understand how these dimensions are working towards achieving customer loyalty.

The need for such study become obvious as the business competition turns out to be more intense due to the complexity and vast expansion of the TPL industry in the UK (refer to Section 1.2.1). It is also significant as the recent trends in the transportation industry have witnessed an increasing number of alliances between customers and TPL providers, with this trend is likely to intensify in the future (e.g. Knemeyer et al, 2003; Murphy and Poist, 2000; Gentry and Vellenga, 1996; Leahy et al, 1995). This study helps to promote how the TPL providers could better understand their customers' attitudes and behaviours during the relationships as well as when receiving the service. This is particularly important as several evidences indicate customers' dissatisfaction with TPL services with particular reference to poor service, poor communication and lack of customer

focus (PE Consulting, 1993; 1996; Rowat, 1996; Meczes, 2002). This study may also suggest them to tailor their strategies towards improving their services, developing and maintaining relationships with the customers.

1.4.2 Conceptual and Empirical Shortcomings of Existing Research

Many researchers recognise the increasing importance of investigating relationships in a business-to-business environment (e.g. Holmlund, 2001; Dorsch et al, 1998; Kumar et al, 1995a) and greater emphasis was given to the creation of customer value as such attention was drawn to relationship marketing. As a result, the issue of relationship quality emerges and researchers have found it useful in industrial marketing especially in dealing with inter-organisational issues in channel relationship (Parsons, 2002; Holmlund, 2001; Holmlund and Strandvik, 1999; Johnson, 1999; Leuthesser et al, 1997; Kumar et al, 1995a; Crosby et al, 1990). Due to the increasing number of alliances between the customers and TPL providers (Knemeyer et al, 2003; Murphy and Poist, 2000; 1998; Gentry and Vellenga, 1996; Leahy et al, 1995), this study is mainly useful as studies that incorporate relationship-marketing theory in TPL studies are particularly lacking (Knemeyer et al, 2003; Gentry and Vellenga, 1996).

The widespread attention of academics as well as practitioners on the relationships between the channel members have resulted in a neglect of the relationships between the third party and channel members both conceptually and empirically. Especially in the UK, much attention has been given to the manufacturer and retailer relationships, but little academic research has been conducted on the use of TPL providers except for the ones carried out by the consultants (Ferne, 2004). Ferne (2004), in particular, highlights that the academic research on the role of TPL providers in the UK have been limited to the works by Ferne (1989; 1990), Cooper and Johnston (1990) and, Milburn and

Murray (1993). This research contributes to fill in the gap due to scarcity of such research in the literature.

Since the early 1970s, the increasing importance of logistics customer service and the related concept of customer satisfaction and service quality was becoming apparent and was seen as a key part of future research in the logistics discipline (Grant, 2004). The concepts of customer service, customer satisfaction and service quality became evident at the beginning of the 1970s as researchers started to realise the benefits gained from customer satisfaction such as closer relationship between the customers and the supplier/service provider, increased customer loyalty and profitability, and gaining a differential competitive advantage. While there exists a large body of knowledge in both areas of relationship quality and service quality, the interaction between the two areas are practically lacking. Service quality seems to have a strong theoretical base in consumer context while relationship marketing/quality in industrial context (e.g. De Wulf et al, 2001; Doney and Cannon, 1997). Although there is evidence of attempts to integrate or replicate the service quality concept in the industrial context, the attempt to measure the effects of service quality on relationship outcomes (De Wulf et al, 2001) both conceptually and empirically have received less attention in the literature.

The fact that the LSQ scale for measuring logistics service quality was developed using a single firm in the US calls for further validation in a different context. Thus, this study attempts to test the generalisability of the LSQ process model in an across industrial context in the UK. Accordingly, this study investigates the effects of the LSQ dimensions in an across industrial sector context. Within the LSQ scale, Mentzer et al (2001) applied two of the nine constructs that were tapped with only two items potentially limiting the scope of the scale. This study

attempts to improve the measurement of these two constructs by providing new conceptualisations.

This study considers the importance of relationships in inter-organisational industrial marketing context even though the long-term relational elements have been so far neglected in the LSQ (Grant, 2004). In order to overcome such shortcomings, this study incorporates the relational dimensions by extending the LSQ process model to include the frequently mentioned relationship quality dimensions.

While the previous research considers relationship quality as a global measure, there exists a lack of research on the causal relationships between the dimensions that make up relationship quality in industrial setting. Although there exists no general agreement among authors on the dimensions that make up relationship quality (e.g. De Wulf et al, 2001; Dorsch et al, 1998; Kumar et al, 1995a), this study attempts to empirically test the relationships between the most frequently mentioned relational constructs of relationship quality and explore the underlying reasons and outcome of these relationships. Such effort is important so as to understand how relationship quality works and provide helps for managers to tailor their relational strategies towards developing long-term relationships with their customers.

1.5 Delimitations of the Research Scope

1.5.1 Research Setting

1.5.1.1 United Kingdom

This research was conducted on the customers of TPL providers in the UK. Fernie (2004) highlights that the empirical work on the use of TPL providers have been largely conducted in the US while the academic research on the role of TPL providers in the UK have been limited to the works by Fernie (1989; 1990),

Cooper and Johnston (1990) and Milburn and Murray (1993). Obviously, this research would fill in this gap in the literature.

1.5.1.2 Across Industries

Several authors argue that research should focus on a specific industry due to the variance of factors among industries (e.g. Lambert and Harrington, 1989; La Londe et al, 1988). However, this research is conducted across industrial contexts. There are several justifications for this decision. First, the findings from one industry may not be generalised to other industry unless they are empirically tested (Lambert and Harrington, 1989). Thus, LSQ needs to be tested for its generalisability across industrial sector firms due to the fact that it was originally based on a single firm. Secondly, in terms of the feasibility of this study, it was difficult to identify the size of the sampling frame of the TPL customers in each industrial sector. Problems also arise when the size of an industrial sector is not large enough for analysis using Structural Equation Modelling (SEM), the statistical analysis method used in this study as SEM is well known as a large sample analysis technique.

1.5.1.3 Unit of Analysis

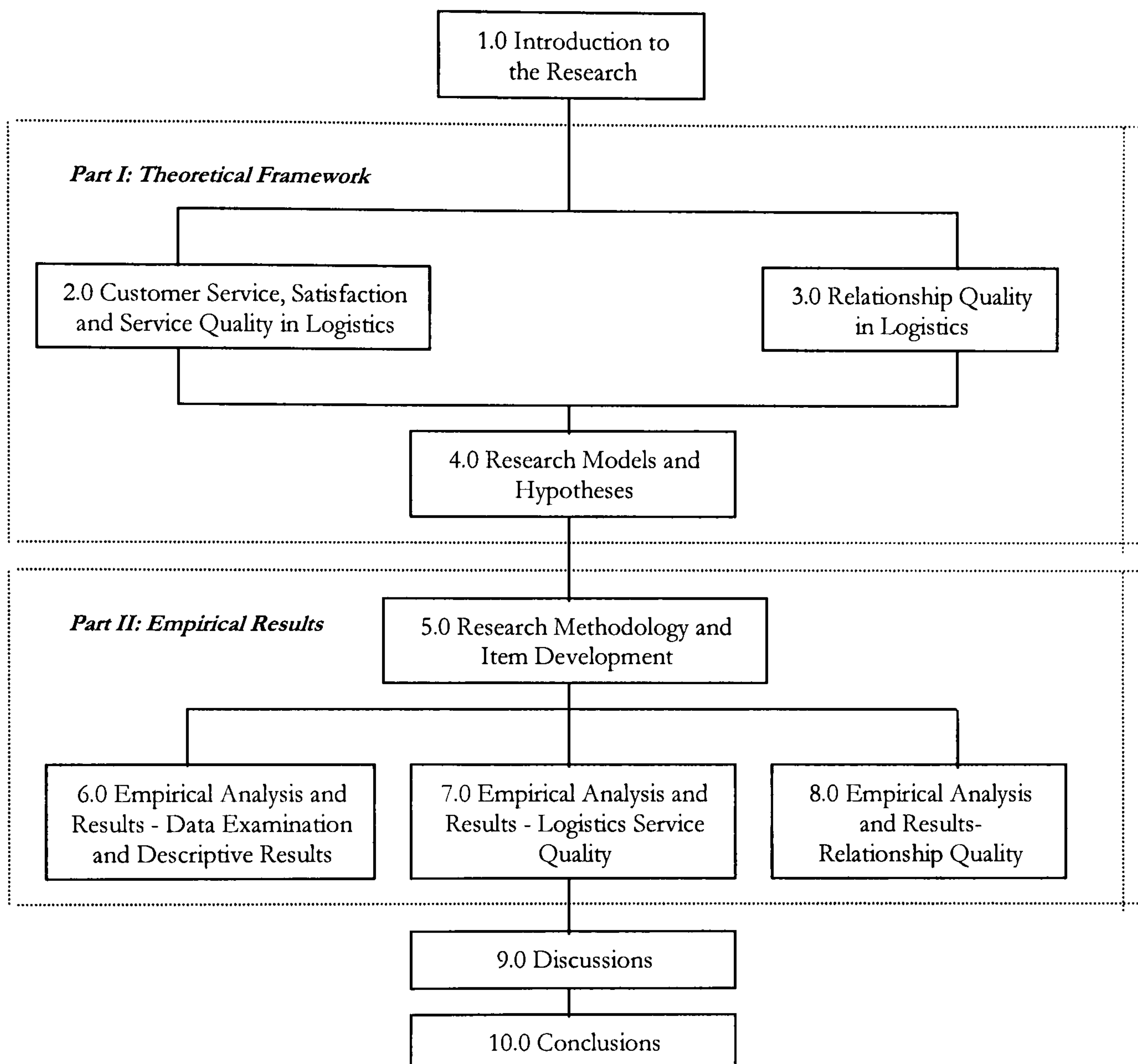
Although some scholars suggest that investigations that capture only one side of a given partnership (either supplier or customer) fail to reflect accurately the dynamic forces that bond or break the relationships in the long run (e.g. Ellram, 1992; Lambert et al, 1999), this study focuses on the customer side of TPL – customer relationships. This is based on several reasons. First, service quality is defined as either or all of customers' perceptions regarding (1) an organisation's technical and functional quality (Gronroos, 1982; 1984); (2) the service product, service delivery, and service environment (Bitner, 1992); or (3) the reliability, responsiveness, empathy, assurances, and tangibles associated with a service experience (Parasuraman et al, 1985). Thus, service quality emphasises the

perceptions of the customers. Second, in relationship marketing particularly relationship quality, it is generally agreed that quality relationships should be assessed from a customer's perspective (e.g. Bejou et al, 1996; Crosby et al, 1990; De Wulf et al, 2001; Jarvelin and Lehtinen, 1996; Roloff and Miller, 1987; Wong and Sohal, 2002; Zeithaml, 1981).

As a consequence, in line with the service quality and relationship quality literature, the study collects data from the customer side of TPL – customer relationships. A review of studies on customers of the TPL providers shows that the unit of analysis is the purchasing/logistics/supply chain managers, President/Vice President of Logistics and Distribution, Purchasing/Logistics/Distribution Executives. These people have been shown to exert a primary influential role in industrial purchasing decisions as well making critical decisions in assessing the logistics outsourcing functions. As such, they were chosen to be the unit of analysis of the study and all constructs in this study were measured based on the customer perceptions.

1.6 Structure of the Thesis

This thesis contains ten chapters. Figure 1.3 depicts the structure of the thesis.

Figure 1.3: Structure of the Thesis

Part one of the thesis discusses the theoretical framework of the study. This chapter lays down the foundation of the thesis. It also discusses the development of the industry in the UK so as to justify the subject of the study. Chapter Two reviews the literature on customer service, satisfaction and service quality in logistics. It demonstrates various studies measuring logistics service performance and highlights the Logistics Service Quality (LSQ) model as a model that measures logistics service quality that is reliable and robust. Chapter Three

critically reviews the dimensions that make up relationship quality namely relationship satisfaction, trust and commitment and the importance of TPL relationship. It also elaborates both the outcome and alternative outcome variable of the model, i.e. customer loyalty and exit intention as well as justifies the applicability of these constructs to logistics. Finally, Chapter Four presents the hypothesised research model and hypotheses.

The second part of the thesis elaborates the empirical research of this study. Chapter Five describes the methodology and the process of generating and testing the measurement items. Chapters Six, Seven and Eight present the empirical results of the study. Specifically, Chapter Six examines the data and exhibits the descriptive results and analysis while Chapters Seven and Eight provide the empirical results and analysis related to testing the hypotheses in Logistics Service Quality model and Relationship Quality model described in Chapter Four. Chapter Nine discusses the main results of the study.

Finally, Chapter Ten draws conclusion from the research questions, highlight the significance of research to theory and practice, points out its limitations and suggests some directions for future research.

1.7 Conclusion

This chapter laid the foundations for the research. It highlighted the development of the TPL industry and positioned the theories in the context of TPL industry in the UK. This chapter also introduced the research problem and research questions, presented the justifications for the conducting the research as well as outlined the structure of the thesis. On these foundations, the thesis proceeds with a detailed description of the research.

Chapter 2

CUSTOMER SERVICE, SATISFACTION AND SERVICE QUALITY IN LOGISTICS

2.1 Introduction

The importance of customer service was recognised over 50 years ago (Kyj, 1987) while logistics, then known as physical distribution had been one of the longest standing subjects of study in marketing (Kent and Flint, 1997). However, the focus on logistics customer service and the related concept of customer satisfaction and service quality has only increasingly developed in the early 1970s (Kent and Flint, 1997; Mentzer et al, 1989) and been seen as a key part of future research in the logistics discipline (Grant, 2004). Since then, more work has shifted the focus of customer service definition from a supplier's viewpoint to a customer perspective (Dadzie et al, 2005; Wilding and Juriado, 2004; Mentzer et al, 2001; 1999; 1997; Maltz and Maltz, 1998; Harding, 1998; Bienstock et al, 1997; Daugherty et al, 1996; Emerson and Grimm, 1996; Innis and La Londe, 1994; Sterling and Lambert, 1989; Christopher, 1986). This was due to the fact that firms that provide innovative customer service would benefit from increased customer satisfaction, closer customer-supplier relationships, increased customer loyalty, and profitability and a differential competitive advantage (Grant, 2004; Stank et al, 2003; Daugherty et al, 1998; Emerson and Grimm, 1998).

This chapter provides an understanding of how customer service quality and satisfaction are viewed from a logistics perspective. Accordingly, it reviews related literature on customer service, satisfaction and service quality in logistics. It also demonstrates various ways in which measuring customer satisfaction has evolved in the literature.

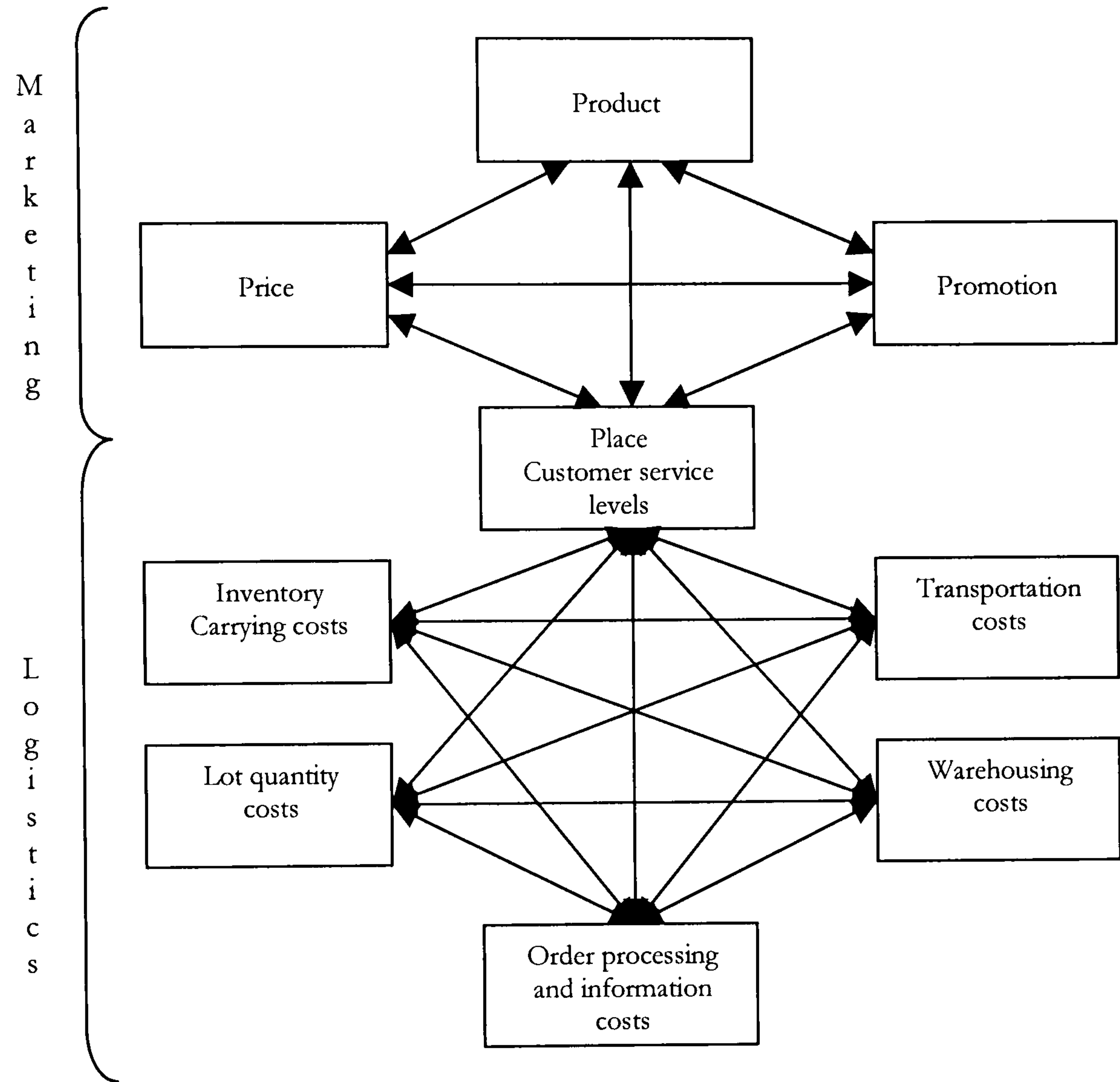
2.2 The Importance of Customer Service and Satisfaction in Logistics

Since it was given attention in the early 1970s, the concept of logistics customer service remains important until today (Stock and Lambert, 2001; Miyazaki et al, 1999; Kent and Flint, 1997). Much of the influence in developing the concept in the early 1970s to mid 1980s came from the operations management, management science, and to some extent, marketing (Kent and Flint, 1997). The importance of customer service and satisfaction in logistics can be viewed from chronological perspectives.

2.2.1 Logistics Leads to Competitive Advantage

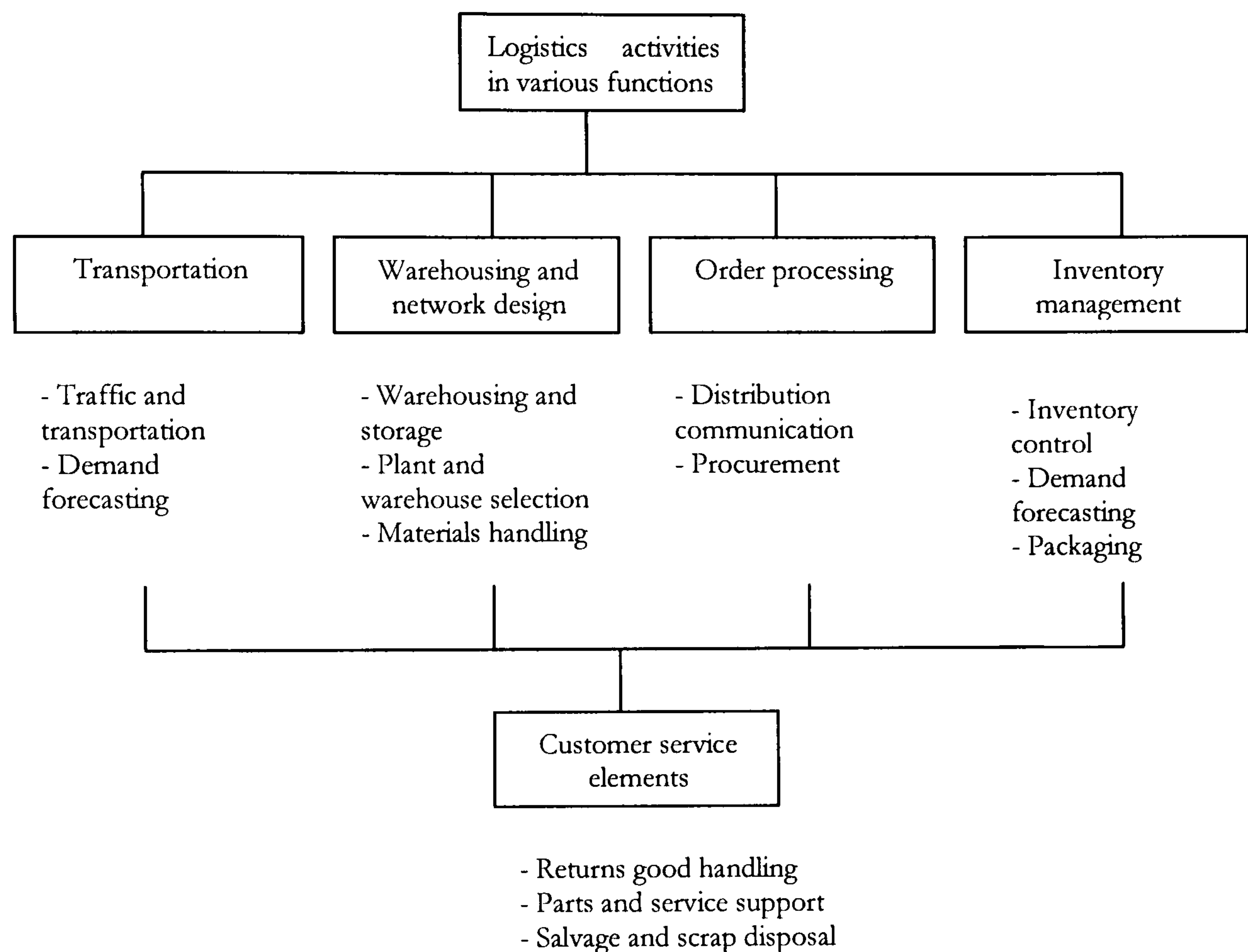
In the early years of the “customer focus” era, companies realised that in order to be successful in business, they must integrate the ideas of having the right product, at the right price, combined with the right promotion and available at the right place, which are the four Ps of the marketing mix (Stock and Lambert, 2001; Mentzer et al, 2001; Lambert, 1990). A company may improve their competitive position by allocating resources more effectively and efficiently to these components of the marketing mix to create a market offering, which is attractive to target customers and advances the long-run profit objectives of the company. Thus, customer satisfaction is the output of the marketing efforts of the firm in which it occurs if the firm’s overall marketing effort is successful (Lambert and Stock, 1993). Similarly, customer service represents the total output of the logistics system and the key to integrating marketing and logistics (see Figure 2.1). It acts as the binding and unifying force for the total logistics supply chain of warehousing, transportation, inventory management, order processing, and related information flows (Dadzie et al, 2005; Stock and Lambert, 2001; Lambert and Stock, 1993; Mentzer et al, 1989) (see Figure 2.2)

Figure 2.1: Cost Trade-offs in Marketing and Logistics



Source: Adapted from Lambert, D.M., (1976), *The Development of an Inventory Costing Methodology: A Study of the Costs Associated with Holding Inventory*, National Council of Physical Distribution Management, p.7

Figure 2.2: Customer Service as the Binding and Unifying Factor for All the Logistics Management Activities



2.2.2 Logistics Adds Time and Place Utility

Concurrently, a crucial aspect of marketing customer service is the ability to provide *time and place utility*, termed “physical distribution service” (Mentzer et al, 1989; Perrault and Russ, 1974). It clarifies the role of physical distribution service in the marketing mix by getting the product available to the customers when and where it is needed. To allow an efficient movement of products to the customers, the improvement and expansion of logistics services create other utilities that describe the marketing features of the company’s product/service offering. They include the company’s ability to deliver the right amount of the right product at the right place at the right time in the right condition at the right

price with the right information (Coyle et al, 1996; Stock and Lambert, 1987; Shapiro and Heskett, 1985). This explains how logistics services enhance the value of the product/service and how it adds up the cost of a product.

As the customers became more demanding, logistics services were extended to include several value-added tasks such as breaking bulk and product mixing, packaging, bar coding, information systems and third party inventory management, which typically take place at distribution centres, change a product's form by changing its shipment size and packaging characteristics. Hence, these activities provide *form utility* (Coyle et al, 1996; Ackerman, 1989; Mentzer, 1993; Mentzer and Firman, 1994; Witt, 1991). Another form of utility is *possession utility*. It is the value added to a product by allowing the customer to take ownership of the item (Stock and Lambert, 2001). This form of utility is not created by logistics, instead it is primarily created through the basic marketing activities such as the offering of credit, quantity discounts, and delayed payments that enable the customer to assume possession of the product. However, the role of logistics depends upon the existence of possession utility, for time or place utility makes sense only if demand for the product exists. It is also true that marketing depends upon logistics, since possession utility cannot be acted upon unless time and place utility are provided (Coyle et al, 1996). Hence, the degree to which these utilities are fulfilled reflects the degree of customer satisfaction.

As the logisticians began to understand how logistics activities constituted the very essence of their business, they then viewed logistics as a critical component in developing the strategy of the firm. This is when the following era of “logistics as differentiator” came in (Kent and Flint, 1997). During this period (from mid-1980s toward the end of 1990s), the main interest on the customer continued with an increasing emphasis on the creation of customer value through integrated supply chain management; logistics channel management, inter-organisational

efficiency and globalisation. Information technology and strategy concepts began to play their role as a means of effective and efficient movement of products/materials. As a result, a great deal of studies has been conducted in an attempt to assess the value created by logistics services for the customers. The following section discusses various ways in which researchers measure logistics service performance.

2.3 Measuring Logistics Service Performance

A considerable number of authors have recognised the importance of logistics service performance as a key marketing component in creating customer satisfaction (Dadzie et al, 2005; Mentzer et al, 2001; 1989; Min and Mentzer, 2000; Bienstock et al, 1997, Innis and La Londe, 1994; Perrault and Russ, 1974). Since then, the number of studies focusing on the definitions and descriptions of how logistics creates customer satisfaction (Mentzer et al, 2001; 1989; Novack et al, 1994; Mentzer and Firman, 1994; Mentzer, 1993; Coyle et al, 1996; Ackerman, 1989; Stock and Lambert, 1987; Shapiro and Heskett, 1985; La Londe and Zinszer, 1976; Perrault and Russ, 1974) and how service firms can create a competitive advantage (Mentzer et al, 2001; Mentzer and Williams, 2001; Morash et al, 1996; Bowersox et al, 1995; Kyj and Kyj, 1994; Innis and La Londe, 1994) have increased. As a result, various methods were used to measure logistics service performance, such as service quality (Mentzer et al, 1999; Harding, 1998; Fransceschini and Rafele, 2000; Bienstock et al, 1997; Novack et al, 1994), the marketing mix (Lambert and Harrington, 1989; Innis and La Londe, 1994), hard and soft customer measures (Maltz and Maltz, 1998) and the general measures such as based on the suppliers' capabilities. Both single and multiple-firms of a single industry approaches have been used.

According to La Londe and Zinszer (1976), customer service can be categorised into three distinct elements: (1) pre-transaction elements that include written

statement policy, customer receives policy statement, organisational structure, system flexibility and management services; (2) transaction elements that include stock-out levels, order information, elements of order cycle, expedite shipments, transshipment, system accuracy, order convenience, product substitution, and (3) post-transaction elements, which installation, warranty, alterations, repairs, parts; product tracing; customer claims, complaints, returns; temporary replacement of products. They emphasise that customer satisfaction may only be deduced from these elements. Consequently, several researchers have used all or some of La Londe and Zinszer's (1976) constructs in many different perspectives of their studies (Grant, 2003; Donaldson, 1995; Morris and Davis, 1992; Sterling and Lambert, 1987; 1989; Lambert and Harrington, 1989; Rinehart et al, 1989; Gilmour, 1982). One of the significant findings resulting from these applications was that Gilmour (1982) found differences as to which elements were required and important to different market segments. His study was on several market segments for scientific equipment. Similarly, Lambert and Harrington (1989), who replicated a methodology by Sterling and Lambert (1987), produced similar findings for the two industries involved in both studies. In fact, Sterling and Lambert (1987) stressed that customer service requires an integrative approach with other marketing components.

Rhea and Shrock (1987) made it clear that distribution effectiveness is the desired outcome of the distribution programmes. Collectively, these outcomes represent "effectiveness indicators" against which logistics performance is to be assessed by the customers. They suggest that customer service policy should be designed to an extent that logistics services should be able to satisfy customers.

However, these studies have focused on customer service from the supplier's perspectives and did not imply the customer's evaluation of value created by the suppliers or service providers (Grant, 2004; Mentzer et al, 2001). Even the way

some authors and logistics executives quantify the logistics value that they create for the customers by considering both suppliers and customers' viewpoints (Johnson et al, 2001; Novack et al, 1994; Lambert and Stock, 1993) may not be appropriate to justify their customers' satisfaction level because it is the customers' perspective of service that determines their satisfaction level. Mentzer et al (2001) argue that focus should be placed on the customers' evaluation of value created by the suppliers or service providers to allow the quantification of customer satisfaction and service quality.

In an integrative review of marketing and logistics, Mentzer et al (1989) and Rinehart et al (1989) argue that two elements exist in service delivery, namely marketing customer service and physical distribution service. These two elements have different dimensions that should be integrated with each other. They demonstrated that across multiple products and industries, physical distribution remains an important element in supplier evaluation, customer perception/satisfaction, and the resulting purchase decision. However, they stressed that buyers have a more accurate perception of the level of the physical distribution service they receive than their suppliers. They found that the benefits or utilities that the customers desired were availability, timeliness and quality of physical distribution service, which is similar to the value of product quality.

In a further attempt to measure customer satisfaction, several researchers have explored the service quality literature and tested the use of the five dimensions (tangibles, responsiveness, empathy, reliability and assurance) of the original service quality instrument, SERVQUAL by Parasuraman et al (1985) and Technical/Functional framework by Gronroos (1984) in many contexts of consumer studies including appliance repair and maintenance, retail banking, long-distance telephone service, securities brokers, credit card services, retail

consumers of health care , residential utilities, job placement, pest control, dry cleaning, financial services, and fast food services (e.g. Brown et al, 1993; Carmen, 1993; Cronin and Taylor, 1992; Babakus and Boller, 1992; Babakus and Mangold, 1992; Parasuraman et al, 1994; 1993; 1991; 1988). This has resulted in the use of a range of one to eight dimensions of SERVQUAL when some researchers argue for some additions of items and dimensions.

The SERVQUAL instrument (Parasuraman et al, 1985) consists of a set of 22 items that are used to measure perceptions of the actual service provided by a company and a similar set of 22 items that are used to measure the level of service expected (i.e. expectations) from the company. It is the 22-item gap score that is known as the SERVQUAL scale. These perceptions and expectations items represent five dimensions of SERVQUAL, namely tangibles, reliability, responsiveness, assurance, and empathy. On the other hand, in the Technical/Functional Quality framework, Gronroos (1984) underlines that technical quality involves “what” is provided and functional quality considers “how” it is provided. Technical quality is obtained from the customer’s evaluation of the technical outcome of the process. Hence, it can be measured in a rather objective manner. The consumer gets functional quality from his/her assessment on how he/she receives an outcome of the production process, which is perceived in a very subjective way.

In the organisational context, the use of the SERVQUAL instrument (Parasuraman et al, 1985) in measuring the logistics service (Mentzer et al, 2001; 1999; Bienstock et al, 1997; Brensinger and Lambert, 1990) has also been investigated. In fact, several attempts have been made to define logistics quality. In a study on the quality and productivity in the logistics process by The Council of Logistics Management (CLM), Byrne and Markham (1991) define quality in logistics as the “means meeting agreed to customer requirements and

expectations, including the following dimensions; (1) ease of inquiry, order placement and order transmission, (2) timely, reliable, order delivery and communication, (3) accurate, complete, undamaged orders and error-free paperwork, (4) timely and responsive post-sales support, (5) accurate, timely generation and transmission of information among the functions of business and with external parties to support the planning, management and execution of the activities”. From this definition, the focus was given to the ease of ordering procedures, timeliness of delivery and communication, accuracy of orders and information as well as responsiveness. Based on the SERVQUAL approach (Parasuraman et al, 1985; 1988), Stock and Lambert (1992) view logistics quality in terms of performance “gaps”. They measure logistics quality based on the ability to distribute a product or materials in conformance with customer requirements and standards. Specifically, logistics quality measures the ability to deliver products, materials and services without errors, defects, mistakes, or other gaps from customers’ expectations. They refer to “customers” as both the internal and external customers. The developments of these definitions form the starting point of using a service quality approach to measure customer satisfaction.

Although in other organisational marketing, there is evidence of largely failed attempts either to integrate SERVQUAL (Brady and Cronin, 2001) or to replicate its conceptual structure, Bienstock et al (1997) successfully developed the Physical Distribution Service Quality (PDSQ) by taking into consideration Lovelock’s (1983) service classification scheme. Under the nature of service act, Lovelock (1983) classifies people and things as two different categories of logistics service recipients and that logistics service should be managed differently. They found that the difficulties encountered in replicating SERVQUAL’s dimensions in the previous logistics research (Brensinger and Lambert, 1990) were because SERVQUAL emphasises functional/process

dimensions that may be only applicable to “people”, rather than technical/outcome dimensions that may be necessary for a distribution service. Consequently, based on the technical quality criteria for physical distribution, Bienstock et al (1997) conceptualise PDSQ as a second-order construct composed of three first-order technical dimensions comprising of timeliness, availability and condition of orders. They call for further research to include the functional dimensions of service quality.

The following section explains how the concepts of service quality were expanded to the logistics context.

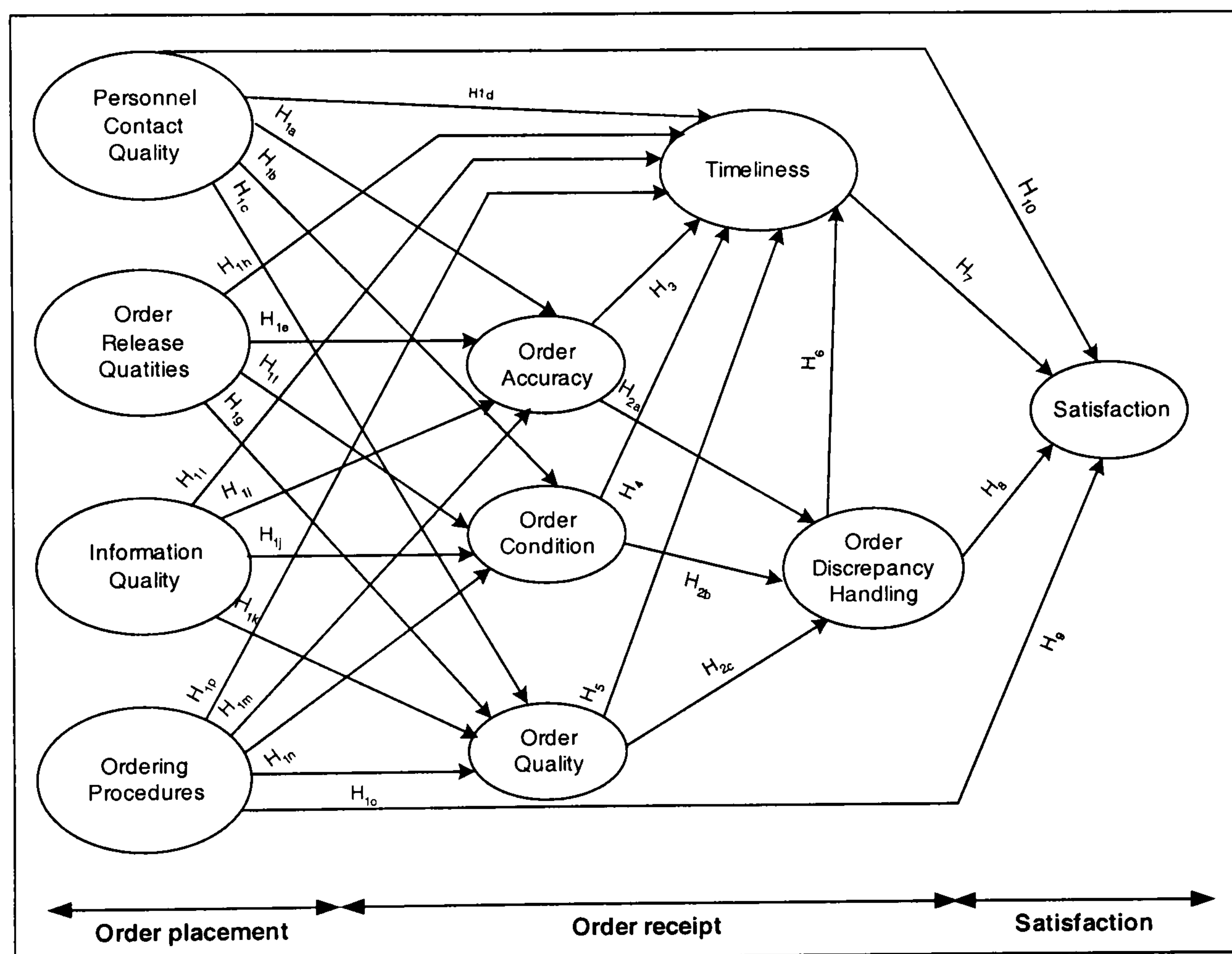
2.4 Logistics Service Quality (LSQ)

By taking into consideration SERVQUAL and other service quality research in marketing, Mentzer et al (1999) expanded the use of the service quality concept into the logistics context. They argue that customer service should be combined with PDSQ (Bienstock et al, 1997) to conceptualise Logistics Service Quality (LSQ). Thus, PDSQ, which consists of timeliness, availability and order condition, are viewed as the critical aspects of the customer’s perception of LSQ. Other components comprise of marketing customer service components that were developed in line with traditional service quality research in marketing, which was based on the notion that logistics services involve people who often take orders and deliver products and procedures for placing orders and handling discrepancies. The interactions that the customers have with these people and procedures should affect their perceptions of overall logistics services.

Empirically validated on the customers of a single large logistics provider firm, Defense Logistics Agency (DLA) in the United States, LSQ is a scale for measuring logistics service quality that is conceptualised as nine dimensions: information quality, ordering procedures, order release quantities, personnel

contact quality, order quality, order condition, order accuracy, timeliness and order discrepancy handling. Mentzer et al (2001) extended Mentzer et al's (1999) study by conceptualising the nine dimensions of LSQ as a process, by which perceptions of logistics service components affect one another and eventually lead to customer satisfaction across order placement, order receipt and satisfaction (see Figure 2.3). The nine dimensions of LSQ are discussed below:

Figure 2.3: Hypothesised Model of LSQ as a Process



Source: Mentzer, J.T., Flint, D.J. and Hult, G.T.M., (2001), "Logistics Service Quality as a Segment-Customised Process", *Journal of Marketing*, 65 (October), p. 86.

2.4.1 Personnel Contact Quality

Personnel contact quality refers to the customer orientation of the supplier's logistics contact people (Mentzer et al, 2001). Having considered the fact that logistics services involve personnel who often take orders and deliver products, and are involved in procedures for placing orders and handling discrepancies, personnel contact quality becomes one of the most vital variables in delivering service. Mentzer et al (2001) highlight the positive influence of personnel contact quality on perceptions of timeliness in all four segments (general, textiles, electronics and construction) in their study. Most authors recognise that customers care about whether customer service personnel are knowledgeable, empathise with their situation, and help them resolve their problems (Bitner, 1990; Bitner et al, 1994; Gronroos, 1982; Hartline and Ferrel, 1996; Parasuraman et al, 1985). Parasuraman et al (1985) argue that in most service encounters, quality perceptions are formed during the service delivery. Similarly, Suprenant and Solomon (1987) suggest service quality perceptions are tied more to the service process, which involves personnel contact, than to the resulting service outcome. As such, personnel contact quality is an important aspect of the employee-customer interface (Hartline and Ferrel, 1996; Hartline et al, 2000).

2.4.2 Order Release Quantities

Order release quantities are associated with the concept of product availability, which means TPL companies have the flexibility to deliver certain order sizes (Mentzer et al, 2001). The importance of product availability has long been realised as a key component of logistics excellence (Mentzer et al, 2001; 1989; Novack et al, 1994; Perrault and Russ, 1974). Customers are most satisfied when they are able to obtain their required quantities. Failure to deliver the required quantities leads to stock-outs followed by financial losses due to insufficient materials for production leading to dissatisfied and disloyal customers (Keebler et al, 1999).

2.4.3 Information Quality

The way customers perceive the information given by the suppliers/service providers with regard to the variety of products that the customer may choose, forms the information quality construct (Mentzer et al, 2001; 1999; 1997; Novack et al, 1994; Rinehart et al, 1989). The quality of the information especially in terms of adequacy and availability of the products is very important to customers so that they are able to use the information to make decisions (Mentzer et al, 2001).

2.4.4 Ordering Procedures

Several researchers found that customers are concerned about effective and simple procedures provided by the suppliers or service providers (Mentzer et al, 2001; 1997; 1989; Bienstock et al, 1997; Rinehart et al, 1989). Thus, they view ordering procedures as efficient and effective procedures of ordering products/materials on the part of the suppliers or service providers.

2.4.5 Order Accuracy

In a qualitative research study, Mentzer et al (2001) underline that customers concern themselves with order accuracy, order condition and order quality when they assess orders as complete. However, Mentzer et al (2001) emphasise that these three constructs are different to each other. Order accuracy refers to the ability of the suppliers or service providers to deliver the right item/product at the required number as ordered and none of the orders being substituted with other items (Mentzer et al, 2001; 1999; 1989; Bienstock et al, 1997; Novack et al, 1994; Rinehart, Cooper and Wagenheim, 1989).

2.4.6 Order Condition

Order condition addresses the damage levels of the products due to handling throughout the transportation process. Damaged products are unusable to the customers. Customers have to go through certain procedures to obtain the

replacement of the damaged products from the suppliers or service providers depending on the source and level of damage. Specifically, it refers to the lack of damage of the orders (Mentzer et al, 2001; 1999; 1989; Bienstock et al, 1997; Rinehart et al, 1989).

2.4.7 Order Quality

Order quality addresses the damage levels of the products ordered from the suppliers or service providers due to manufacturing of the products as opposed to damage due to handling. It reflects the degree to which the products provided by the suppliers or service providers meet the product specifications set by the customers (Novack et al, 1994).

2.4.8 Order Discrepancy Handling

The degree to which the suppliers or service providers deal with any discrepancies upon the arrival of orders reflects the order discrepancy-handling dimension (Novack et al, 1994; Rinehart et al, 1989). When the orders received from the suppliers or service providers are not accurate, in a poor condition, or of poor quality, customers have to go through certain procedures to correct the orders. Thus, the way the suppliers or service providers handle these problems forms customer perceptions on the quality of services provided.

2.4.9 Timeliness

Customers care most that the orders must arrive at the customer's premises as promised. In a broader perspective, it refers to the length of time between order placement and receipt (Hult, 1998; Hult et al, 2000). These situations are represented by the timeliness dimension. This delivery time can be affected by the problems during transportation that may delay the transportation time. It could also be influenced by back-order time when products ordered are not available in stock (Mentzer et al, 2001; 1999; 1989; Bienstock et al, 1997; Novack et al, 1994; Rinehart et al, 1989).

2.4.10 Customer satisfaction

In the LSQ process model, Mentzer et al (2001) positioned satisfaction as the outcome variable of the model. They argue that by including the satisfaction construct, certain weight could be placed on each construct and hence the importance of each dimension in the model could be measured. The satisfaction dimension reflects the customers' general evaluation toward the logistics service provider organisation, i.e. DLA. Mentzer et al (2001) emphasised that the limitation of previous research was that the respondents (i.e. the customers) were required to provide their agreement or disagreement on the importance of each logistics activity and/or dimensions of logistics services. And, those researchers did not demonstrate the process or the causal effects of the constructs being tested that lead to satisfaction. In Mentzer et al's (1999) study, for example, each of the nine dimensions of the model was given equal weight and treated as if they occurred simultaneously. This has resulted in the failure to link significantly to customer satisfaction.

However, it is important to note that the LSQ process model was limited to the purchasing process that was experienced by the customers of a single organisation, i.e. DLA in the United States. Thus, it lacks other customer service dimensions that may have more influence on customer satisfaction or the existing dimensions that may not reflect other industries or companies (Grant, 2004; Mentzer et al, 2001; 1999).

Mentzer et al (2001; 1999) highlight that further research that concentrates on generalising the LSQ process model across industrial sectors is worth consideration. The purpose is to investigate the robustness of the LSQ measures. In response to this call, this study is conducted to replicate and test the generalisation of the LSQ measures in the context of customers of TPL providers across industrial sectors in the UK.

2.5 Concluding remarks

Hennig-Thurau and Klee (1997) and Hennig-Thurau (2000) argued that to operationalise the satisfaction-retention relationship, the service-related quality perception should be integrated with relationship marketing elements. Furthermore, the service quality component in the LSQ model (which consists of the functional and technical quality) is insufficient for a condition of relationship quality (Crosby et al, Evans and Cowles, 1990). As such, it is argued that the relationship marketing elements, particularly relationship quality that has gained considerable attention in inter-organisational, industrial marketing and channel relationships context, need to be added in the model.

In addition, the satisfaction dimension in the LSQ process model may not necessarily lead to customer retention. A few empirical investigations indicate weak or non-existent relationships between customer satisfaction and customer retention (Anderson et al, 1994; Bitner, 1990; La Barbera and Mazursky, 1983; Newman and Werbel, 1973; Oliver, 1980; Oliver and Swan, 1989; Richheld and Sasser, 1990).

This chapter illustrates how the concepts of customer service, satisfaction and service quality are developing in logistics. Specifically, it highlights how service quality concepts are evolving in logistics, and finally highlights the importance of LSQ process model in measuring customer satisfaction. More importantly, it demonstrates how this study fits in and extends the existing literature through the replication of the LSQ process model.

The next chapter reviews the importance of relationship marketing in an inter-organisational context. It explains how TPL providers may benefit from the implementation of relationship marketing, particularly relationship quality followed by discussions on the dimensions of the relationship quality concept.

Chapter 3

RELATIONSHIP QUALITY IN LOGISTICS

3.1 Introduction

Emerging from relationship marketing, which focuses on building, developing and maintaining successful relational exchanges (Morgan and Hunt, 1994; Gronroos, 1994; Berry, 1983), relationship quality concentrates on specific crucial dimensions of long-term orientation of relationships. Since it was introduced, much has been researched in developing the concepts and measures. This chapter starts with explaining the linkages between logistics, satisfaction, relationship quality and profitability followed by the examination of the conceptualisation of relationship quality and its dimensions. The importance as well as the applicability of the relationship quality construct to this study is also discussed.

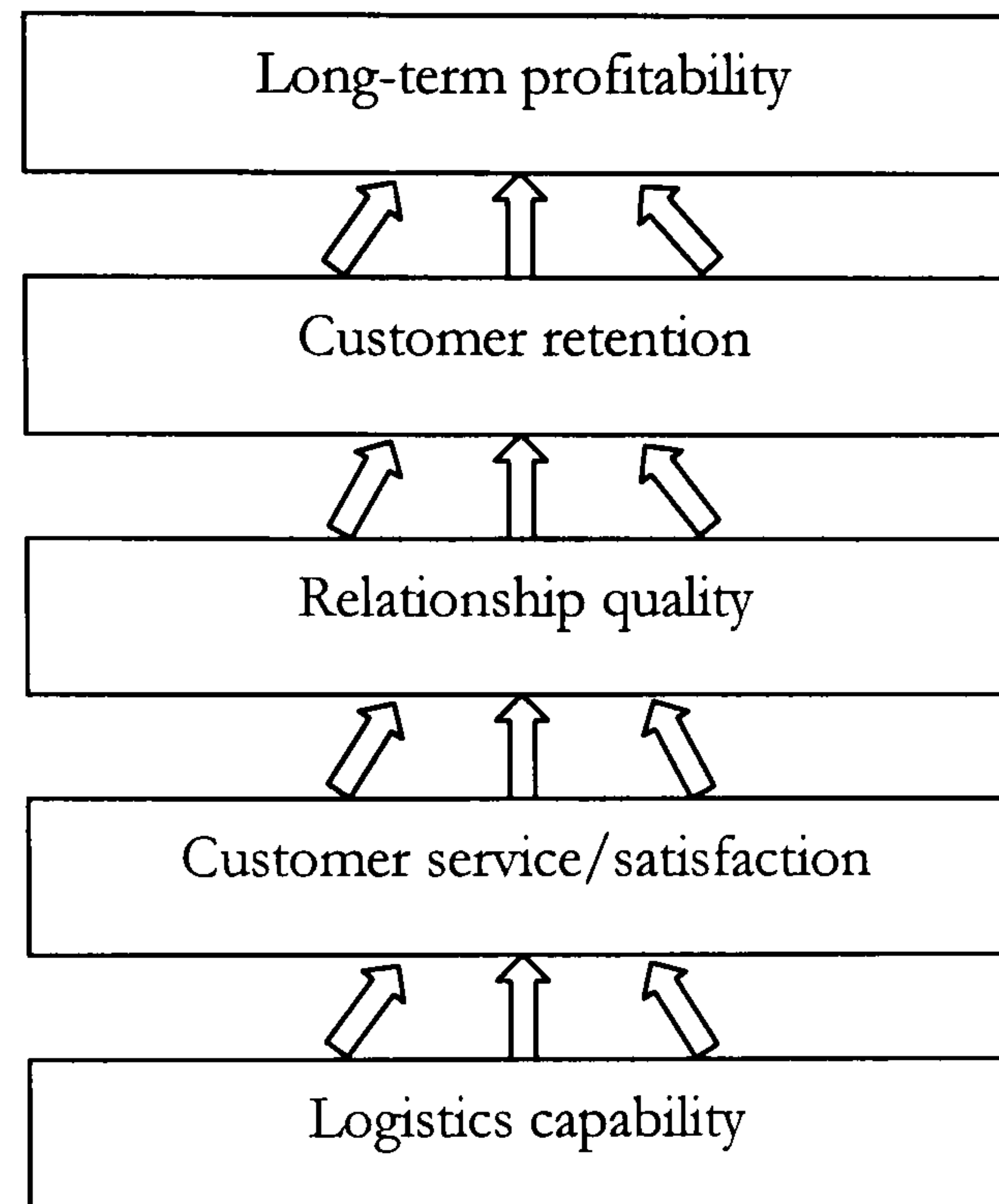
3.2 The Importance of Relationship Quality

As business competition becomes more intense, researchers and practitioners comprehend the involvement of a substantial amount of logistics costs as a percentage of a product's value. They realise that profitability could also be achieved through cost savings rather than merely increasing sales volume (Stock and Lambert, 2001). Consequently, logistics becomes one of the most promising areas where significant cost savings can be achieved, in which the logistics value is created through accommodating and satisfying the customer's service delivery requirements in a cost effective manner (Stank et al, 2003; Innis and La Londe, 1994; Christopher, 1993).

Recent studies are increasingly revealing the powerful impact of customer retention on improving the financial performance of a company. Thus, under the philosophy underlying relationship marketing the marketing activities should be aimed at the establishment of beneficial partnerships with customers (e.g. Christopher and Peck, 2004). It is generally agreed that an effective logistics customer service leads to a good relationship between the supplier/provider firm and customer, which in turn enables firms to retain their customers and consequently increase long term profitability (see Figure 3.1) (Dadzie et al, 2005; Daugherty et al, 1998; Christopher and Peck, 2004; Innis and La Londe, 1994). Innis and La Londe (1994) indicate that customer service is significantly related to maintaining customer loyalty through its effect on repurchase intentions. Some researchers highlight that a 5 percent increase in customer retention leads to an increase from 25 percent to 85 percent in profitability (Christopher, 1997; Reichheld, 1993). This is because a satisfied customer facilitates an increase in sales, and the costs to serve a loyal customer reduce as the supplier/provider firm establishes closer relationships. Satisfied customers are less sensitive to price and tend to purchase more frequently and in greater volume than either dissatisfied customers or new customers (Anderson et al, 1994; Reichheld and Sasser, 1990; Garvin, 1988). Thus, the cost of selling to these loyal customers diminishes. Positive word-of-mouth publicity that is likely to accrue in firms with satisfied customers and the difficulties and higher costs associated with setting up the new accounts than the established ones makes retaining existing customers more attractive.

Christopher (1993) stresses that the combined impacts of a high retention rate and the enhanced profitability of loyal customers lead not only to higher profit but to a better 'quality of earnings' as the customer base is less volatile. A company with lower market share but high customer retention can be more profitable than a company with the reverse characteristics.

Figure 3.1: Key drivers of Long-term Profitability



Source: Christopher, M. and Peck, H., (2004), *Marketing Logistics*, Elsevier Butterworth-Heinemann, Oxford, p.32

From Figure 3.1, it is apparent that efficient and effective customer service programs that are built upon logistics capability may lead to relationship quality and finally long-term profitability.

The importance of relationship quality has long been realised in relationship marketing (Dwyer et al, 1987; Dorsch et al, 1998; Crosby et al, 1990; Gummesson, 1987; Storbacka et al, 1994; Kumar et al, 1995a; Hennig-Thurau and Klee, 1997; Dorsch et al, 1998; Weitz and Bradford; 1999; Hennig-Thurau, 2000; De Wulf et al, 2001; Holmlund, 2001; Palmer and Bejou, 1994). Researchers have found it useful in industrial marketing especially in dealing with inter-organisational issues in channel relationship (Crosby et al, 1990; Holmlund, 2001; Holmlund and Strandvik, 1999; Johnson, 1999; Kumar et al, 1995a; Leuthesser, 1997; Parsons,

2002; Smith, 1998). Smith (1998, p.4) noted, “relationship quality construct is now emerging as a central construct in the relationship marketing literature”.

In a conceptual study, Hennig-Thurau and Klee (1997) suggest that the relationship quality construct is an important mediator between satisfaction and customer retention, which partly explains the weak or non-existent relationship between satisfaction and customer retention in some empirical studies. Quality in perceived service delivery is a pre-requisite for a quality relationship being developed (Crosby, 1989). Crosby et al (1990) stressed the importance of relationship quality relative to service quality. They explicitly state that although the concept of service quality has relevance to services marketing in both transactional and relational nature, it is not sufficient to achieve relationship quality. They refer to relationship quality as an enduring state of buyer-seller relationship. Particularly in an industrial context, the decision whether to invest or divest in a relationship can be seen as dependent on the quality of the relationship (Palmer and Bejou, 1994).

Several related terms have been used to describe relationship quality. A concept that has much in common with relationship quality is ‘close inter-firm relationship’ (e.g. Johnson, 1999; Ganesan, 1994; Anderson and Weitz, 1992; Dwyer et al, 1987). Some scholars recognise the potential importance of close inter-firm relationships as strategic assets (e.g. Webster, 1992; Anchrol, 1991; Theorelli, 1986). However, it is found that inter-firm relationships exhibiting flexibility and durability will most likely be strategically integrated. Also, the concept of relationship strength (Hausman, 2001; Storbacka et al, 1994) is related to the notion of relationship quality. It adds to the emerging understanding of what makes successful relationships by demonstrating that a combination of inter-firm trust, commitment to the relationship, and relational attitudes are related to positive outcomes of the relationship.

/ Some authors refer to relationship quality as relationship outcome composed of two dimensions including trust and commitment (De Wulf et al, 2001; Kumar et al, 1995a; Jap, 2001). This reflects the importance of relationship quality in developing strong, stable or long-term relationships. Other studies, which focus on commitment as the outcome variable (Andaleeb, 1996; Ganesan, 1994; Geyskens et al, 1996; Moorman et al, 1992; Morgan and Hunt, 1994; Smith and Barclay, 1997; Odekerken-Schroder and Bloemer, 2002) also, signify the importance of relationship quality since commitment has been determined as a construct in relationship quality that represents the highest stage in relationship bonding (Dwyer et al, 1987).

In logistics, several authors recognise the benefits of a successful strategic logistics alliance (Razzaque and Sheng, 1998; Bowersox, 1990; Kanter, 1994; La Londe and Cooper, 1989; Gattorna, 1991) due to the fact that a strategic logistics alliance allows a company to take advantage of what it does well and enables it to seek partners who have strength in other areas. Logistics alliance may reflect quality relationships. A survey of alliances by Lal et al (1995) in the automotive, electronics, and packaged consumer goods industries showed that logistics alliances often bring in large service and cost benefits. This comes from more efficient operations, tailored logistics solutions, an expansion in services, and the capture of synergies and large-scale effects. They recognise that a logistics alliance is a powerful tool for enhancing supply chain performance, close working arrangements being the basis. The following section reviews various types and ranges of relationships on TPL relationships with their customers.

3.3 Types and Range of Relationships

Several terms explained in the previous section reflect the different arrangement of logistics relationships (Bagchi and Virum, 1998). A basic understanding of the types of relationship, therefore, is vital in refining the definitions, and also crucial

in determining the degree of the relationships, the extensive use of services as well as the potential of success in the relationships.

According to Lambert et al (1999), when a firm outsources its entire or part of its logistics functions, the firm enters into a relationship, often called a partnership, with the TPL provider. Based on 60 in-depth interviews of 18 relationships, Lambert et al (1999) demonstrate that a company should firstly recognise the degree of integration required before entering into a relationship. They stress the appropriate degree of integration that is greatly influenced by the level of drivers and facilitators (refer to Table 3.1). They describe drivers as compelling reasons to partner such as the strategic benefits resulting from strengthening a relationship, i.e. asset/cost efficiencies, enhanced customer service, marketing advantage, and profit growth or stability; while facilitators reflect the supportive environment for growth and maintenance of a relationship such as corporate compatibility, similar managerial philosophy and techniques, mutuality and symmetry. The combined strength of drivers and facilitators determines the potential for partnership integration as shown in Table 3.1. When the level of combination of both drivers and facilitators is very high, a very strong, closely-knit partnership (Type III) is appropriate, while if it is they are low, a less integrated partnership (Type I) is warranted (see Table 3.1). These varying degrees of integration, namely Type I, Type II and Type III are located within the extremes of an arm's length relationship and a joint venture within this partnership. They refer to the three levels of integration as follows:

- Type I refers to the organisations that recognise each other as partners on a limited basis, co-ordinate activities and planning. The partnership usually has a short-term focus and involves only one division or functional area within each organisation.

- Type II organisations are those who involve progress beyond co-ordination of activities to integration of activities. Although not expected to last “forever”, the partnership has a long-term horizon. Multiple divisions and functions within the firm are involved in the partnership.
- Type III: The organisations share a significant level of integration. Each party views the other as an extension of their own. Typically no “end date” for the partnership exists.

Table 3.1: Propensity to Partner Matrix

		Driver level		
		Low	Medium	High
Facilitator level	Low	Arms' length	Type I	Type II
	Medium	Type I	Type II	Type III
	High	Type II	Type III	Type III

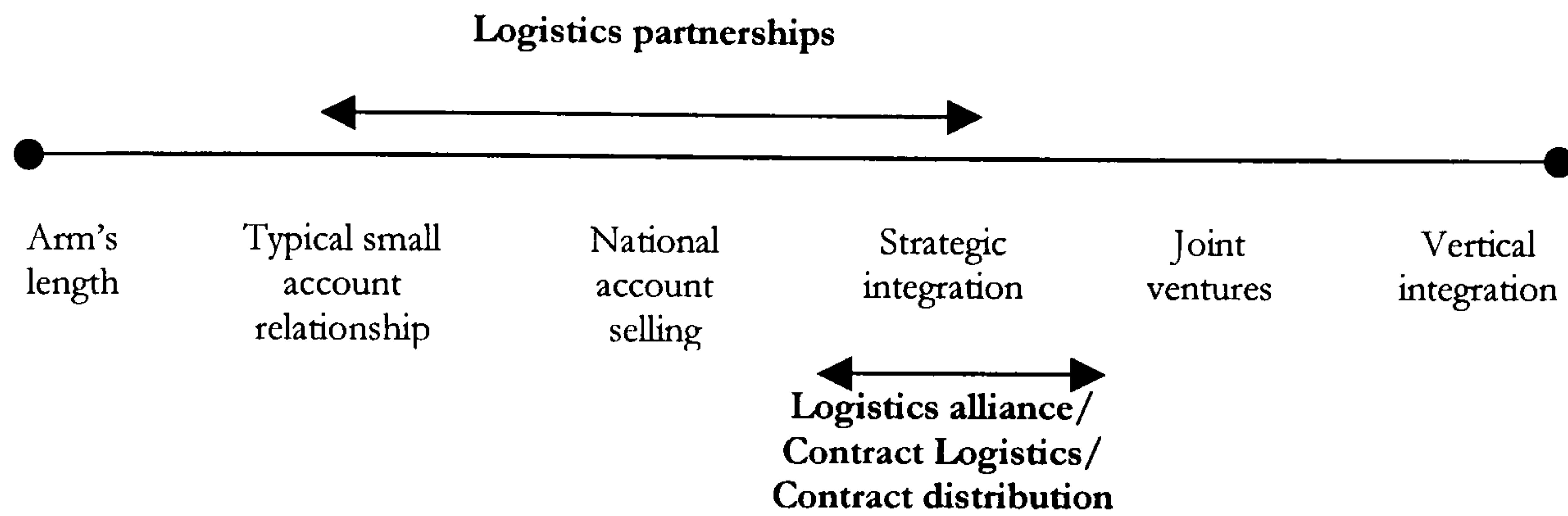
Source: Lambert, D., Emmelhainz, M. and Gardner, J., (1999), “*Building Successful Logistics Partnerships*”, Journal of Business Logistics, Vol.20 No.1, pp. 165-181.

Knemeyer et al (2003) examine the potential existence of these three distinct levels of partnership development in terms of strength, long-term orientation and level of involvement between the parties. Their findings support the differences of characteristics across partnerships but the three distinct levels (type I, type II and type III) of partnership were unclear. Their findings were in line with Cooper and Gardner (1993, p.15), who claim that the term ‘degree of partnership’ refers only to the gradients along a continuum and not to the specific point on it. They, however suggest six points along the range of possible relationships (refer to Figure 3.2).

- Arm's length: Neither party explicitly expects future transactions in an environment where any carrier can be selected for any given load. At this extreme of arm's length relationships, there are no partnership elements.
- Small account selling: This refers to the traditional approach to sales that is based on sales territories and less likely to be specialised according to product or kind of customer.
- National account selling: This refers to a co-ordinated services and billing that can benefit both parties.
- Strategic alliance: This is a contractual relationship formed between two independent entities in the logistics channel to achieve specific objectives and benefits.
- Joint ventures: This involves some form of equity or ownership.
- Vertical integration: This occurs through merger, acquisition, or internal growth.

Joint ventures and vertical integration only emerged in the late 1990s. They involve collaboration with companies from areas such as information technology, management consultancy and financial services (Berglund et al, 1999).

Figure 3.2: The Position of the TPL Terms along the Relationship Continuum



In summary, it can be concluded that the way, in which the terms are used, indicate a similarity of meanings. With the exception of some studies (Murphy and Poist, 1998), logistics alliance, logistics partnership, contract logistics and contract distribution place more emphasis on relationships. They involve some forms of written contract, long-term and extensive type of relationships with the customers. As referred to in the relationship continuum (see Figure 3.2), logistics alliance and contract logistics or contract distribution appear to be similar and are located at “strategic integration” point. Logistics partnership however covers a wider range of relationship styles, beginning with a typical small account relationship to strategic integration (Knemeyer et al, 2003). Arm’s length is not a type of logistics partnership because it does not have any partnership elements; particularly contract (Cooper and Gardner, 1993).

TPL or logistics service provider refers to the ‘organisation’ that performs or provides logistics services and does not show any element of collaboration with the final customers. Therefore, the relationships can be placed at any point along the continuum, which is from an arm’s length to a strategic alliance. The term outsourcing only represents the act of delegation of activities to an external organisation, which is normally the third party company. The degree of

outsourcing also depends on the amount of services provided and the length of relationship.

Several authors consider “contract logistics”, “third-party logistics” and “outsourcing” (Africk & Calkins, 1994) to generally have the same meaning (Razzaque and Sheng, 1998; Lieb et al, 1993; Muller, 1993). Logistics alliance and logistics partnership also appears similar in terms of the length of relationships. However, the emphasis placed on logistics alliance and logistics partnerships are different. This is because logistics alliance originates from strategic management literature, which emphasises the benefits that a company may exploit by allowing another company to take advantage of what they do well. Logistics partnerships, on the other hand, have their root in relationship marketing and thus stress the key characteristics of shared risk/reward, long term focus, joint activities and the concept of trust.

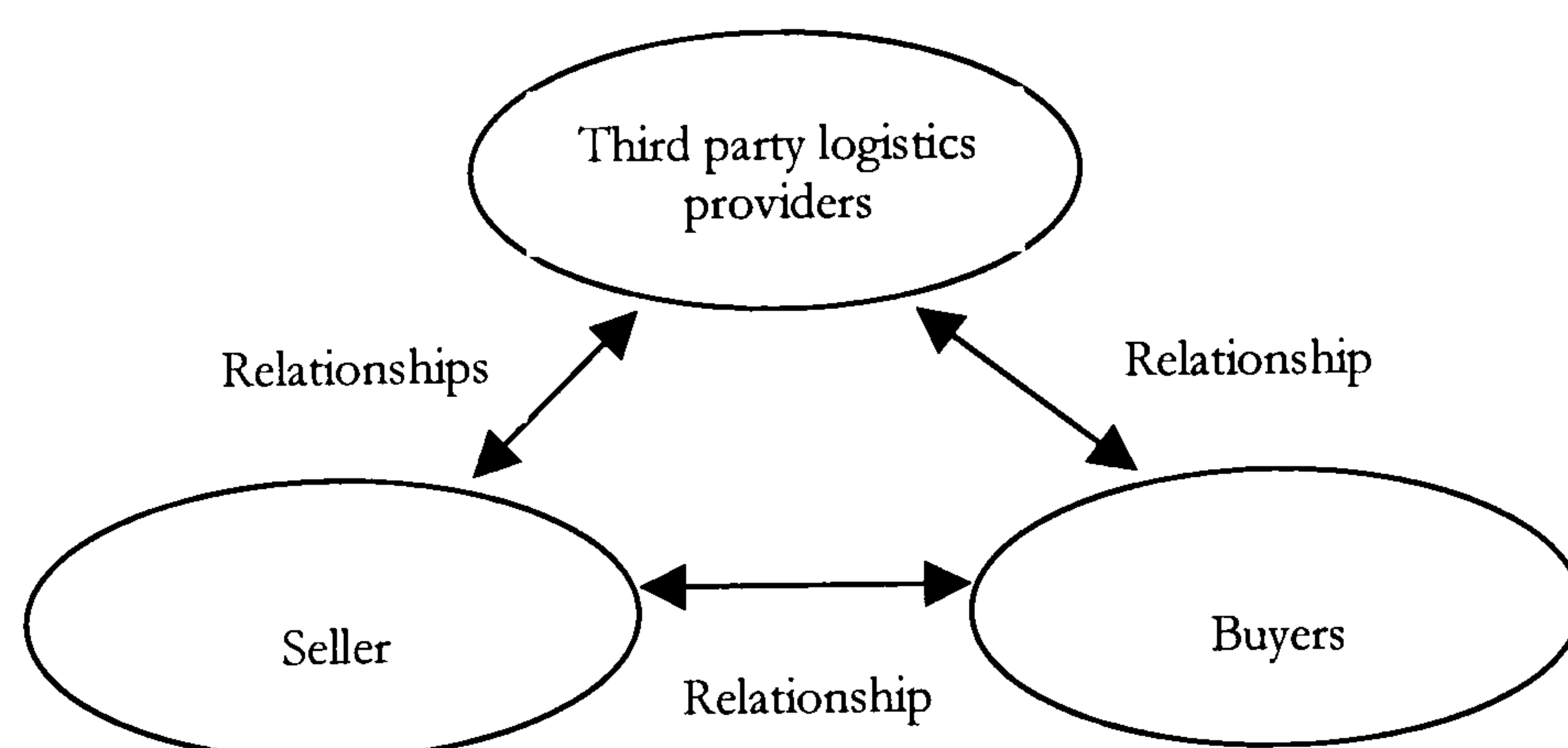
While TPL has been examined and defined in several ways, this study examines TPL providers in terms of the quality of logistics services provided as perceived by their customers as well as the relationship quality they have with them. Accordingly, in line with Laarhoven et al (2000), Bagchi and Virum (1998), Murphy and Poist (1998), Laarhoven and Sharman (1994) and Lieb (1992), this study defines TPL provider as the external parties who perform the functions of the entire logistics process or selected activities within the process that has been traditionally performed within the organisation. It refers to third party relationships as the external parties that have such relationships ranging from an arm’s length to strategic integration relationships with their customers

The next section provides a better view of the TPL concept by investigating the way TPL providers are positioned in the supply chain.

3.4 TPL Positions in the Supply Chain

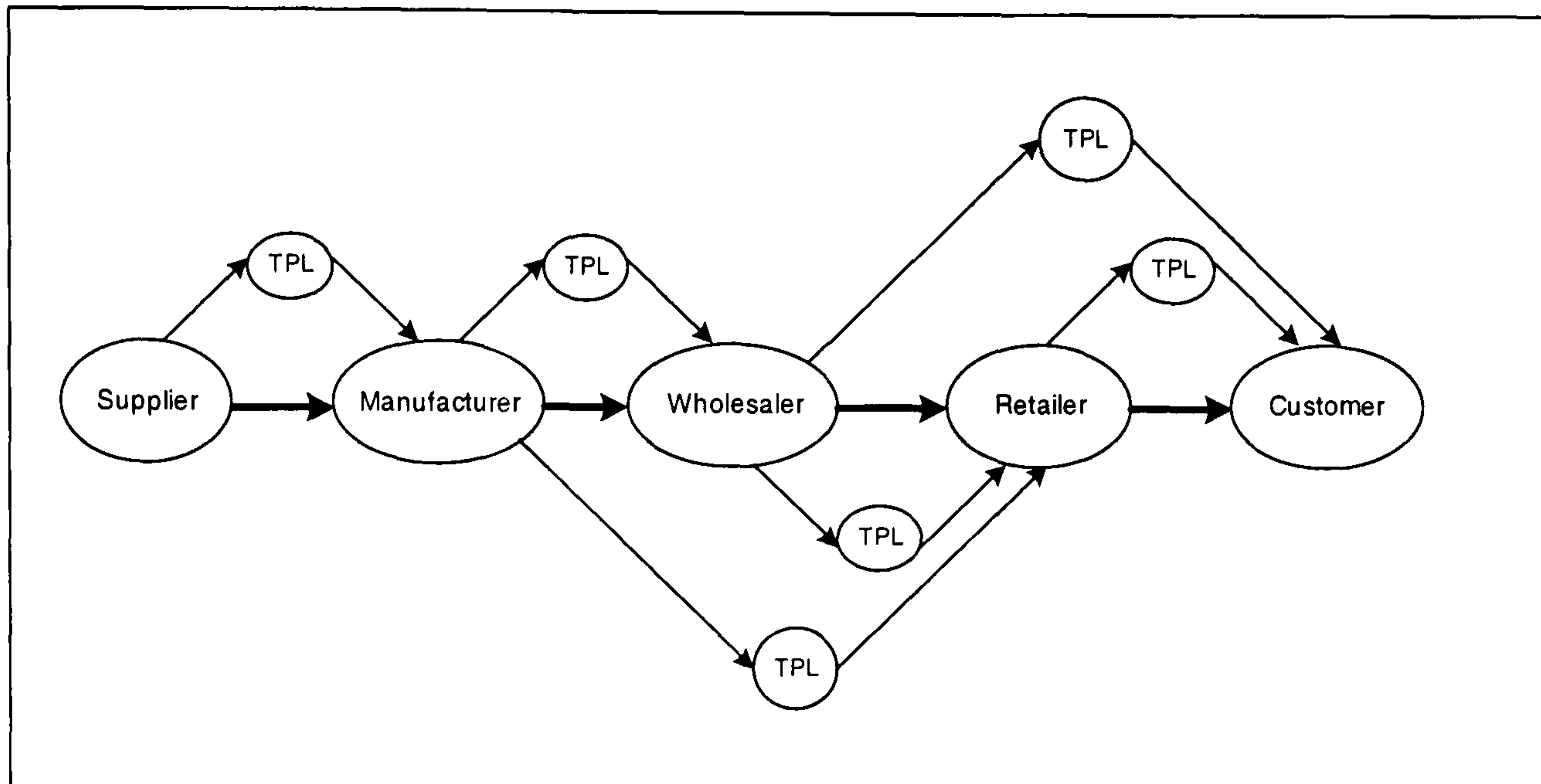
In the supply chain, TPL providers can be seen as supportive supply chain members who provide resources, knowledge, utilities or assets for the primary members of the supply chain (e.g. Bask, 2001; Lambert et al, 1998). The term “third party logistics” has its foundation in a triadic form of relationship covering seller, buyer and TPL provider (refer Figure 3.3). This triad consists of three dyadic relationships: (1) the relationship between seller and TPL provider, (2) the relationship between buyer and TPL provider, and (3) the relationship between seller and buyer in the supply chain. The name “third-party logistics” refers to a situation where the logistics service provider serves two parties in the supply chain, although in many circumstances, TPL relationships have been limited to either the dyadic relationship between seller and logistics service provider or buyer and logistics service provider (Bask, 2001; Menon et al, 1998). As such, TPL customers range from a wide variety of sectors covering the raw materials suppliers, vendors, manufacturers, wholesalers, retailers and government agencies, across various industries, which represents the buyers and sellers in the industrial market (refer to Figure 3.4).

Figure 3.3: Three Dyadic Relationships among Seller, Buyer and Third Party Logistics (TPL) provider



Source: Bask, A.H., (2001), “*Relationships among TPL providers and Members of Supply Chain – A Strategic Perspective*”, Journal of Business and Industrial Marketing, Vol.16 No.6, pp. 470-486.

Figure 3.4: Third Party Logistics (TPL) Service Providers' Positions in the Supply Chain



The following section reviews the existing studies on TPL relationships.

3.5 Existing Studies on TPL Relationships

Both industrial and consumer marketers have realised that successful partnerships with third party logistics service providers are an effective way to gain competitive advantage in the marketplace (La Londe and Cooper, 1989, Bowersox and Daugherty, 1995, Gentry, 1996a; 1996b). Recent trends in the transportation industry have witnessed an increasing number of alliances between customers and TPL providers, with this trend likely to intensify in the future (e.g. Knemeyer et al, 2003; Murphy and Poist, 2000; 1998; Gentry and Vellenga, 1996; Leahy et al, 1995).

While marketing theory has long focused on exchange relationships between buyers and sellers (Gentry and Vellenga (1996) and a great deal of research conducted on TPL (Razzaque and Sheng, 1998), to date studies that incorporate

the relationship marketing theory to TPL studies are few and far between (Knemeyer et al, 2003; Gentry and Vellenga, 1996). According to Stock (1997), theories in relationship marketing were not applied in the logistics literature between 1980 and 1996. Knemeyer et al (2003) stress that the majority of the logistics outsourcing literature is descriptive in nature and lacks theoretical perspective. The few recent studies that take into consideration some aspects of the relationship marketing theory are work by Knemeyer and Murphy (2005), Knemeyer et al (2003), Stank et al (2003), Menzter et al (2000); Min and Mentzer (2000); Lambert et al (1999); Moore and Cunningham (1999) and Moore (1998). Stock (1997) stresses that although the concept of relationship marketing and logistics alliance/partnership overlap, there does not appear to be much interaction between marketing and logistics researchers exploring this topic. Other research on TPL relationships has either come from strategic management (Sinkovics and Roath, 2004; Halldorsson and Skjott-Larsen, 2004; Bask, 2001; Bhatnagar and Viswanathan, 2000) or operations management (van Hoek, 2001). The broad nature of relationship marketing theory allows researchers to explore TPL relationships from different perspectives, from various inputs to desired outputs of relationships (e.g. Stank et al, 2003; Moore, 1998) as well as the structures that lead and affect the development of the relationships (e.g. Knemeyer et al, 2003; Lambert et al, 1999; 1996).

The incorporation of relationship marketing theory particularly relationship quality into TPL or logistics outsourcing studies is crucial due to the dynamics of change of the industry. The organisational issues associated with supply chain relationships that are particularly important in influencing the “make-or-buy” decision (Knemeyer et al, 2003; Hoyt and Huq, 2000) or to remain competitive in the marketplace (Moore, 1998) also influence the needs for the integration of the key relationship elements. This is because with increasing emphasis on cost reduction and leaner organisations, managers are more likely to outsource

logistics activities to the third parties to allow firms to transfer the un-related financial risk, improve service quality and productivity as well as reducing costs (Moore, 1998). In addition to this, a considerable number of studies in disciplines such as marketing, psychology and management have demonstrated the success of this approach in winning and maintaining customers and consequently reducing costs due to the links that it has between customer satisfaction, relationship, customer loyalty and profitability.

The following sections review relationship quality concept and the critical dimensions that make up relationship quality. They highlight the definitions and importance of each dimension to this study as well as justify relations to relationship quality.

3.6 The Concept of Relationship Quality

3.6.1 The Definition of Relationship Quality

Generally, relationship quality can be considered as an overall assessment of the strength of a relationship (De Wulf et al, 2001; Garbarino and Johnson, 1999; Smith, 1998). From a customer's perspective, relationship quality "is achieved through the salesperson's ability to reduce perceived uncertainty" (Crosby et al, 1990; Roloff and Miller, 1987; Zeithaml, 1981). High relationship quality means "the customer is able to rely on the salesperson's integrity and has confidence in the salesperson's future performance because the level of past performance is consistently satisfactory" (Crosby et al, 1990, p.70). From a conceptual point of view, Hennig-Thurau and Klee (1997, p.751) consider a similarity between the conceptualisation of product quality with relationship quality and view relationship quality as "the degree of appropriateness of a relationship to fulfil the needs of the customer associated with that relationship". They stress that the overall (product/service) quality perception should be included as a basic component of relationship quality.

In an industrial context, Holmlund (2001, p.15) defines perceived relationship quality as “the joint cognitive evaluation of business interactions by significant individuals in both firms in the dyad. The evaluation encompasses a comparison with potential alternative interactions of a similar kind, which represent comparison standards”. This working definition of perceived relationships quality is based on current definition in service quality literature, taking into account the specific characteristics of business relationship. It is based on cognitive judgement and dis-confirmation paradigm. However, in contrast to the current quality definitions, relationship quality does not refer to merely social interactions but encompasses the entire relationship that reflects the entire value created from the system of linked production processes (Holmlund and Strandvik, 1999; Holmlund, 2001). Relationship quality in business relationships can be studied either from the buyer’s or the seller’s point of view or by combining their perceptions (Holmlund and Strandvik, 1999). Following the above-mentioned concepts in both consumer and industrial context, it can be concluded that the concept of relationship quality emerges from the root of service quality. Previous researchers conceptualised relationship quality as a higher-order construct consisting of several distinct, though related constructs (Crosby et al, 1990; Dwyer et al, 1987; Kumar et al, 1995a; Dorsch et al, 1998; De Wulf et al, 2001).

Even though, there is no consensus on the dimensions that make up relationship quality, prior conceptualisations mainly emphasise on the importance of satisfaction, trust, and commitment as indicators of relationship quality (Crosby et al, 1990; Dwyer et al, 1987; De Wulf et al, 2001; Hennig-Thurau and Klee, 1997; Dorsch et al, 1998; Leuthesser, 1997). In later studies in an industrial context, relationship quality is viewed in a more complex manner, in which specific dimensions are added from buyer-seller relationships. In an exporting firm and importer relationship, for example, Lages et al (2005) found that the

four dimensions of relationship quality are amount of information sharing, communication quality, long-term orientation as well as satisfaction in the relationship. Dorsch et al (1998) add minimal opportunism (Berry and Parasuraman, 1991; Dwyer et al, 1987), customer orientation (Berry and Parasuraman, 1991) and ethical profile (Hunt et al, 1989) as dimensions of relationship quality in their study of vendor relationship. Kumar et al (1995a) argue that a better relationship quality in channel relationship should encompass conflict (Anderson and Weitz, 1992), trust, commitment, willingness to invest in the relationship and expectation of continuity. Holmlund (2001) conceptualises perceived relationship quality as composed of technical dimension, social dimension and economic dimension. In terms of the impact of sharing principles on the relationship between organisations, Jap (2001) perceives relationship quality as a higher-order concept involving satisfaction, outcome fairness and willingness to collaborate. A higher-order concept is a latent variable, in which the indicators are themselves latent (Garson, 2004).

This study focuses on TPL service provider relationships as perceived by the customers, who are the logistics service buyers. Since studies on relationship quality in TPL relationships are lacking, most concepts and understandings are borrowed from channel relationship literature, which is considered to be the closest to TPL relationships. Thus, based on the past research, relationship quality is seen as encompassing perceived opportunism, relationship satisfaction, trust and commitment. It is conceptualised that better quality relationships can only be achieved through a lower level of opportunism perceived by the customers and greater customer's satisfaction with the relationships, trust and commitment.

3.6.2 Relationship Satisfaction

3.6.2.1 *Definition of Relationship Satisfaction*

In a meta-analysis study, Geyskens (1998) demonstrates that there exists no consensus on the conceptualisation and measurement of relationship satisfaction. In another study of marketing channel relationships, she highlights that channel member satisfaction is defined most frequently as a positive affective state resulting from the appraisal of all aspects of a firm's working relationship with another firm (e.g. Frazier et al, 1989; Gaski and Nevin, 1985; Anderson and Narus, 1984; 1990; Smith and Barclay, 1997; Gassenheimer and Ramsey, 1994; Skinner et al, 1992). In the same context, relationship satisfaction is defined as the domain of all characteristics of the relationship between a channel member and another institution in the channel, which the focal organisation finds rewarding, profitable, instrument, and satisfying (Ruckert and Churchill, 1984; Mohr et al, 1996).

Other authors clarify two different conceptualisations of customer satisfaction as transaction-specific and cumulative (Anderson et al, 1994; Boulding et al, 1993). Cumulative satisfaction is “an overall evaluation based on the total purchase and consumption experience with a good or service over time” (Anderson et al, 1994, p.54) and transaction-specific customer satisfaction is viewed as post-purchase evaluative judgement or an affective reaction to the most recent transactional experience with the firm (Garbarino and Johnson, 1999; Oliver, 1993). Transaction-specific customer satisfaction may provide specific diagnostic information about a particular product or service encounter while cumulative satisfaction is a more fundamental indicator of the firm's past, current, and future performance. It is cumulative satisfaction that motivates a firm's investment in customer satisfaction.

The focus of relationship satisfaction in this study is on the cumulative aspect of satisfaction with the relationship as compared to LSQ satisfaction that refers to the cumulative aspect of satisfaction with the service and organisation. As suggested by Crosby et al (1990), the relational nature in service quality is not sufficient to achieve relationship quality, the term ‘cumulative’ in relationship satisfaction, however refers to a longer-term period relative to the LSQ satisfaction. Therefore, in line with Geyskens et al (1999), relationship satisfaction is defined as a positive affective state resulting from the appraisal of all aspects of a TPL firm’s working relationship with the customer firm over time. The rationale behind this definition is briefly discussed below.

a. Affective state

Relationship satisfaction is generally conceptualised as an overall affective or emotional state (Crosby et al, 1990; Smith and Barclay, 1997; Anderson and Narus, 1990; Ganesan, 1994; Andaleeb, 1996). Geyskens et al (1999) distinguish between two types of satisfaction; economic and non-economic/social satisfaction (Geysken and Steenkamp, 2000). An economically satisfied channel member considers the relationship a success if he/she successfully attains his/her targeted productivity as well as resulting financial outcomes. The non-economic aspects of the relationship refer to positive affective response to the non-economic, psychosocial aspects of its relationship, in that interactions with the exchange partner are fulfilling, gratifying, and easy (Geyskens and Steenkamp, 2000; Mohr et al, 1996; Dwyer and Gassenheimer, 1992). Consequently, the affective or social nature of satisfaction is integrated into this definition.

b. The appraisal of all aspects of a TPL firm’s working relationship over time

Relationship satisfaction may refer to satisfaction with the individual event or overall satisfaction with the TPL firm. Crosby and Stevens (1989) underline that the concept of relationship satisfaction has been attributed with three

dimensions: (1) satisfactory interactions with the personnel; (2) satisfaction with the core service (the extent to which a service satisfies customers' needs), and (3) satisfaction with the organisation. While LSQ satisfaction measures the satisfaction with organisation and core service, relationship satisfaction measures the satisfaction with interactions and working relationships with the personnel.

Ping (1993, p.346) emphasises the cumulative nature of satisfaction in buyer-seller relationships by stating that a buyer "may be dissatisfied with an individual event, yet still satisfied with the supplier relationship overall". Hence, both satisfaction with the working relationship with TPL personnel and the TPL firm are crucial in this study. Overtime relationship satisfaction represents the cumulative effect of a relationship compared with satisfaction that is specific to each transaction (Anderson et al, 1994; Anderson et al, 1997; De Wulf et al, 2001).

3.6.2.2 Importance of Relationship Satisfaction

In marketing channel research, a considerable amount of attention has been paid to relationship satisfaction construct underlining its importance in relationship marketing research (e.g. Geyskens, 1998; Geyskens and Steenkamp, 2000; Gassenheimer and Ramsey, 1994; Ruckert and Churchill, 1984; Gaski and Nevin, 1985; Skinner et al, 1992; Dwyer and Oh, 1985; Ping, 1993; Anderson and Narus, 1990). Geyskens (1999) demonstrates in her meta-analysis study that relationship satisfaction is the most popular construct in the empirical studies on channel relationships.

3.6.2.3 Relationship Satisfaction as a Relationship Quality construct

Satisfaction has been widely used as one of the dimensions of relationship quality both in industrial (Lages et al, 2005; Jap, 2001; Dorsch et al, 1998; Dwyer et al, 1987) and consumer marketing (Crosby et al, 1990; Hennig-Thurau and Klee, 1997; De Wulf et al, 2001; Palmer and Bejou, 1994). Researchers have conceptualised relationship satisfaction according to three dimensions as

underlined by Crosby and Stevens (1989), namely satisfaction with core service, organisation and interactions with personnel. Several authors consider that these three constructs contribute to overall satisfaction (Anderson and Narus, 1990; Crosby and Steven, 1989; Palmer and Bejou, 1994; Jap, 2001), and some other authors consider satisfaction with service/product-related quality (Hennig-Thurau and Klee, 1997; Hennig-Thurau et al, 2001) or organisation (Dorsch et al, 1998) as a basic component of relationship quality. Consequently, relationship satisfaction is regarded as one of the dimensions of relationship quality in this study.

3.6.3 Trust

3.6.3.1 Definition of Trust

Consistent with the previous research in social psychology (Larzelere and Huston, 1980) and marketing channel relationships (Ganesan, 1994; Kumar et al, 1995a; Doney and Cannon, 1997), trust in this study is defined as “the customer’s perceived credibility and benevolence of a TPL provider”. Doney and Cannon (1997) emphasise the relevance of this definition in an industrial buying context due to some degree of risk in a purchase situation indicating the customer’s trust in a TPL provider firm as well as its contact person. The motivation behind this definition is explained below.

a. Perceived credibility

Researchers have perceived trust in different ways. Several researchers view perceived trustworthiness and trusting behaviours as two distinct, but related facets of trust (Andaleeb, 1996; Smith and Barclay, 1997). While trustworthiness refers to a belief, sentiment, or expectation about an exchange partner’s trustworthiness (Andaleeb, 1995; Anderson and Narus, 1990; Anderson and Weitz, 1989, Dwyer and Oh, 1985; Geyskens et al, 1996; Kumar et al, 1995a; 1995b; Scheer and Stern, 1992; Smith and Barclay, 1997; Siguaw et al, 1998),

trusting behaviours are related to the risk-taking behaviour or a willingness to engage in such behaviour (Smith and Barclay, 1997; Andaleeb, 1996; Ganesan, 1994; Moorman et al, 1993; Moorman et al, 1992).

Some scholars merge both aspects into one definition of trust (Ganesan, 1994; Moorman et al, 1993; Moorman et al, 1992). For example, Moorman et al (1992, p.82) define trust as “a willingness to rely on an exchange partner in whom one has confidence”. They claim that both trustworthiness and trusting behaviour must be present for trust to exist. This is because buyers who only believe that their seller is trustworthy, but do not rely on them would only exhibit limited trust. On the other hand, other researchers argue that trustworthiness is a necessary and sufficient condition for trust to exist (Andaleeb, 1995; Anderson and Narus, 1990; Anderson and Weitz, 1989; Geyskens et al, 1996; Morgan and Hunt, 1994). Morgan and Hunt (1994), for instance define trust as trustworthiness only as they suggest that trusting behaviours eventually result from trustworthiness.

In line with Morgan and Hunt (1994), trust refers to the element of trustworthiness only because it is argued that by incorporating trustworthiness and trusting behaviour into one definition leads to unnecessary conceptual confusion and in empirical validation of results. This element of trust refers to the TPL service provider’s honesty, which means the belief that the TPL provider stands by its word (Anderson and Narus, 1990; Kumar et al, 1995a; Doney and Cannon, 1997), fulfills promised obligations, and is sincere (Dwyer et al, 1987, Scheer and Stern, 1992; Kumar et al, 1995a).

b. Perceived benevolence

Trust in TPL service provider’s benevolence means the customer’s belief that the service provider is interested in the customer’s firm welfare (Larzelere and Huston, 1980, Rempel et al, 1985), willing to accept short-term dislocations

(Anderson, et al, 1987), and would not take any unexpected actions that would have a negative impact on the firms (Anderson and Narus, 1990). Trust is considered to exist if one party believes the other party is honest and benevolent (Andaleeb, 1995; Doney and Cannon, 1997; Ganesan, 1994; Kumar et al, 1995b).

3.6.3.2 Importance of Trust

It is generally agreed in the marketing literature that trust is essential in industrial marketing settings (e.g. Anderson and Narus, 1990; Anderson and Weitz, 1989; Ganesan, 1994; Morgan and Hunt, 1994) as a key ingredient for successful relationships (e.g. Garbarino and Johnson, 1999; Morgan and Hunt, 1994; Moorman et al, 1993; Dwyer et al, 1987; Anderson and Narus, 1990; Anderson and Weitz, 1989; Crosby et al, 1990; Dwyer and Oh, 1987; Andaleeb, 1995). In a third party logistics alliance study, Moore (1998) demonstrates that trust is crucial in TPL's relationship with the customers. Doney and Cannon (1997) consider trust as an important pre-requisite for building long-term relationships.

Previous empirical research on trust has centred on marketing channel relationships (Andaleeb, 1995; 1996; Anderson and Narus, 1990; Anderson and Weitz, 1989; Dwyer and Oh, 1987; Ganesan, 1994; Geyskens et al, 1996, Kumar et al, 1995a; 1995b; Morgan and Hunt, 1994; Kim and Frazier, 1997). This is because the high level of trust characteristics of relational exchange enables parties to focus on the long-term benefits of the relationships, ultimately enhancing competitiveness and reducing transaction costs (Doney and Cannon, 1997).

3.6.3.3 Trust as a Relationship Quality Construct

Most scholars consider trust as one of the most critical dimensions in relationship quality both in an industrial and consumer context (Hennig-Thurau, 2001; De Wulf et al, 2001; Hausman, 2001; Johnson, 1999; Dorsch et al, 1998; Hennig-Thurau and Klee, 1997; Kumar et al, 1995a; Palmer and Bejou, 1994; Crosby et

al, 1990; Dwyer et al, 1987). In the literature, trust has been conceptualised as a feature or determinant of relationship quality (Anderson and Narus, 1984; 1990; Dwyer et al, 1987; Crosby et al, 1990; Anderson and Weitz, 1990; Mohr and Nevin, 1990; Moorman et al, 1992). This is based on the belief that trust leads to the desirable attitude of commitment (Andaleeb, 1996; Anderson and Weitz, 1989; Ganesan, 1994; Geyskens et al, 1996; Moorman et al, 1992; Morgan and Hunt, 1994; Siguaw et al, 1998). As a consequence, trust is regarded as one of the dimensions in relationship quality.

3.6.4 Perceived Opportunism

3.6.4.1 Definition of Perceived Opportunism

Originating from the transaction cost literature, opportunism is generally defined as “self-interest seeking with guile” (Williamson, 1975, p.6). Wathne and Heide (2000) elaborate that Williamson (1985, p.47) describes guile as “lying, stealing, cheating, and calculated effort to mislead, distort, disguise, obfuscate, or otherwise confuse”. In summary, it involves the deceit-oriented violation of implicit or explicit promises about one’s expected behaviour (Williamson, 1985). Previous studies used to adopt this as the general term of opportunism. Emerging from the same theory (transaction cost), several researchers highlight the existence of two types of opportunism, namely *ex ante* and *ex post* opportunism (e.g. Cavusgil et al, 2004; Jap and Anderson, 2003; Brown et al, 2000). *Ex ante* opportunism occurs before the firms transact and *ex post* appears after or while the transaction is underway.

In a recent review, Wathne and Heide (2000) categorise opportunism into active and passive opportunism, in which either one can take place within the existing exchange circumstances or within a new circumstance. The new circumstances refer to some changes that occur in practice involving the exchange partner. These circumstances create four different forms of opportunistic behaviours

namely, shirking or evasion of obligations, inflexibility or refusal to adapt, violation (engage in behaviours that were explicitly or implicitly prohibited) and forced negotiation (use new circumstances to extract concessions from the other). Wathne and Heide (2000) claim these behaviours affect the wealth creation and distribution differently.

Studies of TPL providers and customer relationships also view perceived opportunism as crucial (Knemeyer and Murphy, 2005; Moore and Cunningham, 1999; Moore, 1998). Although opportunistic behaviours may be exhibited by either party or both parties in the exchange relationship, they view opportunism as reflecting the TPL providers' behaviour, such as broken or unfulfilled promises that reduce the customer's belief in the providers' trustworthiness due to lack of honesty and distorting information with the intent to mislead (Knemeyer and Murphy, 2005; Moore and Cunningham III, 1999; Moore, 1998).

This study adopts a broad view of opportunism reflecting ex post opportunism and all four forms of opportunistic behaviour (Wathne and Heide, 2000). In line with the previous studies in TPL providers and customers' relationships, perceived opportunism is defined as self-seeking interest behaviours of the TPL providers to disclose or intend to disclose incomplete and distorted information and calculate efforts to mislead, distort, disguise, obfuscate, or otherwise confuse the customers that reduces the customer's belief in the providers' trustworthiness.

3.6.4.2 The Importance of Deterring Perceived Opportunism in Preserving Relationship Quality

Opportunism is a central construct in exchange theory (Jap and Anderson, 2003). It is also one of the key behavioural variables in transaction costs analysis (Williamson, 1975). According to Williamson (1975), people behave opportunistically whenever such behaviour is feasible and profitable. Several researchers highlight that the greatest potential for opportunistic behaviour is in

the long-term relationships where market-based competition is reduced or eliminated (Williamson, 1979; John, 1984; Moore and Cunningham, 1999). Due to the close association of opportunism to trust, Jap and Anderson (2003) underline that opportunism persists in exchange in spite of the firm's best efforts to eliminate it (Moore and Cunningham, 1999). Such behaviour could undermine the foundation for long-term exchange. Hence, more recent distribution channels research is focusing on safeguarding the continuity of business exchange against opportunism (e.g. Jap and Anderson, 2003; Achrol and Gundlach, 1999; Cavusgil et al, 2004).

Therefore, opportunism is virtually inevitable in TPL providers and customer relationships (Knemeyer and Murphy, 2005; Moore and Cunningham, 1999; Moore, 1998). The existence of this construct would deter the quality of relationships and thus prevent achieving positive relational outcomes such as customer referrals (Knemeyer and Murphy, 2005) and business continuity (Jap and Anderson, 2003).

Given its importance, it is strongly argued that this construct should be incorporated in the model.

3.6.5 The Concept of Commitment

Commitment has recently debatable in the marketing channel literature as a critically important element for channel survival (e.g. Anderson and Weitz, 1992; Morgan and Hunt, 1994; Geyskens et al, 1996). This is because commitment represents a long-term orientation toward the channel relationship. (Dwyer et al (1987) underline a relationship as a process that evolves over time characterised by five phases of relationship life cycle, i.e. awareness, exploration, expansion, commitment and dissolution. The life cycle begins with the recognition that one party is a feasible exchange partner (awareness) followed by the search for most suited relational exchange partner (exploration). In this phase, the potential

exchange partners have to consider obligations, benefits and burdens and, the possibility of exchange before entering to the third phase. In the third phase (expansion), trust starts to emerge as the benefits gained from the relationship and interdependence increases. If a high level of input is provided to the association and both partners believe that the future exchange is going to be effective, commitment will then be established. Dwyer et al (1987) note that relationship commitment represents the highest relationship bonding. Some scholars consider commitment as an essential ingredient for successful long-term relationships (Gundlach et al, 1995; Andaleeb, 1996; Dwyer et al, 1987; Geyskens et al, 1996; Morgan and Hunt, 1994). Dwyer et al (1987, p.19) define commitment as “an implicit and explicit pledge of relational continuity between exchange partners”. In channel relationships, commitment has been defined as the desire and intention to continue the relationship (Dwyer et al, 1987; Anderson and Weitz, 1989; 1992; Gundlach et al, 1995; Kumar et al, 1995a; Kim and Frazier, 1997; Mohr et al, 1996; Morgan and Hunt, 1994).

The earlier research on commitment in marketing has taken a uni-dimensional approach to the commitment construct (e.g. Morgan and Hunt, 1994; Anderson and Weitz, 1992). However, organisational researchers have noted that there are many types of commitment, each of which may affect relationships in different ways (Allen and Meyer, 1991). In the channel relationship literature, five types of commitment that characterised relationships have been identified.

- *Affective commitment* includes an attitudinal component signifying an enduring intention by the parties to develop and maintain a stable long-term relationship (Anderson and Weitz, 1992; Gundlach et al, 1995).
- *Calculative/Instrumental commitment* implies the instrumental component, that is, an affirmative action taken by one party that creates a self-interest

stake in the relationship and demonstrates something, more than mere a promise (Gundlach et al, 1995; Brown et al, 1995).

- *Behavioural commitment* is reflected in the actual behaviour of a supplier/service provider towards its customer firm. It implies the extent to which a supplier/service provider provides special help to its customer in times of need (Kim and Frazier, 1997).
- *Moral/Normative/Organisational commitment* is the totality of normative pressures to act in a way which meets organisational goals and interests and suggests that individuals exhibit these behaviours solely because “they believe it is the right and moral thing to do” (Weiner, 1982, p 421; Kumar et al, 1994).
- *Continuance/Long-term commitment* is directly the result of commitment inputs namely calculative commitment. Self-interest stakes created by these inputs bind parties to future courses of action (Gundlach et al, 1995; Kim and Frazier, 1997). Behavioural intention conceptualisations of attitudinal commitment complement the instrumental component and at the same time foreshadow the third component, i.e. long-term commitment (Gundlach et al, 1995).

Most empirical studies provide support that commitment should be treated as a multi-dimensional construct (e.g. Brown et al, 1995; Gundlach et al, 1995; Kumar et al, 1994; Kumar et al, 1995a; 1995b; Kim and Frazier, 1997; Geyskens et al, 1996; Gruen et al, 2000; Odekerken and Bloemer, 2002; Ruyter et al, 2001). In marketing channel studies, Kumar et al (1994) make a conceptual distinction among affective, moral, and calculative commitment and provide uni-dimensional, reliable, and valid scales for measuring these three types of commitment. Kim and Frazier (1997) support this notion by differentiating the

scales for measuring continuance, behavioural and affective commitment due to the fact that each component of commitment is driven by a different set of factors. This study concentrates on the psychological aspect (affective commitment) and the economical aspect (calculative commitment), which is explained in Section 3.6.5.1 and 3.6.5.2. The justification rationale for rejecting continuance, behavioural and normative commitment is explained below.

- *Reasons for rejecting continuance commitment*

Continuance or long-term commitment results directly from calculative commitment (Gundlach et al, 1995). As it represents the outcome of commitment, it has similarities with the conceptualisation of certain relationship outcome constructs such as intention to stay and customer loyalty. The conceptualisation of this construct is integrated with customer loyalty that is commonly used as the outcome variable.

- *Reasons for rejecting behavioural commitment*

The literature shows that behavioural commitment seems not to be as frequently studied as affective and calculative commitment. As has been defined in Section 3.6.5, it reflects the willingness to make-short-term sacrifices. Willingness to make short or long-term sacrifices is reflected in calculative commitment in this study. Therefore, this construct is not included in this study.

- *Reasons for rejecting moral/normative commitment.*

As Kumar et al (1994) note, the performance of intermediaries with moral commitment is not significantly different from those with calculative commitment. Kim and Frazier (1997), on the other hand, suggest that the normative (or moral) aspect of commitment would be very helpful if studies are to be conducted in a cross-cultural context in order to understand the role of socio-cultural context of TPL customer commitment. Since this study is not

conducted within a cross-cultural context, this construct is not considered as relevant here.

3.6.5.1 Affective commitment

a. Definition of Affective Commitment

As has been conceptualised by most authors, affective commitment refers to the psychological attachment of an exchange partner to the other and is based on feelings of identification, loyalty, and affiliation (Gundlach et al, 1995). In channel relationship studies, it refers to the attitudinal aspect of a customer's business ties to its channel member, which reflects the sense of unity binding a customer to its service providers or suppliers' firm (Kim and Frazier, 1997). According to this view, affectively committed channel members desire to continue their relationship because they like the partner, enjoy their partnership, (Buchanan, 1974; Geyskens et al, 1996; Kumar et al, 1994) and experience a sense of loyalty and belongingness (Jaros, et al, 1993; Geyskens et al, 1996). High affective commitment means that a channel member feels a strong unity of interests and goals with the other party and can work efficiently together (Kim and Frazier, 1997).

The attitudinal component of commitment shares a common domain of meaning with other prominent behavioural constructs, such as motivation, identification, loyalty, involvement, and behavioural intention. According to Kumar et al (1994), high affective commitment leads to higher intention and desire to stay as well as greater performance and willingness to invest in the relationship. Parties involved are also less inclined to engage in opportunistic behaviour. In line with the above authors, affective commitment is defined as an enduring desire to continue and maintain a relationship.

3.6.5.2 Calculative Commitment

a. Definition of Calculative Commitment

Calculative commitment is “the extent to which channel members perceive the need to maintain a relationship given the significant anticipated termination or switching costs associated with leaving” (Geyskens et al, 1996, p.304). Gundlach et al (1995) regard it as the input or instrumental component to commitment, which has been variously described as involving pledges, credible commitments, idiosyncratic investments, and a dedicated allocation of resources that become specific to a relationship (see also Anderson and Weitz, 1992; Williamson, 1985). Gundlach et al (1995) stress that it can result in long-term or continuance commitment (Allen and Meyer, 1991) that bind parties to future courses of action. Similarly, Odekerken-Schroder and Bloemer (2002) view it as the economic perspective (Anderson and Narus, 1990; Anderson and Weitz, 1989; Williamson, 1975) that mainly emphasise the economic constraints that keep a relationship intact. Several scholars recognise that calculative commitment is reflected in the stability of the relationship (Anderson and Weitz, 1992; Bendapudi and Berry, 1997; Kim and Frazier, 1997; Odekerken-Schroder and Bloemer, 2002). Having considered that the nature of calculative commitment is based on the perceived structural constraints, it reflects a rather negative motivation for continuing the relationship (Geyskens et al, 1996). Consequently, in this study, calculative commitment is defined as the customer’s intention to maintain the relationship due to significant costs associated with leaving.

3.6.5.3 Importance of Affective and Calculative Commitment

Organisational researchers (Mathieu and Zajac, 1990) have noted that of various types of commitment (Allen and Meyer, 1991), affective and calculative commitments appear to be the most frequently studied and also seem to be the most relevant for inter-organisational relationships (e.g. Geyskens et al, 1996; Mathieu and Zajac, 1990) and marketing channel studies (e.g. Gundlach et al,

1995; Kumar et al, 1994). Past studies on relationship marketing that use the commitment construct mostly focus on affectively motivated commitment (e.g. Andaleeb, 1996; Morgan and Hunt, 1994; Anderson and Weirz, 1992; Garbarino and Johnson, 1999; Kumar et al, 1995a; 1995b; Scheer and Stern, 1992; Dorsch et al, 1998; Tax et al, 1998), which is generally accepted as an outcome variable in most relationship marketing models (Gundlach et al, 1995).

In the literature, various terms have been used to describe affective and calculative commitment such as social and economic (Young and Denize, 1995), dedication and constraints (Odekerken-Schroder and Bloemer, 2002; Bendapudi and Berry, 1997), attitudinal and instrumental (Gundlach et al, 1995). The literature shows a clear distinction between the two types of commitment relative to other types of commitment, which have been listed in Section 4.4.5. Both types of commitment lead to long-term relationships. Bendapudi and Berry (1997) suggest that constraints (motivation for calculative commitment) will only determine the stability of the relationship whereas dedication (motivation for affective commitment) determines the quality of relationship. Affective commitment reflects a positive motivation and calculative commitment implies a negative motivation to long-term commitment. Gundlach et al (1995, p. 80) note, “the behavioural intention conceptualisation of attitudinal commitment complements the instrumental component and at the same time foreshadows the third component, long-term commitment”.

3.6.5.4 Commitment as a Relationship Quality Construct

Commitment is commonly accepted as one dimension of relationship quality (Johnson et al, 2004; Parsons, 2002; Wong and Sohal, 2002; Hennig-Thurau et al, 2001; De Wulf et al, 2001; Hausman, 2001; Smith, 1998; Hennig-Thurau and Klee, 1997; Kumar et al, 1995a). However, the fact that it is positioned at almost the end of the relationship cycle (i.e. the fourth stage of five stages of relationship

cycle) (Scanzoni, 1979), some studies refer to it as the outcome of relationship quality (Andaleeb, 1996; Crosby et al, 1990; Ganesan, 1994; Geyskens et al, 1996; Mohr et al, 1996; Moorman et al, 1992; Morgan and Hunt, 1994; Smith and Barclay, 1997; Odekerken-Schroder and Bloemer, 2002). Consequently, it is this construct that determines the degree of retention of the customers. In this study, commitment is regarded as one of the important dimensions of relationship quality as opposed to outcome. This is because commitment construct that is merely attitudinal in nature may not be sufficient enough to reflect customer retention or loyalty. Instead, the main outcome variable of interest should reflect some behavioural consequence. The justifications are explained in Section 4.5 as below.

3.7 Attitudinal and Behavioural Consequences of Relationship Quality

3.7.1 Customer Loyalty and Intention to Exit

The goal of relationship marketing activities is ultimately aimed at achieving the company's overall profitability. However, the firm's profitability is influenced by several factors/antecedents. Customer loyalty has always been referred to in the marketing literature as a key relationship outcome and it is closely associated to a company's profitability (Hennig-Thurau et al, 2002) by increasing economic attractiveness of the existing customers. Thus, by using the relationship quality approach, customer loyalty is largely determined by a certain number of constructs (Hennig-Thurau and Klee, 1997).

In the literature, several different conceptualisations of customer loyalty have been discussed. They have been defined and measured in many different ways (e.g. Bennett and Rundle-Thiele, 2002; Too et al, 2001; Jacoby and Chestnut, 1978). Out of the variety of considerable conceptualisation of loyalty, this study intends to explore and test the robustness of two frequently used conceptualisations and operationalisation of customer loyalty in the industrial

marketing literature within the theoretical framework proposed. The definitions and importance of those conceptualisations are exhibited in the following Section 3.7.2.

3.7.2 The Concept of Customer Loyalty and Intent to Exit

3.7.2.1 Definitions of Customer Loyalty and Intention to Exit

Customer loyalty has been defined and measured in many different ways (e.g. Bennett and Rundle-Thiele, 2002; Too et al, 2001; Jacoby and Chestnut, 1978). The term loyalty has often been used interchangeably with its operational definition such as repeat purchase (e.g. Ehrenberg, 1998), commitment and retention depending on the context of study such as service, store, vendor loyalty and context that reflect the unit of measurement such as customer and brand loyalty (Bennett and Rundle-Thiele, 2002). As the scope of examining the best-suited approach of conceptualising loyalty expanded, the definition of loyalty is becoming complicated.

However, the vast majority of previous conceptualisations of loyalty have been in the area of consumer goods and services and there has not been very much empirical research conducted into developing and measuring the dimensions of loyalty in a business-to-business context. Referring to brand loyalty in consumer marketing, several authors emphasise the differentiation between the behavioural (i.e. repeat purchase) and attitudinal component of the definition (e.g. Too et al, 2001; Chaudhuri, 1999; Fournier and Yao, 1997; Jacob and Chestnut, 1978). Jacob and Chestnut (1978) conclude that loyalty should only refer to the attitudinal component rather than the behavioural component of it. The latter could be unacceptable due to preference for convenience and inconsistent purchasing that may not represent true brand loyalty. However, other researchers claim that the strongest conceptualisations of customer loyalty should be viewed as a multi-dimensional construct that takes into consideration both the attitudinal

and behavioural components (e.g. Too et al, 2001; Chaudhuri, 1999; Fournier and Yao, 1997).

In business-to-business relationships, most research describes customer loyalty as the intention to stay in the relationship that reflects the customer's motivation/desire to continue the relationship (e.g. Ruyter et al, 2001; Kumar et al, 1994; Biong, 1993; Heide and John, 1992). Several other researchers have used this term interchangeably with intention to stay (Kumar et al, 1994; Ruyter et al, 2001), long-term commitment (Gundlach et al, 1995), and continuance commitment (Kim and Frazier, 1997; Allen and Meyer, 1990). Loyalty behaviour can also be the result of either a favourable attitude to buy from a certain supplier or a real or perceived lack of alternatives. Thus, the continuity measure could comprise both the favourable attitude and perceived or real lack of alternatives (Biong, 1993, Heide and John, 1992, Anderson and Weitz, 1989).

Similarly, Daugherty et al (1998) define loyalty as a long-term commitment to repurchase involving both a favourable attitude and repeated patronage (Dick and Basu, 1994), which is demonstrated by purchasing over time. This definition emphasises commitment, as it has always been associated closely to loyalty. Some researchers suggest that the two constructs are not related (e.g. Oliva et al, 1992) while others assume that they are synonymous and represent each other (e.g. Bennett and Rundle-Thiele, 2002; Assael, 1987). Anderson and Weitz (1992) and Dwyer et al (1987), for example describe 'commitment to a relationship' as implying the adoption of a long-term orientation toward the relationship and a willingness to make short-term sacrifices to gain long-term benefits from the relationship (Anderson and Weitz, 1992; Dwyer et al, 1987).

As proposed under the consumer disconfirmation theory, customer service evaluation outcomes affect approach behaviours and avoidance behaviours (Bitner, 1990). The loyalty concepts that were explained above imply the

approach behaviours. The avoidance behaviours, on the other hand are the opposite of approach behaviours such as switching, negative word-of-mouth, intention to exit, etc. Thus, the avoidance behaviours of loyalty reflect the intention to exit, instead of intention to stay. Rusbult et al (1988) and Rusbult et al (1982), for example, refer to exit as leaving an organisation by quitting, transferring, searching for a different job, or thinking about quitting.

Other researchers, however, provide a different view of customer loyalty (Ping, 1999; 1993; Farrel, 1983; Hirschman, 1970). Hirschman (1970) argues that some customers expect the efforts of others, combined with their own faithfulness, to be successful in improving relationship conditions. He characterised them as loyal and described them as those who remain silent with confidence that things will get better (Farrel, 1983; Ping 1993; 1999). He also characterises loyal behaviour as simply refusing to exit, which is closer to its conceptualisation of brand loyalty (Ping, 1999). In the same way, Rusbult et al (1988) refer to loyalty as passively but optimistically waiting for conditions to improve, waiting and hoping for improvement (Rusbult et al, 1988).

Based on the explanations above, two different conceptualisations are exhibited. First, there are those researchers who emphasise the desire to continue the relationship and others that stress the act of remaining silent, hoping that things will get better.

Accordingly, these two conceptualisations of loyalty were adopted and examined empirically. First, inspired by economic (Hirschman, 1970) and psychology literature (Rusbult et al, 1982), loyalty is conceptualised as the act of remaining silent, confident that things will get better (Hirschman, 1970; Ping, 1993; 1999; Geyskens and Steenkamp, 2000). Second, a reverse conceptualisation of loyalty, i.e. intent to exit is adopted. It refers to customers leaving their TPL providers' firm by terminating the business or contractual relationship with their TPL

providers or thinking about ending the business relationships by looking for a replacement. The purpose is to investigate which of these two conceptualisations provides a more robust model within the framework tested in this study.

3.7.2.2 The Importance of Customer Loyalty and Intent to Exit

Researchers, especially in marketing, began to focus on loyalty research at the end of the 1990s as it became obvious that the more a company can retain its customers, the more successfully it can operate. Reicheld and Sasser (1990) demonstrate that profitability is achieved through the building up of a loyal customer base. This takes less expense than acquisition of new customers in that expenses for customer care decrease during the later phases of the relationship life cycle due to growing expertise of experienced customers (e.g. Dwyer et al, 1987; Fornell and Wernerfelt, 1987).

Having considered this, companies started shifting their emphasis from customer satisfaction to customer loyalty. The shift of the research focus and business strategies has made loyalty incredibly important. The recent attention of research to the dissolution of relationships has also contributed to the rise of customer loyalty research. This is because by understanding the process of how relationships end, it provides guidance to the managers in setting up a strategy to maintain their customers.

Several researchers highlight the use of the relationship quality approach (e.g. Crosby, 1991; Crosby et al, 1990; Dorsch et al, 1998; Smith, 1998) as one of the most promising approaches that might explain how customer loyalty could be achieved (Hennig-Thurau et al, 2002).

3.8 Concluding remarks

This chapter has examined six relationship dimensions, i.e. relationship satisfaction, trust, perceived opportunism, calculative commitment, affective commitment and customer loyalty. Relationship satisfaction, trust and commitment are regarded as the critical dimensions that make up relationship quality while perceived opportunism and calculative commitment deter the quality of relationship. From the literature review, it is these dimensions that drive the behavioural consequence of customer loyalty. This chapter also discusses each dimension relating to definition, importance and the association to relationship quality.

Along these lines, this chapter highlights the powerful impact of customer retention on profitability through efficient and effective customer service programs that are built upon logistics capability. Even though a great deal of studies have been conducted on TPL, studies that integrate the relationship marketing to TPL have been rare. Realisation of the importance of relationship quality is important as both academics and practitioners have recognised that successful partnerships with TPL providers are an effective way to gain a competitive advantage.

The following chapter presents the theoretical framework and hypotheses of the study.

Chapter 4

RESEARCH MODEL AND HYPOTHESES

4.1 Introduction

Based on the literature reviewed in Chapters Two and Three, this chapter presents the hypothesised model and hypotheses developed for the study. It highlights the strengths of the model and explains the effects of each hypothesis as well as the rationale underlying the related hypotheses of the theoretical framework based on the research questions formulated in Chapter One. The hypotheses are theoretically deduced and supported by previous theoretical and empirical studies.

4.2 The Strengths of the Hypothesised Model

In Chapter Two (refer to Section 2.5), two factors that lead to the inadequacy of the LSQ model were underlined. Several authors highlighted that even though some of the service quality components, such as close, enduring, and interdependent associations are relevant to the relational nature in service marketing; they are still insufficient for a condition of relationship quality (Crosby, 1989; Crosby et al, 1990). Crosby et al (1990) recognise that an effective relationship is most critical when the service is complex, customised, and delivered over a continuous stream of transactions (Berry, 1983; Levitt, 1983; Lovelock, 1983). The dynamic and uncertain nature of the business environment that affects future needs (demand) and offerings (supply) also reflect the need for effective relationships (Zeithaml, 1981). As the demand of the TPL customers is getting more complex, the pressure to provide an efficient service at the lowest possible cost becomes significant. This has resulted in complex; customised services and the uncertain nature of the TPL industry. Very large retail chains

such as Wal-Mart and Tesco demand customised logistics. The recent trends such as globalisation also influence the development of more complex services (Waters, 2003). Thus, it is argued that relationship quality dimensions need to be added onto the LSQ model in order to produce a sufficient relational condition to the relationships between the TPL providers and customers. The inadequacy of the LSQ model would also be overcome.

The addition of relationship quality dimensions into the LSQ process model improves the LSQ model in that relationship quality brings such outcomes as customer loyalty. In contrast, most researchers regard satisfaction (outcome variable in the LSQ process model) as insufficient to produce loyal customers (Oliver, 1999; Stewart, 1997; Jones and Sasser, 1995). These researchers highlighted the importance of shifting the strategic business goal from satisfaction to loyalty, due to the impact on profitability from having loyal customers as compared to satisfied customers. However, it has been demonstrated in the literature that satisfaction is one of the antecedents to loyalty, in which for satisfaction to affect loyalty, frequent or cumulative satisfaction is required so that individual satisfaction becomes aggregated or blended (Oliver, 1997). Consequently, the relationship satisfaction construct was added to the hypothesised model to add the cumulative effect of LSQ satisfaction on other relationship quality variables and loyalty and thus strengthen the hypothesised model

As has been discussed in Section 3.6 in Chapter Three, the importance of each relationship quality variable also reflects the strength of the hypothesised model.

According to Mittal and Lassar (1995), relationship satisfaction alone does not necessarily reflect the customer's future loyalty. A customer may be dissatisfied with the relationship, but still remain in that relationship because there is no choice (i.e. either there are no other viable alternatives or the amount of

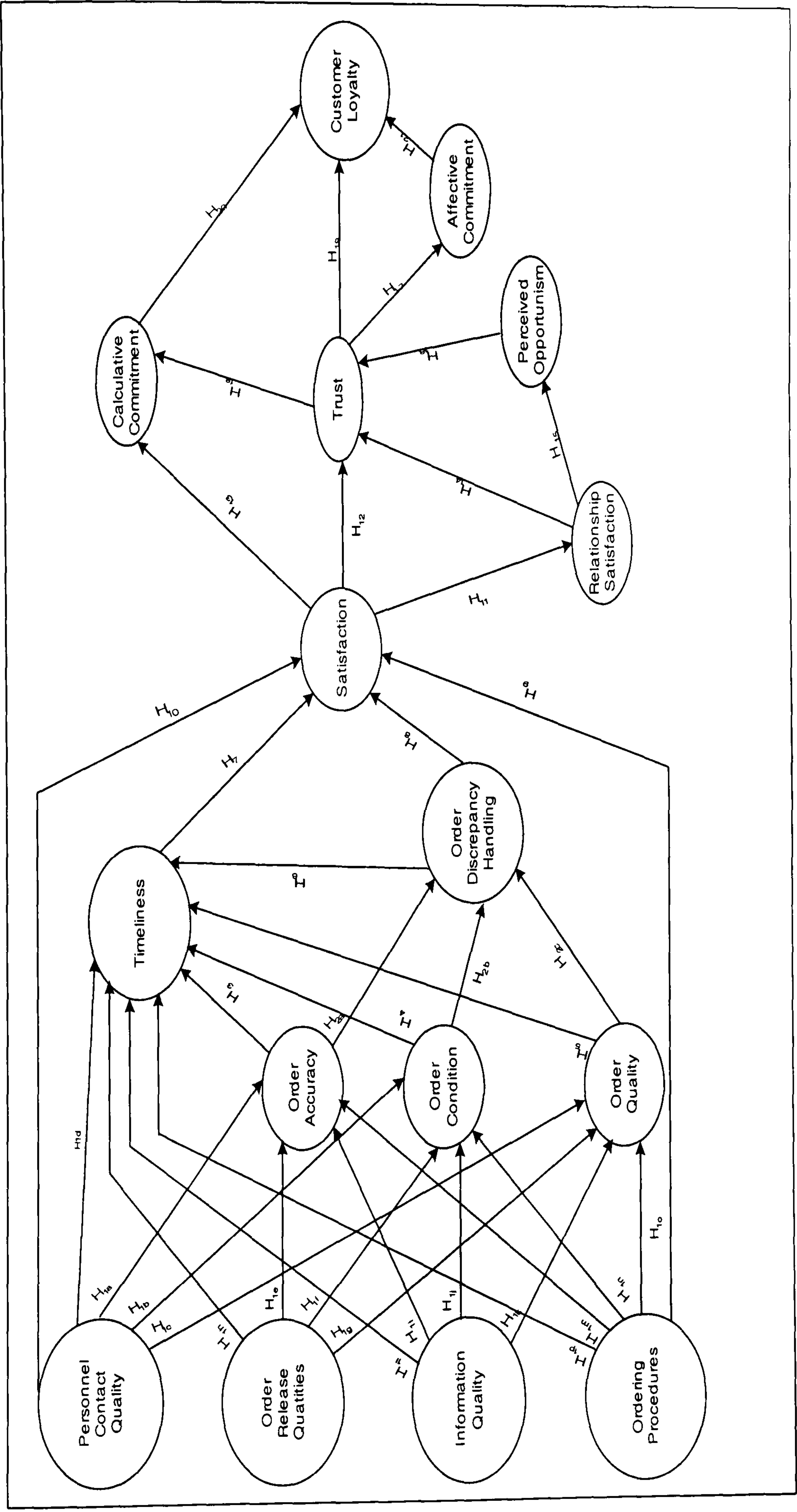
investment is too great). A high level of commitment to a relationship leads people to tolerate undesirable things in that relationship (Hocutt, 1998; Rosenblatt, 1977). Previous research has also either considered relationship quality as a global measure (e.g. De Wulf et al, 2001; Kumar et al, 1995a) or tested the causal relationships among individual relational constructs but did not relate it to relationship quality (e.g. Garbarino and Johnson, 1999; Morgan and Hunt, 1994). A combination of effects that constitute the relationship of quality variables is needed for loyalty to occur.

Consequently, this study extends the LSQ model by adding the relationship quality variables namely relationship satisfaction, trust, affective commitment, and calculative commitment to produce loyal customers. Using the data obtained, it examines (1) the effects of the technical and functional quality in LSQ process model on satisfaction, (2) the effect of satisfaction on relationship quality constructs, and (3) the effects of relationship quality constructs on two different conceptualisations of loyalty, i.e. customer loyalty/exit intention.

4.3 The Components of the Hypothesised Model

Figure 4.1 presents the complete view of the hypothesised model. This model was developed based on the main elements of the model (refer to Figure 1.2 in Chapter One). Both technical and functional qualities of logistics service are incorporated in the Logistics Service Quality (LSQ) model (Mentzer et al, 2001). They are operationalised by nine constructs discussed in Chapter Three, namely: personnel contact quality, order release quantity, information quality, ordering procedures, order accuracy, order condition, order quality, timeliness, and order discrepancy handling. The relationship quality dimensions (see Chapter Three), namely relationship satisfaction, trust, affective commitment, calculative commitment and perceived opportunism were added onto

Figure 4.1: The Hypothesised Model Consisting both the Logistics Service Quality and Relationship Quality Model



the LSQ model. Perceived opportunism, which was found to be significant in TPL providers - customer relationship was included in this model while customer loyalty represents the outcome variable. Accordingly, the hypothesised model constitutes the LSQ model extended to include the relationship quality model.

The main effects of the related hypotheses and their supported arguments for LSQ and relationship quality are discussed in two separate Sections 4.4 and 4.5.

4.4 Logistics service quality and replicated hypotheses

Mentzer et al (2001) test the hypotheses of the LSQ process model on the data that they collected from four customer segments of a single large third party logistics service provider in the United States. This study re-tests the hypotheses (Mentzer et al, 2001, pp. 87-88) to the customers of TPL providers in a cross industrial sector in the UK with the purpose of investigating whether it can be generalised. Thus, the same hypotheses as in Mentzer et al (2001) were tested and they are as follows:

4.4.1 Order Placement and Order Receipt

The first group of hypotheses consists of ordering placement-related constructs (personnel contact quality, order release quantities, information quality and ordering procedures). Since the ordering process involves some elements of interactions between the customers and the suppliers when they place the orders, these groups of hypotheses reflect how the customers perceive the logistics services provided by TPL providers upon the placement of the orders. Mentzer et al (2001) argue that each of these constructs positively affects the customers' perceptions of the order receipt constructs (order accuracy, order condition, order quality, and timeliness). They found that the customers' perceptions of timeliness are driven by different constructs depending on the market segment.

This indicates that the importance of each variable varies across the different customer segments.

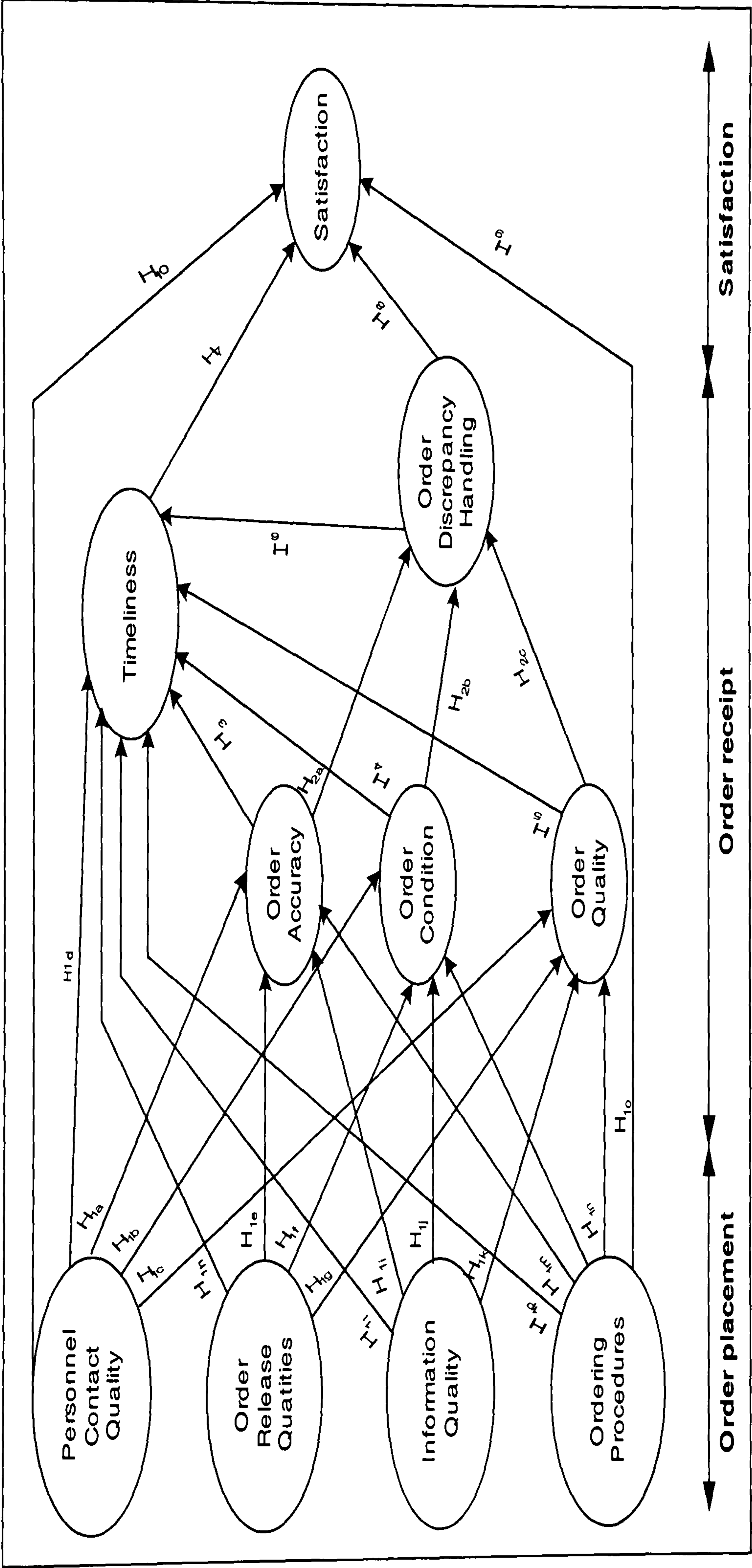
H1: Perceptions of ordering-related constructs positively affect order receipt perceptions: (a) personnel contact quality positively affects order accuracy, (b) personnel contact quality positively affects order condition, (c) personnel contact quality positively affects order quality, (d) personnel contact quality positively affects timeliness, (e) order release quantities positively affects order accuracy, (f) order release quantities positively affects order condition, (g) order release quantities positively affects order quality, (h) order release quantities positively affects timeliness, (i) information quality positively affects order accuracy, (j) information quality positively affects order condition, (k) information quality positively affects order quality, (l) information quality positively affects timeliness, (m) ordering procedures positively affects order accuracy, (n) ordering procedures positively affects order condition, (o) ordering procedures positively affects order quality, and (p) information quality positively affects timeliness. (Mentzer et al, 2001, p.87).

4.4.2 Order Receipt and Order Discrepancy Handling

As indicated in Figure 4.2, Mentzer et al (2001) hypothesise that the three order completeness constructs, namely order accuracy, order condition and order quality influence the perceptions of how TPL providers handle order discrepancies. The way in which the order discrepancies are handled determines the efficiency of the procedures as well as the personnel who are handling them.

H2: Perceptions of order receipt positively affects perceptions of order discrepancy handling procedures: (a) order accuracy positively affects order discrepancy handling, (b) order condition positively affects order discrepancy handling, and (c) order quality positively affects order discrepancy handling. (Mentzer et al, 2001, p.87).

Figure 4.2: The Hypothesised Logistics Service Quality Process Model



Source: Mentzer J.T., Flint, D.J. and Hult, T.M., (2001), "Logistics Service Quality as a Segment-Customised Process", *Journal of Marketing*, 65 (October), p.86

4.4.3 Order Completeness (Order Accuracy, Order Condition, Order Quality) and Timeliness

An order is considered timely when it arrives at the required time; the order is accurate, in good condition, and of acceptable quality. If these criteria are not met, timeliness is affected especially when the order discrepancies are not handled adequately (Mentzer et al, 2001). Thus, it is hypothesised that perceptions of order accuracy, order condition, order quality and order discrepancy-handling affect the perceptions of timeliness.

H3: Perceptions of order accuracy positively affects perceptions of timeliness.

H4: Perceptions of order condition positively affects perceptions of timeliness.

H5: Perceptions of order quality positively affects perceptions of timeliness.

H6: Perceptions of order discrepancy handling positively affects perceptions of timeliness. (Mentzer et al, 2001, p.87).

4.4.4 Personnel Contact Quality, Ordering Procedures, Timeliness, Order Discrepancy Handling and Satisfaction

A considerable number of studies show that service quality is the antecedent of satisfaction (e.g. Spreng and Mackoy, 1996; Olsen, 2002; Brady and Robertson, 2001). Mentzer et al (2001) argue that the logistics process should be evaluated from customers' perceptions based on the fact that the logistics services should be considered as an integrated set of activities that are aimed at increasing customer satisfaction and reducing costs (e.g. Bienstock et al, 1997; Persson, 1995). They hypothesised that receiving timely orders (timeliness), the handling of order discrepancies and two other placement-constructs, i.e. ordering procedures and personnel contact quality, which tie in the broader service quality literature, are hypothesised as having strong effects on satisfaction. The model also shows the direct effects that these four constructs have on satisfaction

because they involve the ease-of-use of the service that affects satisfaction. Although the results demonstrate that different segments placed different weight on satisfaction, this study re-tests the same four hypotheses to investigate the generalisation of these hypotheses on the sample of this study.

H7: Perceptions of timeliness positively affect satisfaction.

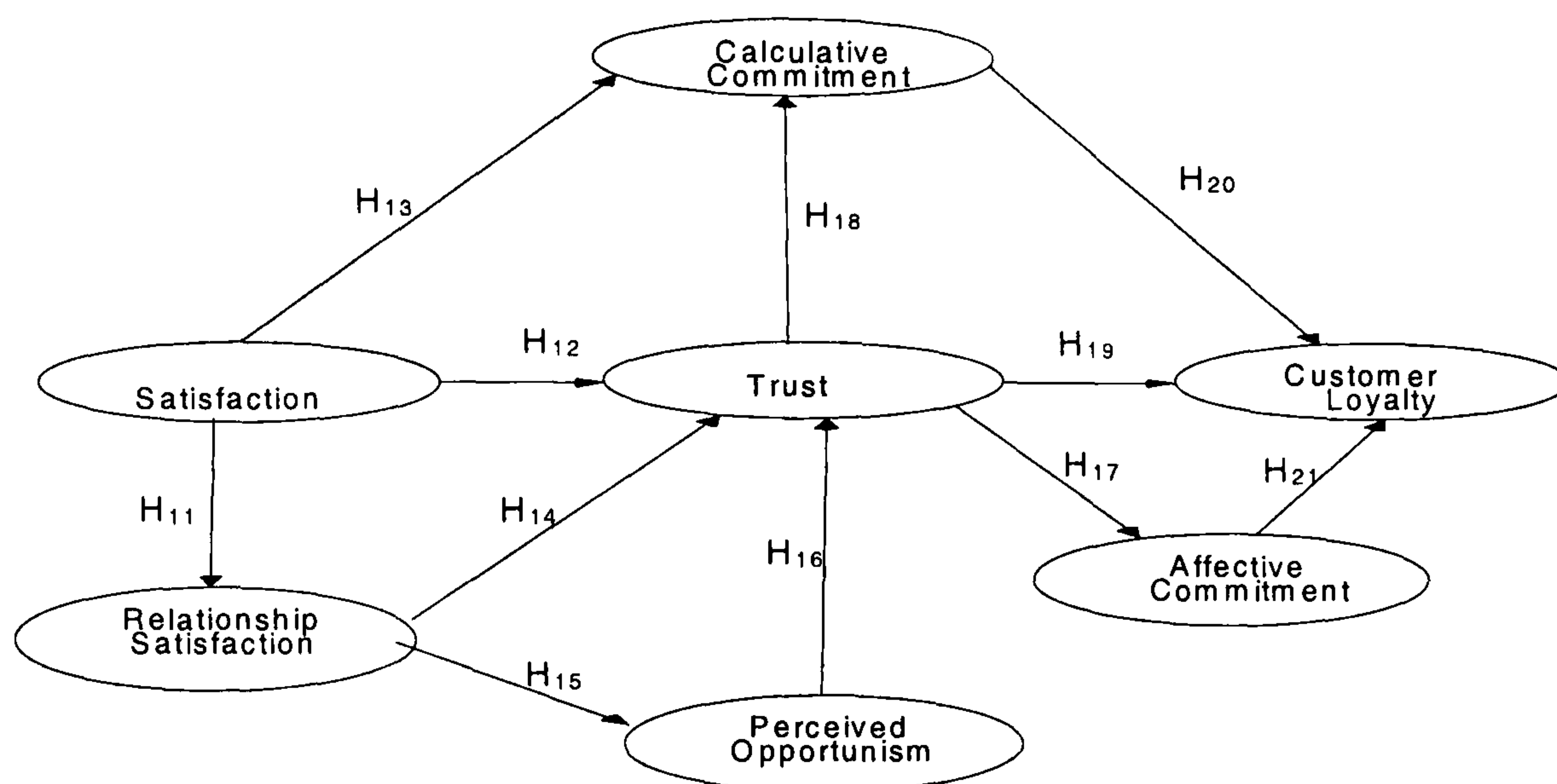
H8: Perceptions of order discrepancy handling positively affect satisfaction.

H9: Perceptions of ordering procedures positively affects satisfaction.

H10: Perceptions of personnel contact quality positively affects satisfaction. (Mentzer et al, 2001, p.88)

4.5 Relationship Quality and Related Hypotheses

In this section, the effects of the five relationship quality dimensions, namely relationship satisfaction, trust, affective commitment, calculative commitment and perceived opportunism are explained. The behavioural consequence of the relationship quality model i.e. customer loyalty is also discussed. Figure 4.3 summarises the hypotheses of the relationship quality framework.

Figure 4.3: The Hypothesised Relationship Quality Model

4.5.1 Satisfaction and Relationship Quality

In the previous section 4.4, the effects of various logistics process dimensions on satisfaction were explained. As described in Section 2.4.10 in Chapter Two, Mentzer et al (2001) view satisfaction as the customers' evaluation on the logistics service provider organisation, i.e. DLA as well as the services provided based on the dimensions of LSQ. Mentzer et al (2001) suggest that further research should conceptualise LSQ with other related constructs such as customer loyalty or other similar concepts. To ease explanations, satisfaction with LSQ will be termed as LSQ satisfaction thereafter.

Several studies demonstrate that the effect of service quality on behavioural intentions is mediated by customer satisfaction (e.g. Olsen, 2002; Brady and Robertson, 2001). A few empirical investigations that examine the satisfaction-customer retention relationships indicate that the direct relationship between these constructs is weak or even non-existent. Hennig-Thurau and Klee (1997) in their conceptual study on the role of satisfaction in relationship marketing

suggest that satisfaction and customer retention is mediated by relationship quality.

Although the link between service quality – satisfaction – relationship quality has been established conceptually (e.g. Storbacka et al, 1994; Christopher, 1997; Heskett et al, 1994), little empirical evidence exists in the current marketing literature to support this link. De Wulf et al (2001) suggest that relationship should be directed to examine the value of existing instruments such as SERVQUAL in affecting relationships rather than restrict the scope to typical relationship marketing constructs. They emphasise that the previous research that examined the effects of SERVQUAL measures on the relationship outcomes (relationship quality) are practically lacking. The few studies that demonstrate the link from satisfaction on relationship quality dimensions show that the overall satisfaction significantly affects trust, commitment and future intentions of their customers (Garbarino and Johnson, 1999). Rusbult et al (1991) found a significant relationship between satisfaction with past outcomes and commitment to a relationship.

Therefore, since there are limited studies that show the effect of service quality on relationship quality, this study intends to measure these effects. It is argued that satisfaction with service quality may have some effects on relationship quality dimensions due to the interaction elements in service quality.

Consequently, the following hypotheses were formulated.

H11: A higher level of satisfaction with logistics service quality leads to a higher level of relationship satisfaction.

H12: A higher level of satisfaction with logistics service quality leads to a higher level of trust.

H13: A higher level of satisfaction with logistics service quality leads to a higher level of calculative commitment.

/ 4.5.2 Relationship satisfaction and Trust

Several authors theorize a positive relationship from relationship satisfaction to trust (Narayandas and Rangan, 2004; Bendapudi and Berry, 1997; Crosby et al, 1990; Tax et al, 1998). However, only a few authors found strong empirical support for the path of relationship satisfaction to trust (Ganesan, 1994; Selnes, 1998). Geyskens (1998), in a meta-analysis study revealed that relationship satisfaction significantly influences trust. However, several authors have proposed an opposite causal ordering from trust to relationship satisfaction (Andaleeb, 1996; Smith and Barclay, 1997; Raven et al, 1993). Dwyer et al (1987) suggest that satisfaction and trust should be built during subsequent phases of relationship development, supporting a sequential satisfaction-trust relationship. Consequently, it is posited that relationship satisfaction influences trust.

H14: A higher level of relationship satisfaction leads to a higher level of trust

4.5.3 Relationship satisfaction and Perceived opportunism

The creation of a social environment, which has been emphasised by the relational norms framework would discourage opportunism behaviour and, thus, be in favour of mutual interest seeking (Achrol and Gundlach, 1999). Under the new paradigm for studying the law of contractual behaviour, Macneil (1980) proposed relational exchange that includes a social component as the key element. Hence the parties involved in relational exchange derive non-economic satisfaction resulting from engaging in social exchange. Geyskens and Steenkamp (2000) emphasise the similarity of non-economic satisfaction to relationship satisfaction in terms of the idea of an affective state resulting from the appraisal of various aspects of a firm's working relationship with another firm. A number of studies demonstrate the capability of relational values in safeguarding

opportunistic behaviour (Gundlach et al, 1995; Heide and John, 1992; Lusch and Brown, 1996). John (1984) proposes that it is useful to view opportunism as an endogenous variable that is evoked by certain antecedents within the long-run relationship. It is because opportunistic behaviour may not always occur at a point of time, but may result from an accumulated mistreatment from the other party. Brown et al (2000) suggest that efforts should be directed at building effective relational exchange with their channel partners as a mechanism to effectively limit opportunistic behaviour.

As a result, the following hypothesis is posited:

H15: A higher level of relationship satisfaction leads to a lower level of perceived opportunism

4.5.4 Perceived opportunism and Trust

Based on past research (e.g. Knemeyer and Murphy, 2005; 2004; Yilmaz and Hunt, 2001; Dorsch et al, 1998; Morgan and Hunt, 1994; Gundlach et al, 1995; Moore, 1998; Moore and Cunningham, 1999), opportunistic behaviour is found to inversely relate to trust, in which opportunistic behaviour reduces the level of trust. Williamson (1975) stated that opportunism would disappear if both partners were more open and honest. Several authors recognise that, the greatest potential for opportunistic behaviour is in long-term relationships where market-based competition is reduced or eliminated (e.g. Moore, 1998; Moore and Cunningham, 1999; John, 1984). When opportunism exists, there will be a subsequent damage to the customer's trust. As a result, the following proposition is posited.

H16: A higher level of perceived opportunism leads to a lower level of trust.

4.5.5 Trust and Affective Commitment

According to Ganesan (1994), trust is hypothesised to affect commitment as it is expected to (1) reduce the perception of risk, (2) increase the confidence of the

customer that short-term inequities will be resolved over the long term, and (3) reduce the transaction costs in an exchange relationship.

Most studies in channel relationships show strong empirical evidence for a positive path from trust to commitment (Leonidou and Theodosiou, 2002; Moore, 1998; Anderson and Weitz, 1989; Kim and Frazier, 1997; Morgan and Hunt, 1994; Ganesan, 1994; Crosby et al, 1990; Moorman et al, 1992), which supported the conceptual studies on this relationship (Narayandas and Rangan, 2004; Bendapudi and Berry, 1997; Dwyer et al, 1987; Moorman et al, 1993).

Although these studies refer to global ‘commitment’, their operationalisation reflects primarily affective commitment (Geyskens et al, 1996). In line with these studies, the following hypothesis is deduced:

H17: A higher level of trust leads to a higher level of affective commitment

4.5.6 Trust and Calculative Commitment

Some authors (Ruyter et al, 2001; Geysken, et al, 1996; Holmes and Rempel, 1989) posited a negative relationship between trust and calculative commitment. They found empirical support due to the fact that when trust is low, decisions on whether to maintain the relationship or not are more likely to be based on a calculation of immediate benefits relative to costs. A channel member who intends to continue the relationship is more likely to be motivated to do so because it cannot easily replace its current partner and obtain the same resources and outcomes outside its current relationship.

Consistent with the above authors, this study investigates the following hypothesis.

H18: A higher level of trust leads to a lower level of calculative commitment.

4.5.7 Trust and Customer Loyalty

As has been explained in the previous chapter (refer to Section 3.7.2.1), loyalty can be regarded as attitudinal loyalty and behavioural loyalty. According to Bennett and Rundle-Thiele (2002), commitment is one of the terms that has always been used interchangeably with attitudinal loyalty, which includes relationship commitment items in the construct (Rusbult et al, 1988; Hawkes, 1994). In Section 4.5.6, a considerable number of studies that demonstrated significant relationships between trust and commitment were included. Most of the existing studies show that trust works better through commitment (attitudinal loyalty) before it reaches behavioural loyalty (e.g. Morgan and Hunt, 1994). However, there were also some studies that provided empirical evidence that the positive relationship from trust to loyalty is significant (Anderson and Weitz, 1989; Kim and Frazier, 1997). Most of these studies refer to behavioural loyalty.

Based on the existing studies that demonstrate significant relationship from trust to both attitudinal and behavioural loyalty, the following hypothesis is formulated:

P19: A higher level of trust leads to a higher level of customer loyalty behaviour.

4.5.8 Commitment and Customer Loyalty

Customer loyalty has always been referred to in the marketing literature as a key relationship marketing outcome (Hennig-Thurau et al, 2002; Oliver, 1999; Reichheld and Sasser, 1990). Many studies have found the positive influence of customer loyalty on profitability through cost reduction effects and increases revenues per customer (Berry, 1995). Since then, it has been the primary goal of every firm to produce loyal customers.

Consequently, many studies have been conducted to investigate the antecedents of customer loyalty. Among the most common constructs determined as the

antecedents of loyalty are customer satisfaction, service quality, commitment and trust (Hennig-Thurau et al, 2002). In Section 3.7.2 in Chapter Three, two conceptualisations of customer loyalty in industrial context were found in the literature. First, the act of remaining silent and confident that things will get better (Ping 1994; 1999; Rusbult et al, 1988; Farrell, 1983; Hirschman, 1970), and second is the refusal to exit or the intention to stay (e.g. Hennig-Thurau et al, 2002; Ruyter et al, 2001; Kim and Frazier, 1997; Gundlach et al, 1995; Kumar et al, 1994; Biong, 1993; Heide and John, 1992; Hirschman, 1970).

While most evidence of the positive influence of customer loyalty comes from the latter conceptualisation, there is a lack of empirical evidence on the effect on the former conceptualisation. The use of the former conceptualisation of loyalty was limited to studies by Geyskens and Steenkamp (2000), Ping (1999; 1994), Farrell (1983), Hirschman (1970). With the exception of Geyskens and Steenkamp (2000), loyalty is positioned in a series of antecedents that include loyal behaviour, voice, neglect and exit. Geyskens and Steenkamp (2000) found that loyalty is built by economic satisfaction and reduced by social satisfaction. Economic satisfaction is the channel member's evaluation of the economic outcomes that flow from the relationship such as sales volume, margins and discounts. Social satisfaction, on the other hand is a channel member's evaluation of the psychosocial aspects of its relationship, in that interactions with the exchange partner are fulfilling and gratifying. Consequently, it is the intention of this study to test its measures in the context of this study. Consequently, this study intends to measure the impact of affective and calculative commitment on both conceptualisation of loyalty. This is because they were found as the main conceptualisations of loyalty used by previous studies in industrial marketing. Thus, it is useful to investigate which measures of loyalty are better suited to the hypothesised model and produce a more robust model.

Thus, the following hypotheses were deduced in order to measure the impact of commitment on the former conceptualisation of loyalty (to remain silent and confident things will get better) while the following Section 4.6.2 provides the hypotheses that measure the impact of commitment on the latter conceptualisation of loyalty. The former is viewed as comprising both behavioural and attitudinal components while the latter comprises only the behavioural components of customer loyalty. Hence, it is deduced that:

P20: A higher level of calculative commitment leads to a lower level of customer loyalty behaviour.

P21: A higher level of affective commitment leads to a higher level of customer loyalty behaviour.

4.6 Alternative hypotheses

In relation to the explanations presented in the previous Section 4.5.8, three alternative hypotheses were formulated in order to distinguish the effects of the relationship quality constructs on two different conceptualisations of loyalty. While the previous hypotheses measure the effect of various relationship quality constructs on customer loyalty, these hypotheses were developed in order to investigate the impact of relationship quality constructs on intention to exit.

4.6.1 Trust and Intention to exit

It has been generally agreed that trust has to go through commitment before it affects the behavioural component of loyalty (e.g. Morgan and Hunt, 1994; Bendapudi and Berry, 1997). However, Bennett and Rundle-Thiele (2002) argue that the term loyalty has often been used interchangeably with repeat purchase; commitment and retention depending on the context of study (see Section 3.7.2.1 in Chapter Three). As referred to in Section 4.5.5, trust has been shown to have strong empirical impact on commitment in many studies (Leonidou and Theodosiou, 2002; Moore, 1998; Anderson and Weitz, 1989; Kim and Frazier,

1997; Morgan and Hunt, 1994; Ganesan, 1994; Crosby et al, 1990; Moorman et al, 1992).

Accordingly, it is posited that:

P19a: A higher level of trust leads to a lower level of intention to exit behaviour.

4.6.2 Commitment and Intention to exit

As indicated by the value-attitude-behaviour hierarchy, it is commonly accepted that attitudes influence behaviour (e.g. Homer and Kahle, 1988; Korgaonkar et al, 1985). Sharp and Sharp (1997) explicitly stated that the effectiveness of relationship marketing efforts should be evaluated in terms of the behavioural changes they bring about. Hennig-Thurau and Klee (1997) argue that in relationship quality, the commitment dimension in particular is an antecedent of customer retention. Morgan and Hunt (1994) found significant relationships between the level of buyers' relationship commitment and their acquiescence, propensity to leave, and cooperation, all of which can be regarded as the behavioural outcomes of relationships. As indicated earlier, both types of commitment lead to the desire to continue the relationship or the intention to leave the relationship.

An individual's intention to leave a firm (Netemeyer et al, 1996) is commonly modelled as an ultimate outcome in studies of human behaviour in organisations (e.g. Chandrashekar et al, 2000). The relationship between organisational commitment and turnover has previously been explored in sales force settings (Johnston et al, 1990). Previous research confirms the negative relationship of organisational commitment with turnover intention and turnover (Brown and Peterson, 1993).

As a desire to act implies higher chances of actual behaviour occurring, it is predicted that a positive relationship exists between calculative commitment and intent to exit behaviour and negative relationship between affective commitment and intent to exit behaviour.

P20a: A higher level of calculative commitment leads to a higher level of intention to exit behaviour.

P21a: A higher level of affective commitment leads to a lower level of intention to exit behaviour

4.7 Concluding remarks

This chapter discusses the relations between the concepts presented in Chapter Three and Chapter Four. It re-tests ten hypotheses from the LSQ process model (Mentzer et al, 2001) and formulates eleven hypotheses for the relationship quality model, in which the relationship quality dimensions were added onto the LSQ process model.

It highlights that the addition of the relationship quality model strengthens the LSQ process model and thus a more critical dimension of customer loyalty can be tested. It clarifies the main components of the model as LSQ, satisfaction, relationship quality and customer loyalty. The two frameworks (LSQ and relationship quality) were presented separately along with the complete integrated framework consisting of both models. The hypotheses were formulated based on the sequence and causality found in the literature reviewed in Chapter Three and Four. These effects come to the fore of the empirical hypotheses testing that will be presented in Chapter Eight and Nine. The following chapter discusses the methodologies employed for this study.

Chapter 5

RESEARCH METHODOLOGY AND ITEM DEVELOPMENT

5.1 Introduction

This chapter presents the research design, the rationale behind the choice of methods used in the research, the strengths and weaknesses of the chosen methods as well as the limitations in conducting the research. In discussing the limitations, several solutions for overcoming the limitations are proposed.

As explained in the previous chapter, the hypothesized model comprises of two sub-models, namely the RQ and LSQ. This study re-tests the original LSQ process model with the customers of TPL providers across industrial sectors in the UK. Having considered the importance of relationships between TPL providers and their customers, RQ dimensions were added to the LSQ process model.

5.2 Research Design

5.2.1 Data Collection Method

The choice of an adequate data collection method should be based on the type of research problem investigated (Kerlinger, 1986). As a result, each of the choices made was evaluated in light of the specific problem investigated in this study. This study applies a cross-sectional design of research. Cross-sectional research involves the collection of information from any given sample of population elements only once. There is ordinarily an emphasis on the calculation of statistics that efficiently summarise the wide variety of data collected from the large cross section of subjects (Churchill, 1999). This type of research is considered as the most feasible method for this research due to the time frame

limitation and to provide the required information in a valid and representative way.

The choice of the data collection method in this study was pre-determined by the decision made to re-test the LSQ process model as it aims at examining the generalisability of the LSQ constructs. Mentzer and Khan (1995) highlight that mail surveys are useful for extending the generalisability (external validity) of theory across studies. Consequently, this study uses survey method particularly mail survey technique to gather the required data. Mail survey is a questionnaire administered by mail to designated respondents under an accompanying cover letter. The respondents return the questionnaire by mail to the research organisation (Churchill, 1999).

5.2.1.1 Strengths and Weaknesses of Mail Questionnaire

There are several strengths and weaknesses associated with mail questionnaire that need to be taken into consideration.

The strengths of the mail questionnaire are obviously related to simple administration and ease of tabulation and analysis. The respondents can give thought and consideration to the questions given, having the time to look at the questionnaire. Respondents can also consult the documents and other people to provide high quality information. In terms of bias, there will be no interview bias, as there is no opportunity for questions to be asked differently. Therefore, reliability is facilitated by the consistency of fixed-alternative questions (Eborall, 1991; Whitley, 1985; Pressley, 1983).

Despite the strengths of the method, there are also some weaknesses. The most prominent problem in mail questionnaire is the non-response problem. According to Bethlehem (1999), non-response is the phenomenon that an element in the selected sample does not provide the requested information, or

that the provided information is unusable. Due to non-response problem or poor response rate, the sample size is usually smaller than expected. In addition, the estimates of population characteristics may also be biased. This situation occurs if, due to non-response, some groups in the population are over or under-represented, and these groups may behave differently with respect to the characteristics to be investigated. Indeed, research is assumed to be biased unless very convincing evidence to the contrary is provided. In this study, several solutions have been determined before the development of the questionnaires in an effort to reduce the non-response rate.

5.2.1.2 Solutions for Overcoming Weaknesses in Mail Questionnaire

The most prominent method in mail questionnaire survey used to maximise response rates is the Dillman's Total Design Method (Dillman, 2000). Among the methods recommended is the five-wave mailings consisting of pre-notification letter, first wave of questionnaires mailings, postcard reminder, second wave and finally the third wave of questionnaire mailing.

In terms of questionnaire design, a user-friendly format recommended by Dillman (2000) was incorporated accompanied by cover letters to stress the importance of the research, the need for a timely response, the confidentiality of the responses, and how the results of the research would benefit those who participated (Moore, 1998).

Support of the research from professional bodies can also contribute to the increase of response rate. Thus, effort was made to obtain support from The Chartered Institute of Logistics and Transport (CILT), UK. CILT is a professional organisation that focuses on professional excellence, development of the most relevant and effective techniques in logistics and transport, and development of policies, which respond to the challenges of a changing world.

The details of the development and mailing of the questionnaires are explained in the latter part of this chapter (refer to Section 5.2.7).

5.2.2 Research Setting

5.2.2.1 Single Industry vs. Multiple Industries

Prior studies have either examined multiple industries or focused on a single industry. There are several advantages and drawbacks associated with both methods. Several researchers recognise that customer service research involves a trade-off between depth and breadth (Lambert and Harrington, 1989; Sterling and Lambert, 1987; Tucker, 1980). Lambert and Harrington (1989) highlight that in-depth study of one industry allows the researcher to design a questionnaire specifically for that industry. This is important because “the relevant factors may well vary by industry and product” (La Londe, Cooper and Noordeweir, 1988, p.18). However, generalising the findings from one industry to another is not possible (Lambert and Harrington, 1989).

Studying multiple industries on the other hand allows generalisation of the findings, but the questionnaire cannot be industry specific. Some studies pointed out that large occurrences of “not applicable” was due to the fact that many of the variables used were ambiguous and vague because they were non-channel specific (Sterling and Lambert, 1987; Tucker, 1980). Consequently, although research within a specific industry provides the most reliable data, generalisation should not be made unless the research is conducted in other industries with reasonably similar profiles (Lambert and Harrington, 1989).

This study was conducted across industrial sectors/multiple industries. This was due to the unidentified size of TPL customers’ population within each industrial sector. The fact that an LSQ process model was developed based on multiple segments led to an assumption that the instrument could be generalised across industrial sectors. Consequently, RQ that were added onto the model used the

same sample. The non-technical specific of the RQ dimensions allows its application across industrial sectors.

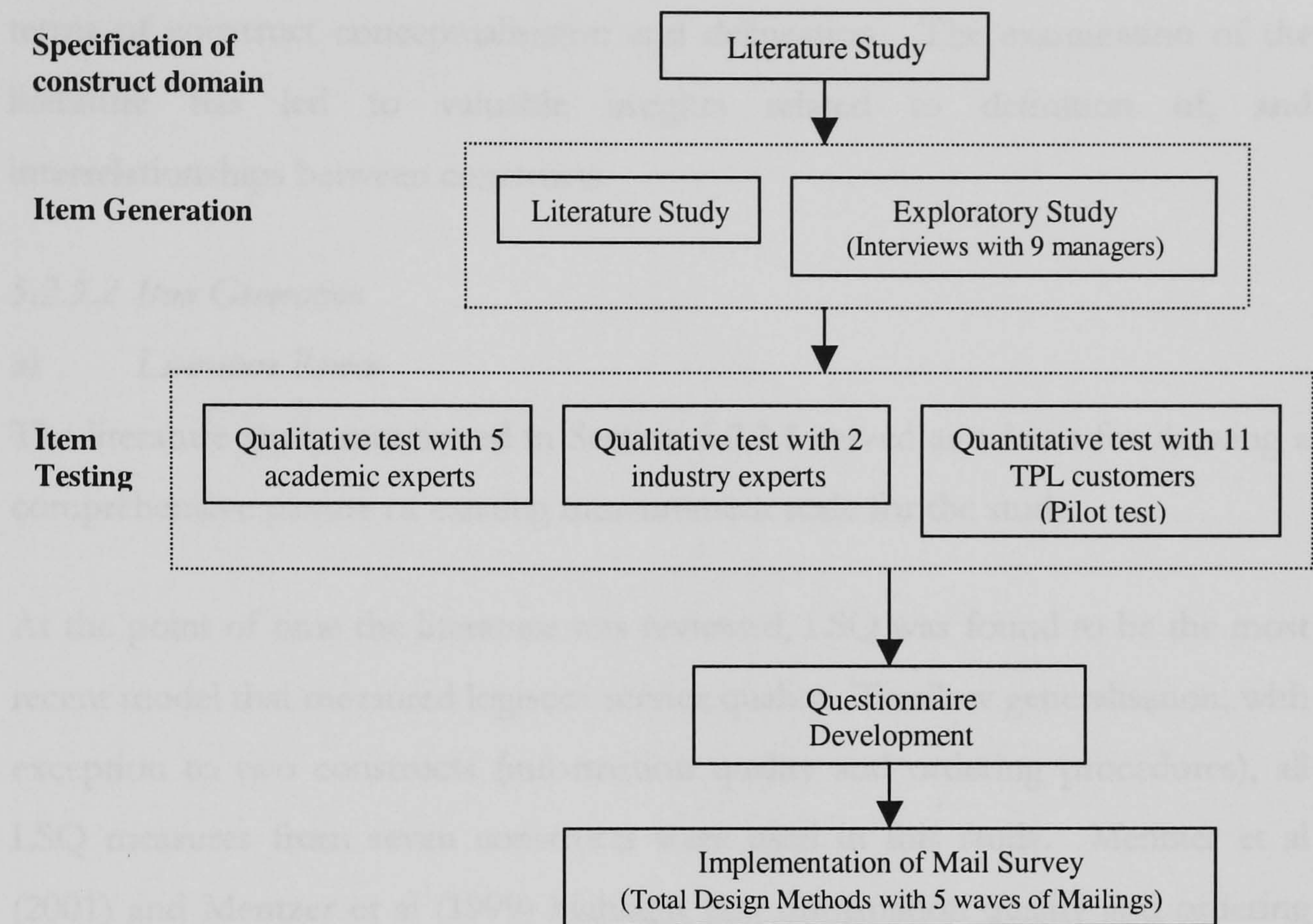
5.2.2.2 Unit of Analysis

A review of studies on logistics customer service shows that the units of analysis were among the purchasing/logistics/supply chain managers, President/Vice President of Logistics and Distribution, Purchasing/Logistics/Distribution Executives. These people have been shown to exert a primary influence role in industrial purchasing decisions as well making critical decisions in assessing the logistics outsourcing functions. As such, the logistics managers were the best people to assess logistics services provided by their TPL providers as compared to those involved in purchasing as used by Mentzer et al (2001). This is because Mentzer et al (2001) were assessing the logistics services of the supplying firms that were delivered by a TPL provider. Furthermore, as the use of inbound and outbound movement of products was unknown, the difficulties in segregating the logistics managers to inbound and outbound categories supported the decision to choose the logistics managers as the unit of analysis of the study.

5.2.3 Item Development

This section discusses the methods used in generating the measurement items. Figure 5.1 describes briefly the research methodology of the study.

Figure 5.1: Overview of the Research Methodology



5.2.3.1 *Specification of Construct Domain*

As the nature of the study is a cross-disciplinary approach, the literature relating to various research fields such as supply chain management (e.g. Mentzer et al, 2001; Christopher, 1997), marketing logistics (e.g. Christopher, 1997; Bienstock et al, 1997; Mentzer et al, 2001; 1999; 1997; 1989; Mentzer and Khan, 1995), third party logistics industry and its development (e.g. McKinnon, 2001), service quality (e.g. Parasuraman et al, 1985; Gronroos, 1984), industrial marketing (e.g. Webster, 1992), relationship marketing (e.g. Gronroos, 1994), channel relationships (e.g. Kumar et al, 1994; Kumar et al, 1995a; 1995b; Geyskens et al, 1996; Kim and Frazier, 1997) and relationship quality (e.g. De Wulf et al, 2001; Dorsch et al, 1998; Hennig-Thurau and Klee, 1997; Kumar et al, 1995a; Holmlund and Kock, 1995; Crosby et al, 1990; Dwyer et al, 1987) was reviewed.

First, the sources of information of the constructs that were of interest to the study were reviewed. Second, the sources of these constructs were examined in terms of construct conceptualisation and delineation. The examination of the literature has led to valuable insights related to definition of, and interrelationships between constructs.

5.2.3.2 Item Generation

a) Literature Review

The literature study mentioned in Section 5.2.3.1 served as a basis for drawing a comprehensive picture of existing measurement scale for the study.

At the point of time the literature was reviewed, LSQ was found to be the most recent model that measured logistics service quality. To allow generalisation, with exception to two constructs (information quality and ordering procedures), all LSQ measures from seven constructs were used in this study. Mentzer et al (2001) and Mentzer et al (1999) highlight that information quality and ordering procedures constructs affects the model fit statistics and scale perfection because they were tapped with only two items. Hence, they need to be improved. The applicability of the measures was subject to an exploratory study to determine the suitability of the items in the context of the research in this study.

As for the relationship quality constructs and measures, apart from referring to the literature in the areas mentioned in Section 5.2.3.1, handbooks of marketing scales (e.g. Bearden et al, 1993; Bruner and Hensel, 1992) were consulted for the same purpose. Table 5.1 indicates the sources that were used as input in generating the items for measuring the constructs of the study.

Table 5.1: Literature Sources of the Constructs and Measures of the Study

Constructs	No. of Items	Source
Logistics Service Quality		
Order Release Quantities	3	Mentzer, Flint and Hult (2001)
Order Accuracy	3	Mentzer, Flint and Hult (2001)
Order Quality	3	Mentzer, Flint and Hult (2001)
Personnel Contact Quality	3	Mentzer, Flint and Hult (2001)
Information Quality	5	Mohr and Spekman (1994)
Ordering Procedures	6	Dabholkar (1994)
Order Condition	3	Mentzer, Flint and Hult (2001)
Order Discrepancy Handling	3	Mentzer, Flint and Hult (2001)
Timeliness	3	Mentzer, Flint and Hult (2001)
LSQ Satisfaction	3	Mentzer, Flint and Hult (2001)
Relationship Quality		
Relationship satisfaction	5	Ping (1993)
Trust	8	Doney & Cannon (1997)
Perceived opportunism	6	Gundlach, Achrol & Mentzer (1995)
Calculative commitment	3	Geyskens, Steenkamp, Scheer, Kumar (1996)
Affective commitment	3	Geyskens, Steenkamp, Scheer, Kumar (1996)
Customer Loyalty	4	Ping (1993)
Exit Intention	4	Ping (1999)

b) Exploratory/Qualitative Study

Lambert and Harrington (1989) emphasise that using variables from past research instruments such as survey questions leads to mis-interpretation and non-response when applied to a different context of the study. Thus, an exploratory study is crucial and very beneficial in defining the construct domain, leads to practical recommendations concerning data collection, and provides a basis for item generation. For the purpose of this study, an exploratory research study was conducted to explore the general practices of logistics activities carried out by the TPL providers in the UK. Other purposes include investigating any new concepts/constructs/items that may have arisen from practitioners’ perspective, and helping with development of the questionnaire for the study and improving it in terms of clarity and relevancy of the questions so as to ensure the research rigor.

The exploratory research study was conducted over a three-month period to develop an understanding of the customers' perceptions of the logistics services provided by their main TPL providers and relationship quality between them. Nine semi-structured interviews were conducted; in which seven represented the customers while the other two were managers from one of the leading TPL providers in the UK. The customers represented a number of logistics-related professions including Logistics Managers, Distribution Operations Manager, Manager Distribution Project, Head of Physical Logistics, Logistics and Customer Service Manager and Distribution Manager who came from a wide range of industries. The industries involved were food retailing, general retailing, food manufacturing, general manufacturing and retailing, automotive and aerospace component manufacturing businesses. Their experience in the current position ranged from one year to three-and-a-half years while experience in the current organisation ranged from two years to twenty-five years. The majority (five) of the respondents were in the category of Senior Managers with only two females. No interviews were conducted with people below junior managerial level and no other personal details were collected because within the objectives of the study, there was no intention to relate the data to individuals, but to take their output as a whole.

Each interview was conducted around a short interview-guide questionnaire of thirteen open-ended questions for the customers and nine open-ended questions for the TPL providers. The questions focused on how they perceived the quality of logistics service provided by their TPL providers as well as relationships between them. On the part of TPL providers, this study explores the perceptions of the TPL providers towards their customers. All interviews were conducted face to face; in which seven of them were conducted in the respondent's own premises around East Midlands and two of them in the Business School, Loughborough University. The length of the interviews ranged from fifteen

minutes to one hour and ten minutes, with a mean length of fifty-five minutes. The respondents were given the opportunity to pursue clarification where necessary which has enabled exploration into more deep issues of particular concern to respondents.

All nine interviews were recorded, transcribed and analysed. The exploratory research study supports the critical importance of technical and functional quality in driving customers' satisfaction. It also demonstrated that the issue of stimulating efforts in producing more loyal customers is central in the TPL providers' – customers' relationships. The data obtained from the interviews was persuasive in that by incorporating relationship quality into logistics service quality it would enhance the efficiency of logistics service quality leading to a more critical outcome measure, i.e. customer loyalty. The knowledge gained from the exploratory study was helpful in determining the critical importance of the research area as well as generating more applicable measurement items.

5.2.4 Mail Survey Design

As mentioned in section 5.2.1, this study used mail survey to address the research questions. Following the exploratory study, a questionnaire was developed. This section discusses the process of developing the instrument and how the mail survey was implemented.

5.2.4.1 The Process of Instrumentation

Following Churchill's (1999) procedure for developing a questionnaire, the crucial steps in the process of developing the questionnaire is discussed.

a) Information sought

Precision on what information will be sought is crucial at earlier stages in the research process so that the decisions made will not prove to be difficult at the later stage of the research (Churchill, 1999). This study relies on the literature

study and exploratory research effort in seeking the information. It covers the information on the background of the TPL industry in the UK; the logistics service quality and relationships issues between the TPL providers and the customers as well as exploration of related variables for the study. As a result, there are four categories of information needed for the study. These include company information; logistics service quality, relationship quality and personal information on the respondents.

The company information is used to identify the characteristics of the industry involved so as to ensure that the results obtained were limited to the respondents in this study. The information obtained from the LSQ and RQ sections were used to test the models while the personal information of the respondents was used to determine the degree of reliability of the data.

b) Type of Questionnaire and Method of Administration

Since the main purpose of the study was to test a list of hypotheses of logistics service quality and relationship quality, the communication method used was based on a structured form of questionnaire and has well-defined sequence and standardised response categories. Several authors suggest that it is the most productive method in obtaining the data (e.g. Churchill, 1999).

Several factors underlie the decision for using the mail survey as the main data collection method. First, this study investigates the relationships between behaviours and a series of company/respondent's characteristics in addition to relationships among behaviours that involves a lengthy attitude scale. Although other equivalent methods such as telephone and face-to-face interview would be equally attractive; the length of the questionnaire for this study, cost and time restrictions faced by this study do not prove that those methods are efficient for this study.

c) Form of Response

In relation to the two preceding steps, this study opts for multichotomous and scale questions as opposed to dichotomous questions. A multichotomous question is a fixed-alternative question where respondents are asked to choose the alternative that most closely corresponds to their position on the subject while scales is another type of fixed-alternative question that employs a scale to capture the response. In this study, questions on logistics service quality and relationship quality sections used scale questions whilst the other two sections i.e. the company profile and respondent's profile used multichotomous questions. Although the multichotomous questions did not permit the respondents to elaborate their true positions, a well-designed series of multiple-choice questions allowed for such elaborations (Churchill, 1999). The arguments for the scale questions are elaborated in detail in section 5.2.4.2 (a).

d) Question Wording

Decision of questionnaire wording is a critical task, because poor phrasing of a question can cause the respondent to refuse to answer the questions or to answer incorrectly, either on purpose or because of misunderstanding. The first condition leads to the problem of item non-response and the latter produces measurement error (e.g. Churchill, 1999). In this study, questionnaires from previous studies, the feedback from the exploratory study and pilot testing helped to improve the clarity of the questions.

e) Question Sequence

It is generally recommended to use simple, interesting, and non-threatening questions to begin a questionnaire (Churchill, 1999; Malhotra, 1996; Parasuraman, 1991). This is because once the respondents have some difficulties in answering them, find them uninteresting, or find them suspicious or threatening in any way; they may refuse to complete the remainder of the questionnaire. The

questionnaire designed for this study started with simple questions related to the company profile and background of relationships with one selected TPL provider.

Secondly, as suggested by several authors, questions securing basic information were presented first and those seeking classification information, last (Churchill, 1999; Parasuraman, 1991). Basic information refers to the subject of study and classification information refers to the data that is collected to classify respondents in order to extract more information about the phenomenon of interest. Therefore, the four parts of the questionnaire started with the company's profile followed by logistics service quality questions, relationship quality and finally the respondent's profile.

Finally, it is considered useful to divide the questionnaire into several logical parts. Skipping from topic to topic in a random fashion may confuse respondents; break their train of thought, and cause errors in the data (Malhotra, 1996; Parasuraman, 1991). In this study, the sequence of questions on logistics service quality were presented as according to the previous study (Mentzer et al, 2001) in order to assist the reliability of results on the generalisability of the LSQ model in a different context. Thus, a total number of 32 items in LSQ were arranged according to each of the nine constructs (refer to Table 5.3 and 5.4 for constructs and items). However, 34 questions that represented the relationship quality items were randomly scattered so that no respondent should have been able to detect which items were associated with which factors (Jap, 2001; Lages et al, 2005). This is important to minimise response bias and reduce the potential of halo effects (Churchill, 1999; Kerlinger, 1986).

f) Physical Characteristics of the Questionnaire

The physical characteristics of a questionnaire are crucial, in that they may affect (1) the accuracy of the replies obtained, (2) the way respondents give their

responses, (3) the ease of processing the responses received, and (4) respondents' acceptance of the questionnaire (Churchill, 1999; Mayer and Piper, 1982). In this study, in order to secure respondents' acceptance of the questionnaire, good-quality coloured paper was used to print the questionnaires. Lilac was chosen to represent the university corporate colour. By using the university's headed paper, a cover letter was attached to every questionnaire. It served to introduce the study and to convince the respondents to co-operate. The cover letter went through several review process involving several experts (see Section 5.2.6). In order to stimulate the response rate, permission was obtained from the Chartered Institute of Logistics and Transport (CILT), UK to include their logo in the cover letter and printed at the bottom right of the cover letter indicating their support towards the significance of the study.

To facilitate handling and control, this study used a booklet A-4 sized style of questionnaire by using the A-3 sized paper folded into two. Although smaller questionnaires (smaller than A-4 sized) are better in terms of appearance in that they are easier to complete and carry than the larger ones, the fact that the questions would look crowded led to the decision of using A-4.

5.2.4.2 The Format of Attitude Measurement

While self-report techniques for attitude measurement are used most widely in marketing research, researchers use different types of response scales (Churchill, 1999). This study used itemized rating scale as opposed to graphic and comparative rating scale. Itemized rating scale is a measurement scale that has numbers or brief descriptions associated with each category and the categories are ordered in terms of scale position (Malhotra, 1996). The itemised rating scale is distinguished by the fact that the rater must select from this limited number of categories (Churchill, 1999). Among the three types of unidimensional scaling methods (Thurstone or Equal Appearing Interval scaling; Likert or Summative

scaling, Guttman or Cumulative scaling), Likert scale was selected. This is due to the decision to use the pre-existing scale (LSQ). Likert scaling implies a self-reported technique for attitude measurement in which the respondents are asked to indicate their degree of agreement or disagreement with each of a series of statements (Malhotra, 1996; Churchill, 1999). It is one of the most widely used attitude scaling techniques in marketing research (Churchill, 1999; DeVellis, 1991). It is particularly useful as it allows respondents to express the intensity of their feelings (Churchill, 1999; DeVellis, 1991; Likert, 1932). The simplicity of its construction, administration and understanding of using the scale makes it regarded as most suitable for a mail survey (Malhotra, 1996).

The specific format of the Likert scale used in this study was characterised by (a) seven response options (b) an odd number of response options, (c) a forced choice of response options, and (d) positive and negative item formulations.

The following explains the choice for the Likert scale, followed by the reasons underlying the specific format of the scale.

(a) Number of scale categories

Traditional guidelines suggest that the appropriate number of categories should be seven plus or minus two, i.e. between five and nine (Malhotra, 1996; Parasuraman, 1991). According to Churchill and Peter (1984), empirically, there exists a positive relationship between the number of scale points and scale reliability (Churchill and Peter, 1984) where the larger number of scale points leads to larger variances, resulting in increased reliability (DeVellis, 1991; Nunnally, 1978). In a larger number of scale points, the respondents can finely discriminate each response category (Malhotra, 1996; Parasuraman, 1991; Churchill and Peter, 1984), which in turn results in increased reliability. Hence, this study used a seven-point Likert scale except for satisfaction items that used a five-point Likert scale. This is because satisfaction items consist of items that

were taken directly from the original LSQ (Mentzer et al, 2001). Thus, it was important to keep the scale identical so that a direct comparison of the outcome could be made.

Secondly, the way the data is analysed also influences the number of categories. It is generally accepted that if the data is going to be analysed using sophisticated statistical techniques, seven or more categories are required (Malhotra, 1996). This is because the number of scale categories influences the size of correlation coefficient, which is a common measure of relationship between variables. The correlation coefficient decreases with a reduction in the number of scale categories. This in turn, affects the statistical analysis based on correlation coefficient (Malhotra, 1996; Givon and Shapira, 1984). As this study will employ structural equation modelling (which is an advanced statistical technique) for the analysis, all items except for satisfaction items (95.5 percent of total number of items) used the seven-point Likert scale. Mentzer et al (2001; 1999) recognise that the five-point Likert scale implemented in their studies is possibly one of the limitations of the LSQ scale, which led to the attenuation of the instrument.

(b) Odd versus Even Number of Categories

This research opted for an odd number of response categories. With an odd number of categories, the middle scale position is generally designated as neutral or impartial (Malhotra, 1996). According to Malhotra (1996), the Likert scale is a balanced rating scale with an odd number of categories and a neutral point. If at least some of the respondents have neutral responses, these respondents should be given the opportunity to express their neutrality (Malhotra, 1996; DeVellis, 1991). Since it is expected that some respondents might feel neutral about the statements in the questionnaire, this study chose to include a neutral response position.

(c) *Forced versus non-forced choice of response options*

A forced rating scale is defined as “a scale that forces respondents to express an opinion because a “no opinion” or “no knowledge” option is not provided (Malhotra, 1996). In this situation, respondents who have no opinion may choose the middle scale position. In such cases where a large proportion of respondents do not have opinions, marking the middle position will distort measures of central tendency and variance. Thus, including the “no opinion” category might improve the accuracy of the data (Malhotra, 1996). Since it is expected that the respondents would have an opinion about the topic under investigation and that a forced scale discloses the largest amount of information (Malhotra, 1996), a forced choice of response option was chosen for this study.

(d) *Positive versus negative formulations*

It is generally recognised that alternating between positively and negatively worded items is good practice in order to reduce potential halo-effects (e.g. De Vellis, 1991). Negatively worded items are items that represent the possibility of the construct absence and positively worded items represent its presence. The intention to include both positively and negatively worded items within the same scale is to avoid an acquiescence, affirmation, or agreement bias. However, some authors find that negatively worded items are associated with some problems such as confusion of the respondents, leading to a higher standard deviation, and lower Cronbach alpha. De Vellis (1991) argued that if the questions are written clearly, these problems could be avoided. In this study, the logistics service quality items were pre-determined by the original LSQ questionnaire (Mentzer et al, 2001), thus used positively worded items only, while the questions on relationship quality were designed to include both positive and negative worded items.

5.2.5 Sampling Frame Development

This study faced several constraints in identifying the current customers of TPL providers in this study. This includes the legal restrictions in using the current database of the Chartered Institute of Logistics and Transport (CILT), UK. However, several ways were identified for developing the database for the study. Consequently, the sample frame was derived from two main sources:

5.2.5.1 The Third Party Logistics (TPL) providers' websites

It was determined that most TPL providers provide a list of their major clients on their websites. Consequently, a total of 50 major TPL providers' websites as listed in the Distribution Business magazine (June 2002) and Distribution magazine (April 2003) were reviewed in order to gather a list of TPL customers. As a result, a total of 683 TPL customer firms were gathered with no indication that they were owned to a UK or a foreign company. Most of the companies listed on these websites do not provide sufficient information in terms of full name identity, addresses or contact person. Since the total number of companies was considered insufficient, another resource was determined.

5.2.5.2 The Institute of Logistics and Transport (ILT) Members' Directory 2000

The Institute of Logistics (ILT) Member's Directory 2000 proved to be the best resource available for the study to support the above list. This is due to legal (data protection) restrictions in using the current database of the members. The Directory provides the members' names, title position, company's name, and member's region as well as membership codes. To start with, a screening process was carried out on a total of approximately 22 500 members from the directory. The overseas, student, academic and TPL providers' members were deleted from the list. Then, the title positions of these members were reviewed by choosing only the logistics-related title positions. The list includes members who came from the same company. In order to avoid any unnecessary influence in the

results, only one member was selected to represent one company. The priority was given to the highest level of responsibility held in the logistics-related position.

The potential respondents were gathered from both sources. Those companies, which appeared more than once, were deleted. Finally, a total of 999 companies were gathered from the ILT Members' Directory 2000 and 264 from the TPL providers' websites. The list of names available in the directory allowed the researcher to correspond with the respondents personally. However, this was not possible for those respondents who were gathered from the TPL websites because of the time restrictions in searching for the personalized information.

The next stage was to search for the information on each company for mailing purposes. It was decided that the database available in FAME was the best database available to generate information of each company. FAME provides the contact addresses, websites, telephone numbers; and it also contains a brief description of the company's business activities and the Standard Industrial Classification (SIC) Codes. The exhaustive process of screening and developing the sample frame led to a final number of 1263 companies generated for the study.

5.2.6 Survey Pre-testing

It is generally accepted that data collection should never begin without an adequate pre-test of the content and physical appearance of items (Dillman, 2000; Malhotra, 1996; Churchill, 1999). Pre-testing refers to testing the questionnaire on a small sample of respondents for the purpose of improving the questionnaire by identifying and eliminating potential problems (Malhotra, 1996). This section illustrates how the items were tested.

A mixture of experts reviewed the scale instrument to ensure the content validity. They consisted of 4 academics, a logistics consultant and a TPL customer. These people were chosen because the academics were well versed with the area of research, the consultant had an experience of conducting thirteen annual surveys on the TPL providers' customers, and the customer had twelve years' experience dealing with several TPL providers. Each of the experts was sent a questionnaire and a cover letter, in which they were asked to freely comment on any aspect of the questionnaire such as the relevance of the questions, understanding of the instructions and questions, the suitability of the terms used, the sequence of the questions, the length and layout of the questionnaire and provide any other suggestions, which they think may improve the questionnaire.

The instrument was then pre-tested using a random sample of 50 firms. Six usable questionnaires were obtained. The findings from the qualitative fieldwork and the pilot test of this study suggested several changes. First, in order to improve the LSQ scale, two constructs (information quality and ordering procedures) with only two items needed to be expanded. Particularly with the information quality construct, it was found that the concept was not applicable because for the managers of a TPL customer firm, there was no catalogue information (refer to Table 5.2 for the original items). Mentzer et al (2001; 1999) argued that the information that is contained in the service provider's catalogue should be available and of adequate quality in order to make decisions. The results from the exploratory study reflected that the logistics practice heavily involves inter-organizational information systems such as the Internet and Electronic Data Interchange (EDI) in exchanging information due to the complexity of logistics operations and inter-organisational relationships. Thus, the quality of information should be evaluated in a more rigorous manner. The information quality measures, developed by Mohr and Spekman (1994) were found to be appropriate in this study and were therefore adopted (see Table 5.2).

The second two-item construct was ordering procedures. In Mentzer et al's (1999) study, ordering procedures refer to the efficiency and effectiveness of the order placement procedures. In a cross-sectoral context, the situation is more complex and ordering procedures measures used by Mentzer et al (1999) do not fully reflect the ordering procedures in certain industries. Instead, measures such as effectiveness, ease, simplicity, flexibility of the ordering procedures as well as time and effort taken are deemed to be important (Dabholkar, 1994). Thus, a wider concept of ordering procedures was used in this study (see Table 5.2).

Besides the modification of these two-item scales, the results from the exploratory and pilot study found that an exact application of the scale would generate some complications in the responses and analysis of the results due to the specific type of measures that were developed within the DLA organization. The LSQ scale was also confined specifically to inbound movement of products/materials. It was expected that the complex procedures of the logistics operations among industries and the specific type of services used by customers would also contribute to the problems.

Table 5.2: Item Changes in Information Quality and Ordering Procedures

LSQ US (Mentzer, Flint and Hult, 2001)	LSQ UK (Current Study)
<p>Information Quality</p> <p>Customers perceive the availability and adequacy of information on products that is contained in the catalogues.</p> <p><i>Operational measures:</i></p> <p>Catalogue information is available</p> <p>Catalogue information is adequate</p>	<p>Quality of information exchange includes such aspects of accuracy, timeliness, adequacy and credibility.</p> <p>The information communicated by this TPL provider is timely.</p> <p>The information communicated by this TPL provider is accurate.</p> <p>The information communicated by this TPL provider is adequate.</p> <p>The information communicated by this TPL provider is complete.</p> <p>The information communicated by this TPL provider is credible.</p>
<p>Ordering Procedure</p> <p>Refers to the efficiency and effectiveness of the procedures followed by the supplier.</p> <p><i>Operational measures:</i></p> <p>Requisitioning procedures are effective</p> <p>Requisitioning procedures are easy to use</p>	<p>Customers concern not only efficiency and effectiveness of the procedures, but it includes time and effort in placing the order, the complexity of the procedures, the accuracy of the order, the reliability of the ordering system and the flexibility in any event of changing the order.</p> <p>Requisitioning procedures are effective</p> <p>Requisitioning procedures are easy to use</p> <p>Requisitioning procedures are simple.</p> <p>Requisitioning procedures do not take much effort.</p> <p>Requisitioning procedures do not take much time.</p> <p>Requisitioning procedures are flexible.</p>

As proposed by Mentzer et al (1999), the number of scale responses was increased from 5-point Likert “agree/disagree” scale to 7-point scale to allow wider discrimination of the responses (with exception to satisfaction). As mentioned in Section 5.2.4.2 (a), a larger number of scale points lead to larger variances, resulting in increased reliability. Due to the expected problems of filling in the questionnaire, the scales of “don’t know” and “not applicable” as used by Mentzer et al (1999) were not incorporated in the questionnaire. It is

argued that excluding these options discloses the largest amount of information (Malhotra, 1996). This has been highlighted in Section 5.2.4.2 (c). Based upon the literature review, exploratory study and pre-testing of the questionnaires, the pool of items presented in Table 5.3 and 5.4 was finalised.

Table 5.3: List of Constructs and Items for Logistics Service Quality

Construct	Item	Statement/Question
Order Release Quantities	1	Requisition quantities are not challenged.
	2	Difficulties never occur due to maximum release quantities
	3	Difficulties never occur due to minimum release quantities
Order Accuracy	1	Shipments rarely contain the wrong items
	2	Shipments rarely contain an incorrect quantity
	3	Shipments rarely contain substituted items
Order Quality	1	Substituted items sent by TPL provider work fine
	2	Products ordered from/via the TPL provider meet technical requirements
	3	Equipment and/or parts are rarely non-conforming
Personnel Contact Quality	1	The designated key contact personnel make an effort to understand the situation
	2	Problems are resolved by the designated key contact personnel
	3	The knowledge/experience of the key contact personnel is adequate
Information Quality	1	The information communicated by this TPL provider is timely
	2	The information communicated by this TPL provider is accurate
	3	The information communicated by this TPL provider is adequate
	4	The information communicated by this TPL provider is complete
	5	The information communicated by this TPL provider is credible
Ordering Procedures	1	Requisitioning procedures are effective
	2	Requisitioning procedures are easy to use
	3	Requisitioning procedures are effective
	4	Requisitioning procedures are effective
	5	Requisitioning procedures are effective
	6	Requisitioning procedures are effective
Order condition	1	Products/materials received from TPL depots/warehouses are undamaged
	2	Products/materials received direct from the suppliers are undamaged
	3	Damage rarely occurs as a result of the transport mode or carrier
Order Discrepancy Handling	1	Correction of delivered quality discrepancies is satisfactory
	2	The report of discrepancy process is adequate
	3	Response to quality discrepancy reports is satisfactory
Timeliness	1	Deliveries arrive on the date promised
	2	Time between placing requisition ad receiving delivery is short
	3	The amount of time a requisition is on back-order is short
Satisfaction	1	What is your general impression of the service that your main TPL provider provides? (1 = Terrible to 5 = Excellent)
	2	Which word(s) best describes your feelings toward your MAIN TPL provider? (1 = Very Dissatisfied to 5 = Very Satisfied)
	3	How satisfied are you with the services provided by your main TPL provider? (1 = Very Dissatisfied to 5 = Very Satisfied)

- Notes:
- 1) Satisfaction construct were measured on a five-point Likert scale (1= “strongly disagree”, 5= “strongly agree”) while all other constructs were measured on a seven-point Likert scale (1= “strongly disagree”, 7=”strongly agree”).
 - 2) Please refer to Table 6.1 for sources of items.

Table 5.4: List of Constructs and Items for Relationship Quality

Construct	Item	Statement/Question
Relationship Satisfaction	1	All in all, this TPL provider is very fair with us
	2	Overall, this TPL provider is a good company to do business with
	3	In general, we are pretty satisfied with our relationship with this TPL provider
	4	Overall, this TPL provider treats us very fairly
	5	All in all, our relationship with this TPL provider is very satisfactory
Trust	1	This TPL provider keeps promises it makes to our firm
	2	This TPL provider is not always honest with us
	3	We believe the information that this TPL provider provides us
	4	This TPL provider is genuinely concerned that our business succeeds
	5	When making important decisions, this TPL provider considers our welfare as well as its own
	6	We trust this TPL provider keeps our best interests in mind
	7	This TPL provider is trustworthy
	8	We find it necessary to be cautious with this TPL provider
Opportunism	1	This TPL provider exaggerates needs to get what they desire
	2	This TPL provider is not always sincere
	3	This TPL provider slightly alters facts to get what they want
	4	Good faith bargaining is not a hallmark of this TPL provider's negotiation style
	5	This TPL provider provides a completely truthful picture when negotiating
	6	This TPL provider breaches formal or informal agreements to their benefit
Affective Commitment	1	Even if we could, we would not drop this TPL provider because we like being associated with them
	2	We want to remain a customer of this TPL provider because we genuinely enjoy our relationship with them
	3	Our positive feelings towards this TPL provider are the major reason we continue working with them
Calculative Commitment	1	Staying with this TPL provider is a matter of necessity
	2	It would be too expensive to terminate our relationship with this TPL provider
	3	We continue our relationship with this TPL provider because we have no other viable options
Loyalty	1	We will not say anything to this TPL provider about mutual problems because they seem to go away by themselves.
	2	We disregard problems with this TPL provider because they just seem to work themselves out.
	3	Problems with this TPL provider will often fix themselves
	4	Sometimes we ignore problems with this TPL provider
Exit	1	Occasionally, we will think about ending the business relationship with this TPL provider.
	2	We are not likely to continue the business relationship with this TPL provider
	3	We will probably consider a replacement TPL provider in the near future
	4	We are looking at replacement TPL provider
	5	We will probably stop doing business with this TPL provider in the near future

- Notes:
- 1) All seven RQ constructs were measured on a seven-point Likert scale (1= “strongly disagree”, 7= “strongly agree”).
 - 2) Please refer to Table 6.1 for sources of items.

5.2.7 Mail Survey Implementation

This study employed the Tailored Design Method by Dillman (2000). According to Dillman (2000), there are five elements that have significantly improved response to mail surveys in most situations. The elements include (1) a respondent-friendly questionnaire, (2) up to five contacts with the respondents, (3) inclusion of stamped return envelopes, (4) personalised correspondence, and (5) a token financial incentive that is sent with the survey request. This study implemented all elements suggested by Dillman (2000) except for giving a token financial incentive to the respondents due to financial restrictions.

Consequently, the respondents were contacted via three waves of questionnaire mailings together with pre-notification letter and postcard reminder. The five compatible contacts were conducted according to the following procedures (Table 6.6 indicates the responses received from each mailing):

1. *Pre-notification Letter*

A brief pre-notice letter was sent to 1263 respondents, ten days prior the first mailing of the questionnaire, i.e. on the 3rd of November 2003. The main content of the letter indicated the arrival of a questionnaire of an important survey within a week's time and the appreciation for their response. As a result of the pre-notification letter, five respondents were deleted from the mailing list; leaving 1258 respondents remaining on the list. This was because those respondents did not want to participate in the study or the company no longer employed the employee.

2. *First-wave mailing*

The first wave of mailing was sent out on the 11th November 2003. In this mailing, the questionnaires were sent to a total of 1258 logistics-related managers. The questionnaire set consisted of a questionnaire, a stamped return envelope, and a cover letter that explained the importance of the study and response as well

as a guarantee of the confidentiality of the results. As shown in Table 5.5 below, the responses received from the first wave mailing were 104.

3. *Postcard reminder*

On the 21st of November, postcard reminders were mailed to the respondents. It was exactly ten days after the first wave of questionnaires were mailed. The main content of the postcard was the expression of appreciation for responding to the questionnaire and the request from those who have not responded to return the questionnaire as soon as possible. A total of 83 responses were received from this mailing, which added up to a total of 187 responses.

4. *Second-wave mailing*

Two weeks after the postcard reminders were sent, on 7th of December 2003, another set of questionnaires were mailed. In this mailing, a questionnaire was sent again along with a cover letter. The cover letter urged the non-respondents to return the questionnaire as soon as possible. Accordingly, 56 responses were received, which brought a total of 243 responses.

5. *Third-wave mailing*

The third wave of the questionnaires was mailed straight away after a long Christmas and New Year holiday, which was on the 5th of January 2004. Dillman (2000) suggests that this final contact should be carried out by telephone or special delivery (first class) mail within a week or so after the fourth contact. He emphasises that past research shows that a “special” contact of these types improves overall response to mail surveys. However, due to time and financial restrictions, the third wave of the questionnaires was sent using second-class mail. As in the previous questionnaire mailings, the letter consisted of a questionnaire and a cover letter. The cover letter emphasised the importance of their participation in the study. The third wave mailing produced another 93 responses that led to a total of 336 responses.

Table 5.5: Total Questionnaires Sent out and Responses from each Mailing

	Total Responses	Percentage of Total Responses
Pre-notification Letter	5 (unusable)	
First-wave mailing	101	8.0%
Postcard Reminder	79	6.3%
Second-wave mailing	52	4.1%
Third-wave mailing	92	7.3%
Total responses received (excluding response from pre-notification)	324	25.7%

Table 5.6: Response Rates

Response rates	Total
Original sample	1263
Revised sample	1258
Total responses	324 (25.7%)
Wrongly delivered	73
Unusable/incomplete responses	27
Non-customer of TPL	41
Total unusable responses	141
Adjusted sample size	1117
Usable responses	183
Effective response rate	16.4%

Note: Effective response rate is calculated based on the adjusted sample size

Table 5.6 describes the response rates as well as its categories. A total of 324 (25.7 percent) of the managers responded. However, usable responses came from 183 TPL customers leading to an effective response rate of 16.4 percent. The unusable responses came from wrongly delivered, incomplete responses and non-customers. The contents of the cover letter indicated that the non-customers should also respond to the questionnaires even though the main interest of the study is only on the TPL customers. The purpose was to get an approximate proportion of TPL customers in the logistics market. It is important to note that the effective response rate was based on an adjusted sample size. From this table, it can be seen that there was 22.5 percent of wrongly delivered questionnaire. It had been expected that the study would

receive such a rate of wrongly delivered responses due to the outcome of using a directory that was published four years ago.

Boyson et al (1999) report that studies on TPL typically have less than 250 responses. Other recent TPL studies, such as Sinkovics and Roath (2004) and Knemeyer et al (2003) have nine percent and eight percent respectively. In fact, Sinkovics and Roath (2004) highlight that most of the published studies on TPL have similar low response rates. Bartlett et al (2001) establish a minimum return sample size of 370 for a population of 10 000 at a 0.05 margin of error. Thus, this study produced a reasonable response rate. In order to support the analysis and significance of the findings, several methods were used to assess the accuracy of the survey results. The discussion is provided in Section 6.2 and 6.3 in Chapter Six.

5.3 Concluding remarks

This chapter describes the research design of the study with regard to the use of mail questionnaire as the main data collection method. It explains the procedures of generating the items, which include the literature review, exploratory study and pre-testing followed by the process of developing the survey instrument. It also demonstrates the process of developing the sample for the study, in which the sources were from the TPL providers' websites and ILT Members' Directory 2000 before highlighting the use of Total Design Method (Dillman, 2000) in mailing the questionnaires.

In conclusion, this chapter summarises various methodological choices and their rationales related to the data collection method, item generation, questionnaire development, and survey design and research scope. Following the research methodology, the empirical results particularly the descriptive analyses are presented in the following chapter.

Chapter 6

EMPIRICAL ANALYSIS AND RESULTS – DATA EXAMINATION AND DESCRIPTION

6.1 Introduction

Following the research methodology chapter, the empirical results are presented in Chapters Six, Seven and Eight. This chapter deals with the preliminary examination and descriptive analysis of the data sets while Chapters Seven and Eight are concerned with the empirical analyses of LSQ and Relationship Quality (RQ) models using structural equation modelling technique respectively.

This chapter presents the preliminary evaluation of the raw data sets before revealing the descriptive analysis of the data. Specifically, Section 6.2 examines the multivariate normality and outliers and Section 6.3 provides the test for non-response bias for the study.

6.2 Data Examination

Prior to analysis, examination of data is crucial for the researcher to gain a basic understanding of the data and relationships between variables. Examination of data is a time-consuming but necessary step so that the data leads to better prediction and more accurate assessment of dimensionality (Hair et al, 1998; Tabachnick and Fidell, 2001; Baumgartner and Homburg, 1996). This section addresses the evaluation of accuracy of input, missing data, multivariate normality and absence of outliers of the data in this study.

6.2.1 Accuracy of input

Data were collected from logistics-related managers of TPL customer firms throughout the UK. In Chapter Five, the procedure used for collecting the data

was explained. The preliminary results of this study convey some general characteristics of the study samples that are presented in Tables 6.1, 6.2 and Figure 6.1.

6.2.1.1 Profile of the respondents

Table 6.1: Distribution of Survey Respondents among Industrial Sectors

Industry	TPL customers	
	Frequency	Percentage
Food, Beverages and Tobacco	50	27.3
Computer and related activities, Electronic, Electrical Equipment and Machinery	22	12.0
Chemical, Oil and pharmaceutical Products	22	12.0
Automotive industry and Aerospace	17	9.3
Paper, publishing and printing	11	6.0
Non-electronic consumer products	10	5.5
Rubber, Plastics, Non-metal minerals, metal and fabricated products	9	4.9
Personal Care and Household Product	7	3.8
Constructions	5	2.7
Health and Social Work	4	2.2
Post & Telecommunications	3	1.6
National/Local Government	1	0.5
General/Other Business Activities	22	12.0
Total	183	100

Table 6.2: Profile of the Respondents

Area of responsibility	Freq.	Percentage	Level of responsibility	Freq.	Percentage
Logistics/Distribution services	146	65.2	Chief Executive/Owner/ Partner	1	0.4
Logistics Strategy/Planning	31	13.8	Director/Board Member	55	24.6
Warehousing/Storage	6	4.5	Manager	154	68.8
Purchasing/Procurement	9	4.0	Supervisor/Junior/First Line Manager	7	3.1
Stock/Inventory Management	4	1.8	Other	2	0.9
Sales and Marketing	2	0.9	Non-response	5	2.2
General	14	6.3			
Other	2	0.9			
Non-response	5	2.2			
Total	224	100.0	Total	224	100

Note: The total number of respondents (n=224) is inclusive of both customers (n=183) and non-customers (n=41).

The survey was conducted across the industrial sector with 81.7 percent of the respondents representing TPL customers. Table 6.1 illustrates the breakdown of the industrial sectors in the study and Table 6.2 demonstrates the profile of the respondents. It indicates that the majority of the respondents were managers (68.8 percent) followed by the Director/Board Member (24.6 percent). Just over 65 percent and 13 percent of the respondents were from the Logistics/Distribution services and Logistics Strategy/Planning respectively. Most respondents (70.5 percent) had more than six years working experience in their current position as well as having more than six years experience working with TPL providers (62.1 percent). This provides assurance for the reliability of the information obtained, given that the respondents would have familiarity with the subject matter. More than half (56.3 percent) of the companies that responded were manufacturers followed by wholesalers/distributors (27.7 percent), retailers (9.8 percent) and others (6.2 percent). As for the industry classification, respondents came from a variety of sectors with 25.9 percent from the food, beverages and tobacco industry.

6.2.1.2 Length of relationship

There was approximately an equal number of respondents who had relationships of more than six years and less than or equal to five years (50.6 percent and 49.4 percent) with their TPL providers. Of these, 32.1 percent of the manufacturers, 32.0 percent of the wholesalers/distributors and 42.1 percent of the retailers had between a six and ten year relationship with their TPL providers. These results support the trend towards the development of longer-term partnerships as they illustrate that most respondents already had between a five and ten year relationship with their TPL providers (34.1 percent) (see Table 6.3).

Table 6.3: Length of Relationships with the TPL Provider

Length of relationship with TPL provider	Manufacturers	Wholesalers/ Distributors	Retailers	Others	All resp.
Less than 3 years	24.5%	22.0%	31.6%	0.0%	23.6%
Between 4 and 5 years	27.4%	24.0%	15.8%	42.8%	25.8%
Between 6 and 10 years	32.1%	32.0%	42.1%	57.1%	34.1%
More than 10 years	16.0%	22.0%	10.5%	0.0%	16.5%
Total	100%	100%	100%	100%	100%

6.2.1.3 Length and types of logistics contract

Compared with a series of surveys by PE Consulting in 1990, 1993 and 1996, the proportion of companies with formal logistics contracts shows a dramatic increase of 42 percent (from 20 percent to 62 percent) since 1996 (P-E Consulting, 1996). Of these, 43.2 percent of the respondents were implementing an open book contract, 25.7 percent closed book, 9.8 percent claimed that both types of contract were applicable in their business relationships and 4.4 percent indicated having another type of working logistics arrangement. The contract length of less than a year, which had increased from 30 percent in 1990 to 40 percent in 1996 (PE Consulting, 1996), has also dropped drastically to 13.7 percent. The decreasing trend of those with a contract length of between two and five years previously, rose from 32 percent in 1996 (PE Consulting, 1996) to 56.8 percent in this study. These data support the importance of investigating the relationships between TPL service providers and their customers.

6.2.1.4 Logistics expenditure spent on TPL providers

As shown in Table 6.3, 36.8 percent of the retailers spent less than 20.0 percent of their logistics expenditure on TPL providers, whereas 38.3 percent of the manufacturers and 38.0 percent of the wholesalers/distributors spent between 21.0 and 50.0 percent of their logistics expenditure on TPL providers. Although from Table 6.3, it can be seen that most respondents (59.1 percent) spent less than 50.0 percent of their logistics expenditure on the TPL providers, the fact

that more than 76.4 percent of the respondents have more than four years relationship with their TPL provider is a good indication that the respondents are a representative sample for analysis.

Table 6.4: Logistics expenditure of the respondents

Logistics expenditure	Manufacturers	Wholesalers/ Distributors	Retailers	Others	All resp.
Less than 20 percent	15.9%	28.0%	36.8%	28.6%	21.9%
Between 21 and 50 percent	38.3%	38.0%	26.3%	42.8%	37.2%
Between 51 and 80 percent	33.6%	16.0%	21.1%	14.3%	26.8%
Between 81 and 100 percent	12.1%	18.0%	15.8%	14.3%	14.2%

6.2.1.5 Types of services outsourced

The results show that in line with the existing studies (AMR Research, 2000; 2001; PE Consulting, 1996), transportation (82.5 percent) and warehousing (53 percent) remain the main services used by the customers (see Figure 6.1), followed by information services and value added services. Most firms have been outsourcing the warehousing function to the same providers in order to reduce holding costs (AMR Research, 2001). This is because there has been a long tradition of firms contracting out freight transport operations (McKinnon, 1999). In the UK, the liberalisation of the road freight market over the past 30 years followed by the change in the managerial attitudes to contracting out in the 1980s and 1990s lead to the rising number of firms contracting-out their transport functions. Figure 6.1 displays the range of TPL services used by the customers.

6.2.1.6 Inbound and Outbound Movement of Products/Materials

With regard to the operational aspect of logistics services provided by TPL providers, just over a half of the respondents (52.2 percent) used TPL providers for their outbound movement of products. Although the use of inbound only logistics services was insignificant, almost a half (43.3 percent) of the respondents used TPL providers for both inbound and outbound movement of their

products/materials. Thus, the sample can be considered representative of both inbound and outbound logistics.

Figure 6.1: Types of Services Outsourced

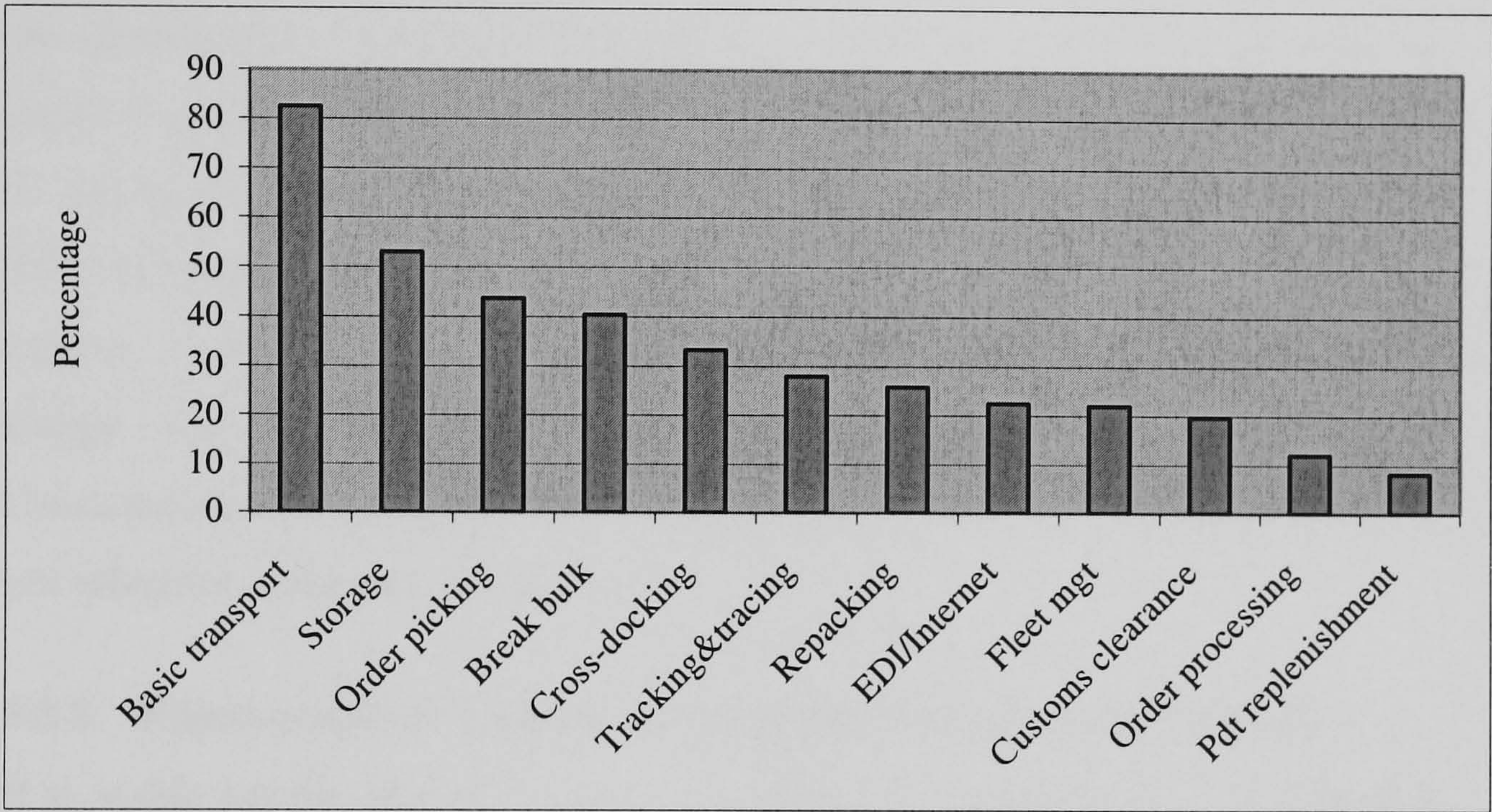


Table 6.5: The Movement of Products/Materials

Products/Materials movement	Manufacturers	Wholesalers/ Distributors	Retailers	Others	All resp.
Inbound only	3.8%	2.0%	15.8%	0.0%	4.4%
Outbound only	49.5%	59.2%	63.2%	14.3%	52.2%
Both inbound and outbound	46.7%	38.8%	21.1%	85.7%	43.3%
Total	100%	100%	100%	100%	100%

6.2.2 Data Screening

The accuracy of the input was conducted on the entire data by checking whether coding errors appeared in the raw data sets. In those cases where coding errors occurred, the original questionnaire was consulted in order to correct these errors (Baumgartner and Homburg, 1996; Churchill, 1999).

Throughout the process of verifying the accuracy of the data, this study found several questions were associated with missing data. Most of the missing data came from Section Three of the questionnaire, relating to logistics service quality section, with 15.83 percent of missing data. Other sections involved less than two percent of the missing data. The way missing data was dealt with; especially the missing data in Section Three of the questionnaire is fully explained and justified in Section 7.3.2.2 in Chapter Seven. The missing data in other sections of the questionnaire were estimated by inserting mean values. According to Tabachnick and Fidell (2001), the mean is the best estimate of the value of a variable. This is because, as a whole, the mean for the distribution does not change and the researcher is not required to guess at missing values. Consequently, these missing values are not considered as troublesome and would not affect the results and analysis.

6.2.3 Examination of multivariate normality and absence of outliers

It is widely known that SEM generally requires the assumption of multivariate normality (e.g. Tabachnick and Fidell, 2001). This is crucial as it often affects the power of statistical analysis, which concerns the capability of a test in distinguishing between good and bad models (McQuitty, 2004). A lack of multivariate normality is also troublesome because it inflates the chi-square statistic, creates upward bias in critical values for determining coefficient significance, and affects standard errors (e.g. Baumgartner and Homburg, 1996). To determine the degree of non-normally distributed data in this study, all measured variables were examined for univariate and multivariate outliers, skewness and kurtosis using AMOS 5.0, the SEM package used to analyse the data in this study.

6.2.3.1 Examination of outliers

Outliers are typical, infrequent observations. They have such an extreme value on one variable (a univariate outlier) or such a strange combination of scores on two or more variables (multivariate outlier) that they distort statistics in which they affect the value of the regression coefficient more than any other non-outliers.

There are four ways in which outliers may occur. The first is due to the data being entered incorrectly. Second, the failure in specifying the codes of the missing values, leading the missing values to be read as real data. Third is that the outlier is not part of the population which is intended as a sample and finally, an outlier appears because of the extreme values in the variable that affects the normal distribution (Tabachnick and Fidell, 2001). Several steps can be conducted to reduce the influence of outliers (e.g. Tabachnick and Fidell, 2001). The procedures used to identify the outliers in this study are Mahalanobis distance, which is available in AMOS 5.0 software package and the standardised z scores in SPSS EXPLORE. Mahalanobis distance method was used to detect outliers in all variables of relationship quality model. However, in LSQ model, z score was used because tests for normality and outliers function in AMOS 5.0 is not workable with the presence of missing data. Consequently, the values cannot be computed.

Mahalanobis distance is the distance of a case from the centroid of the remaining cases where the centroid is the point created at the intersection of the means of all the variables (Tabachnick and Fidell, 2001). By using Mahalanobis distance with $p < .001$, only four cases were identified as multivariate outliers. Since these outliers only account for about 2 percent of the total respondents, the proportion did not distort the results.

6.2.3.2 Examination of Normality

Normality of variables can be assessed using statistical or graphical methods. There are two components of normality, i.e. skewness and kurtosis. Skewness is about the symmetry of the distribution while kurtosis refers to the peakedness of a distribution. With normal distribution, both skewness and kurtosis have zero values (Tabachnick and Fidell, 2001).

In this study, both skewness and kurtosis were examined using AMOS 5.0. Values of 2.32 or less and 1.96 or less mean there is non-significant kurtosis and skewness at 10 percent and 5 percent respectively. For the relationship quality model, none of the critical values of skewness exceeded the 1.96 level, indicating no significant skewed variables. However, there were five values of kurtosis that exceeded the 2.32 level, reflecting that there was significant kurtosis at 10 percent significance level, which means significant non-normality. The five items affected were item 3 in exit (EX3), item 7 in trust (T7) and all three items in satisfaction (SA1, SA2 and SA3) (please refer to Table 6.4 for list and constructs and items for RQ). However, similar tests using AMOS 5.0 were not possible for the variables in LSQ model due to the presence of missing data. Hence the tests for skewness and kurtosis for LSQ variables were conducted using SPSS FREQUENCIES. The results show that the values of skewness ranged from .04 to 1.63 while the kurtosis was from .09 to 1.60 except for item 3 in order accuracy (OA3, please refer to Table 5.3 for list of constructs and items for LSQ), which had quite a high kurtosis value of 2.37. The results suggest that in general, the scale items were not highly skewed and kurtotic, which would give serious impact to the results.

However, according to Tabachnick and Fidell (2001), even if significant skewness or kurtotic is found, transformation or the deletion of the data such as list wise deletion (LD) and pair wise deletion (PD) can be attempted, even though some

variables are not expected to be normally distributed in the population after the attempts. They further suggest that researchers should turn to choose an estimation method that can address the non-normality problems as a solution.

6.2.4 Solution for Outliers and Non-Normality problems

The problems of non-normality of the data elaborated in Section 6.2.3.2 were considered as minor and unlikely to have a large impact on the analysis. However, a procedure was undertaken to reduce the impact. As indicated in the previous section, choosing a method of estimation is one of the methods of addressing the non-normality problem. This study uses this method to reduce the impact of non-normality on the analysis. This is because, in a Monte Carlo simulation study that examined the Full Information Maximum-Likelihood (FIML) estimation in structural equation models with non-normal indicator variables, Enders (2001) found that FIML bias was relatively unaffected by the non-normal data associated with missing data and thus appeared to be the method of choice. It is believed that this method is the best method to deal with the non-normality problem compared to the transformation and deletion of the cases due to the limited sample size in this study. It is important to note that this study uses the FIML method of estimation available in AMOS 5.0 software package. Further explanation of the FIML method as well as its advantages in the context of this study will be explained in Section 7.3.2.2 in the following chapter.

6.3 Test for Non-Response Bias

One of the criticisms of a mail survey is non-response bias. This is important because one should never generalise results to the entire population without estimating the bias due to the fact that the response from persons who have responded might differ from those who have not (Lambert and Harrington, 1990; Armstrong and Overton, 1977).

There are several ways in which the bias can be estimated, namely comparisons values for the population, subjective estimates, and extrapolation (Armstrong and Overton, 1977). The non-response bias in this study was estimated based on the extrapolation method. In this method, it is assumed that the responses from persons who answered in a later wave are likely to be similar to non-respondents. Then, the responses of the early respondents (first wave) are compared with the late respondents (last wave), based on the respective scores of each item of the study.

In order to test for the existence of non-response bias in this study, a parametric test (t-test) was used to evaluate the differences in proportions of the two samples. The last 50 respondents in the third wave of the questionnaire mailings were considered to be close to the non-respondents. They were compared with the first 50 respondents in the first wave group of respondents. They were designated as early and late respondents. The answers for relationship quality and logistics service quality sections from both groups of respondents were tested.

From Table 6.6, the results show that there was no difference in the opinion of relationship quality items between the early and late respondents at 5 percent significance level. This was indicated by a probability value (significance level) above 0.05 that suggests a high degree of similarity of opinion between groups on those factors. Thus, it can be concluded that there is no evidence of difference in the views of relationship quality between the early and late respondents.

The same results appear in the logistics service quality items (see Table 6.7). It exhibits that, at 5 percent significance level, there is no difference in the opinion between the early and late respondents except for item 1 and item 2 of order release quantities construct (ORQ1 and ORQ2) that shows p less than .05. However, since order release quantities construct are multiple scale items, item ORQ3 may represent both items ORQ1 and ORQ2 in indicating the similarity of

views between early and late respondents. Thus, it can be concluded that there is no evidence of difference in the views of logistics service quality between the early and late respondents suggesting that there is no response bias in the views of logistics service quality.

Table 6.6: Test for Non-Response Bias on Relationship Quality Items

Measures	*Total	**Early respondent	***Late respondent	ANOVA	
				F statistics	Significance level
Relationship satisfaction					
TPL very fair with customers	5.16	5.14	5.18	0.020	0.888
TPL is a good company to work with	5.17	5.06	5.28	0.509	0.477
Customer satisfied with relationship	5.01	5.00	5.02	0.004	0.952
TPL treats customer very fairly	5.00	4.98	5.02	0.018	0.894
Relationship with TPL is very satisfactory	4.94	4.94	4.94	0.000	1.000
Trust					
TPL keeps promise	4.99	4.90	5.08	0.348	0.557
TPL not honest	2.90	2.98	2.82	0.229	0.634
Customer believe the information that TPL provides	5.06	5.08	5.04	0.020	0.887
TPL genuinely concerned in customers' success	5.00	4.96	5.04	0.074	0.786
TPL consider customers' welfare	4.45	4.44	4.46	0.004	0.947
TPL keeps best interests in mind	4.55	4.40	4.70	1.122	0.292
TPL is trustworthy	5.32	5.28	5.36	0.096	0.758
Need to be cautious with TPL	3.35	3.28	3.42	0.155	0.695
Perceived Opportunism					
TPL exaggerates needs	3.34	3.36	3.32	0.018	0.894
TPL not sincere	3.10	3.20	3.00	0.389	0.534
TPL alters facts	3.16	3.10	3.22	0.129	0.720
Good faith bargaining is not a hallmark of negotiation style	3.32	3.40	3.24	0.223	0.638
TPL provides a truth picture when negotiating	4.53	4.56	4.50	0.050	0.824
TPL breaches agreement	2.39	2.42	2.36	0.037	0.847
Affective Commitment					
Customer would not drop TPL	3.23	3.26	3.20	0.032	0.857
Customer enjoys relationship	4.49	4.54	4.44	0.094	0.760

Table 6.6: Test for Non-Response Bias on Relationship Quality Items (cont.)

Customer has positive feelings towards TPL	4.00	4.10	3.90	0.443	0.507
Calculative Commitment					
Staying with TPL is a necessity	2.92	3.14	2.70	1.558	0.215
Too expensive to terminate relationship with TPL	2.99	2.88	3.10	0.376	0.541
Customers continue relationship because no other viable option	2.63	2.74	2.52	0.378	0.540
Customer loyalty					
Customer will not say anything because they seem to go away by themselves	2.13	1.92	2.34	2.416	0.123
Customer disregards problems because they seem to work themselves out	2.12	2.06	2.18	0.210	0.648
Problems with TPL provider will fix themselves	2.85	2.86	2.84	0.005	0.946
Customer ignore problems with TPL	2.46	2.66	2.26	1.859	0.176

Notes: * Mean values of all respondents ** Mean values of the first 50 respondents in the first wave of mailings *** Mean values of the last 50 in the third wave of mailings.

Table 6.7: Test for Non-Response Bias on Logistics Service Quality Items

Measures	*Total	**Early respondents	***Late respondents	ANOVA	
				F statistics	Significance level
Order release quantities					
Requisition quantities are not challenged	4.57	4.17	4.95	4.754	0.033
No difficulties due to maximum release quantities	3.92	3.40	4.41	6.652	0.012
No difficulties due to minimum release quantities	4.14	3.80	4.46	3.244	0.076
Order accuracy					
Shipments contain wrong items	5.07	5.03	5.11	0.057	0.813
Shipments contain incorrect quantity	4.92	4.82	5.03	0.348	0.557
Shipments contain substituted items	5.64	5.56	5.71	0.151	0.699
Order quality					
Items sent by TPL provider fine	3.77	3.78	3.76	0.002	0.966
Products ordered meet technical requirements	4.70	4.44	5.00	1.600	0.211
Equipments rarely non-conforming	4.74	4.47	5.07	1.908	0.172
Personnel Contact Quality					
Personnel understands the situation	5.44	5.53	5.35	0.383	0.537

Table 6.7: Test for Non-Response Bias on Logistics Service Quality Items (cont.)

Personnel resolves problems	5.09	5.22	4.96	0.783	0.379
Knowledge/experience of personnel is adequate	5.18	5.41	4.94	2.212	0.140
Information quality					
Information is timely	4.91	4.82	5.00	0.324	0.571
Information is accurate	5.02	5.04	5.00	0.018	0.894
Information is adequate	4.92	4.96	4.88	0.062	0.803
Information is complete	4.90	4.84	4.96	0.149	0.700
Information is credible	5.17	5.06	5.29	0.635	0.428
Ordering procedures					
Requisitioning procedures are effective	5.47	5.29	5.69	1.893	0.173
Requisitioning procedures easy to use	5.42	5.34	5.51	0.348	0.557
Requisitioning procedures simple	5.37	5.27	5.49	0.521	0.473
Requisitioning procedures do not take much effort	5.21	5.07	5.37	0.857	0.357
Requisitioning procedures do not take much time	5.13	4.95	5.34	1.490	0.226
Requisitioning procedures flexible	4.97	4.66	5.34	4.112	0.046
Order Condition					
Products received from TPL depots undamaged	4.81	4.60	5.02	2.031	0.158
Products received from suppliers undamaged	4.80	4.61	4.98	1.697	0.196
Damage as a result of transport	4.50	4.34	4.67	0.879	0.351
Order Discrepancy Handling					
Correction of delivered discrepancies is satisfactory	4.81	4.74	4.89	0.245	0.622
Discrepancy process report is adequate	4.57	4.51	4.63	0.136	0.713
Response to discrepancy report is satisfactory	4.64	4.67	4.61	0.047	0.829
Timeliness					
Deliveries arrive on the date promised	5.20	5.33	5.09	0.615	0.435
Short delivery time	5.06	5.27	4.84	1.624	0.206
Requisition back-order time is short	5.10	4.94	5.23	0.757	0.387

Notes: * Mean values of all respondents ** Mean values of the first 50 respondents in the first wave of mailings *** Mean values of the last 50 in the third wave of mailings.

Finally, it appears that non-response bias poses no significant problem to this study.

6.4 Concluding remarks

This chapter presents the preliminary part of the empirical results, in which it gives a broad explanation of the data examination that includes the descriptive analysis of the characteristics of the respondents. It highlights the reliability of the data obtained based on the respondents' length of experiences dealing with TPL providers. A considerable amount of logistics expenditure spent on TPL providers, the increasing trend towards the development of longer-term contractual period and relationships signify the importance of research in investigating relationships.

This chapter also demonstrates the method and procedures used to test the non-response bias in this study. The results suggest that non-response bias is not a problem indicating possibility to proceed with the analysis.

The following chapter presents the arguments for using the Structural Equation Modelling (SEM) method of analysis before finally testing the first part of the model, i.e. LSQ model.

Chapter 7

EMPIRICAL ANALYSIS AND RESULTS – LOGISTICS SERVICE QUALITY

7.1 Introduction

The empirical results of this study are presented in two separate chapters, Chapter Seven and Chapter Eight. This chapter begins with some introduction to Structural Equation Modelling (SEM) followed by rationales behind the use of this data analysis technique. It also discusses the issues arising from using this technique as well as steps taken in examining the properties of the raw data sets. It also includes the evaluation of LSQ overall model, measurement model and structural model.

7.2 What is Structural Equation Modelling?

Structural Equation Modelling (SEM) is one of the multivariate techniques that have been widely used in disciplines as disparate as psychology, marketing, education, sociology and organizational behaviour (Hair et al, 1998). It is a family of statistical techniques, which incorporates and integrates path analysis and factor analysis. The process of SEM follows two stages; (1) validating the measurement model, and (2) fitting the structural model (Garson, 2004). The measurement model defines relations between the observed and unobserved variables. It provides the link between scores on a measuring instrument (i.e. the observed indicator variables) and the underlying constructs it is designed to measure (i.e., the unobserved latent variables). It represents the Confirmatory Factor Analysis (CFA) model in that it specifies the pattern by which each measure loads on a particular factor. CFA plays an important role in SEM, in which it is used to assess the role of measurement error in the model to validate a

multi-factorial model, and to determine group effects of the items on the factors. In contrast, the structural model defines relations among the unobserved variables. Accordingly, it specifies the manner, by which particular latent variables directly or indirectly influence (i.e., “cause”) changes in the values of certain other latent variables in the model (Byrne, 2001).

In logistics research, SEM is becoming increasingly popular (Keller et al, 2002) as this technique allows the development of valid, robust and generalizable measures, thus increasing external validity (e.g. Hubbard and Vetter, 1996; Thacker et al, 1989). In marketing, SEM has come to the attention of the marketing and consumer behaviour researchers since the publication of the monograph by Bagozzi (1980). However, the methodology has only been popular since the introduction of the eighth version of LISREL (Joreskog and Sorbom, 1993) in the early 1990s. The emergence of other alternative computer programs such as EQS (Bentler, 1989), PROC CALIS procedures in SAS, and RAMONA (Browne and Mels, 1992) have also contributed to its popularity among the marketing researchers. The potential of SEM for comprehensive investigations of both measurement and theoretical issues has now been recognised in the marketing discipline as it is now appearing routinely in most high-ranking journals (Baumgartner and Homburg, 1996).

7.3 Analytical Choices – Why Structural Equation Modelling?

This section presents the rationales behind using SEM technique for testing the research hypotheses in this study. It also discusses the issues arising in this study related to the procedures of its implementation.

7.3.1 Why Structural Equation Modelling?

Generally, the SEM causal modelling process addresses structural and measurement issues in survey research (Fornell et al, 1990). As a widely used tool

in academic research (Baumgartner and Homburg, 1996; Hair et al, 1998, Steenkamp and van Trijp, 1991), there are several factors that make SEM causal modelling procedures appropriate to test the hypothesised model (Bollen, 1989; Joreskog and Sorbom, 1989). First, the technique allows the use of separate relationships for each of a set of dependent variables. In contrast to multiple regression analysis, for instance, SEM can estimate several equations at once. Since the model in this study involves equations that are interrelated, SEM allows the dependent variable in one equation to simultaneously be an independent variable in one or more other equations. Furthermore, this technique estimates the individual weightings (coefficient) of each observed variable in the context of testing the overall theoretical model rather than each coefficient individually. Thus, the complex relationships of the model in this study can be analysed by using this technique, which is not possible with other multivariate techniques available (Fornell and Larcker, 1981; Hair et al, 1998; Steenkamp and van Trijp, 1991). Secondly, the approach suits the proposed research model as it consists of latent variables, i.e. variables that are hypothesised and unobserved concepts that can only be estimated by observable or measured variables. This is because SEM has the ability to incorporate latent variables into the analysis. Thirdly, by using SEM, the model in this study can accommodate measurement errors as the use of confirmatory factor analysis, which specifies the rules of correspondence between manifest (indicator) and latent variables, permits the reduction of measurement error by having multiple indicators per latent variable. The measurement error could be caused by inaccurate responses and the measures of the theoretical concepts, which leads to a lower reliability (Garson, 2004; Hair et al, 1998). Finally, with regard to the LSQ process model (Mentzer et al, 2001), the use of a similar method to Mentzer et al's (2001) study, i.e. SEM, allows appropriate re-testing of the model and comparison of the results.

7.3.2 Issues Related to the Procedures in Using Structural Equation Modelling

When using SEM, several decisions related to the SEM procedures need to be taken before estimation can occur. Hence, this section discusses the arguments related to (1) sample size, estimation method and missing data, (2) covariances versus correlation, (3) number of indicators per construct, (4) software chosen for the analysis.

7.3.2.1 *Sample size*

Covariance and correlation coefficients tend to be less reliable when estimated with small samples (see explanations in Section 7.3.2.3). Sample size thus plays an important role in the estimation and interpretation of SEM results (e.g. Tabachnick and Fidell, 2001; Hair et al, 1998). Consequences of using smaller samples include more convergence failures (the software cannot reach a satisfactory solution), improper solutions (including negative error variance estimates for measured variables), and lowered accuracy of parameter estimates. In particular, standard errors are computed under the assumption of large sample sizes. Although, in many cases, a sample size of 200 is regarded as the “critical sample size” (Hoelter, 1983), a larger sample size is preferred. Guadagnoli and Velicer (1988) in Tabachnick and Fidell (2001) underline that 150 cases are sufficient if solutions have several high loading variables ($>.80$). A study by Fan et al (1999) found that for the sample size of 100, only 0.3 percent of the samples yielded non-convergence and 7.7 percent produced improper solutions of some sort. While for the sample size of 200, none of the samples produced non-convergence and only 2.6 percent yielded improper solutions.

Bentler and Chou (1987) recommend that one should have a minimum of 15 cases per measured variable. However, one should also consider the expected effect size and the distributions of the measured variables because they influence

the power of analysis (MacCallum et al, 1996). Thus, if the data is normally distributed and there is no missing data and outlying cases, researchers may go as low as five cases per parameter estimate (Bentler and Chou, 1987).

Accordingly, the results analysed from a sample size of 183 in this study are reliable because in LSQ, 94.3 percent of the items have item loadings of above .70 with 74.3 percent above the item loading of .80. In the Relationship Quality model, 81.3 percent of the items have item loading above .70 with 67 percent above the item loading of .80. Furthermore, as underlined by Fan et al (1999), this sample would not produce any non-convergence problems and only produced approximately 3 percent of improper solutions, which is not a problem.

However, the sample size obtained (n=183) in this study is inadequate to test 16 variables in the hypothesised model (LSQ and RQ) at once. This is because there are only 3.8 cases per measured variable. Thus, to allow testing of both models, the hypothesised model was segregated into two models, LSQ and RQ, and they were tested separately.

The following section discusses the arguments on the method used in dealing with the missing data in this study.

7.3.2.2 Missing Data and Estimation Method

While Relationship Quality model has no missing data, the LSQ model is associated with approximately 15.83 percent of missing data. However, the estimation method used in this study is sufficient to deal with these problems.

In the presence of missing data, one would either delete or estimate the missing data. The problem of deleting the missing data is that the remaining sample size becomes smaller. An advantage of structural equation modelling is that the missing data mechanism can be included in the model by estimating it.

Estimation techniques transform the covariance matrix of the observed variables into structural or path coefficients. There exist several estimation techniques such as maximum likelihood (ML), unweighted least squares, generalised least squares (GLS), ordinary least squares (OLS), and two-stage least squares (Bollen, 1989) and they are usually included in some of the software packages (Tabachnick and Fidell, 2001; Hair et al, 1998). In the selection of the appropriate estimation technique, it is suggested that sample size, plausibility of the normality and independence assumptions need to be considered (Tabachnick and Fidell, 2001). ML estimation is currently the most frequently used estimation method in SEM (Tabachnick and Fidell, 2001; Baumgartner and Homburg, 1996; Bollen, 1989; Anderson and Gerbing, 1982) and it is regarded as the best estimation technique in the presence of incomplete data (e.g. Jamshidian and Bentler, 1999; Tang and Bentler, 1998; Arbuckle, 1996).

With particular reference to the re-testing of the LSQ model, it was expected that some questions might not be applicable to some respondents due to the specific measures developed from a single organization. As a result, the responses generated 15.83 percent of incomplete data. Order quality, order release quantities, and order accuracy constructs were the constructs that were largely affected. Most respondents who were using TPL providers for outbound logistics only or using specific types of logistics services indicated that those constructs' measures were not applicable. According to Enders (2001), missing data is a common problem in applied research settings. McArdle (1994) emphasizes that although the term missing data typically represents an image of negative consequences and problems; such missingness can provide a wealth of information in its own right and, indeed, often serves as a useful part of the analyses. Researchers who have attempted to deal with incomplete data have used various approaches such as list wise deletion, pair wise deletion and imputation. However, the modern approaches such as multiple imputation and

maximum-likelihood methods are proven to produce unbiased estimates of the population values, thus improving both the accuracy and often the statistical power of results. AMOS 5.0, which is used in this study, represents a direct approach that is based on Full Information Maximum Likelihood (FIML) estimation (Byrne, 2001; Arbuckle, 1996). Byrne (2001) demonstrated that, despite 25 percent data loss in a sample, the overall χ^2 and the goodness-of-fit statistics such as RMSEA and CFI are relatively close. These findings provide strong evidence for the effectiveness of the direct ML approach in addressing the problem of missing data values.

The strength lies in the consistency and efficiency of FIML estimates when the unobserved values are Missing Completely At Random (MCAR), provides unbiased estimates when the unobserved values are Missing At Random (MAR) and FIML estimates provide the least bias when the missing values are Non-ignorable Missing At Random (NMAR) (Byrne, 2001; Enders, 2001). However as noted earlier, the missingness of data in this study was because certain measures were simply inapplicable to particular respondents. Therefore, literally there are no missing data in this problem. As according to Schafer and Graham (2002), if responses to these measures were available from some other respondents, the observations may denote responses for those who claimed that the measures were applicable and the missing ones represent hypothetical responses for those who think that the measures were not applicable. Thus, the hypothetical missing data could be regarded as MAR. They argued that researchers do not have to worry whether the missingness depends on the characteristics of those who think the measures as not applicable, but the missing values are introduced merely as a mathematical device to simplify the computations. Based on this argument, the incomplete data in this study would be regarded as MAR, therefore, FIML method appears to yield an accurate assessment of model fit especially when normality assumptions are met (Enders,

2001). Another popular software, LISREL also provides such estimation method, but Allison (1987) and Muthen et al (1987) highlight that their techniques are limited in that they are only applicable to situations where the number of distinct patterns is small, and they require the user to have an exceptionally high level of expertise (Arbuckle, 1996).

On the other hand, the data from the relationship quality is not associated to any missing data. However, as in the analysis of LSQ model, a similar estimation technique (FIML estimation) was adopted to test the RQ model.

7.3.2.3 Covariances Versus Correlations

The use of either variance/covariance matrix versus the correlation matrix is an important issue of interpreting the results. Although SEM was initially formulated for use with the variance/covariance matrix, the interpretation of the results is somewhat difficult. This is because the coefficient should be interpreted in terms of the units of measure for the constructs, in which the mean of each construct is subtracted before multiplication. On the other hand, each construct in the correlation matrix is standardised before it was interpreted, in which the mean was subtracted, and then divided by standard deviation. Thus, the interpretation of a correlation matrix is rather straight forward as compared to the covariance matrix. According to Hair et al (1998) and Dillon et al (1987), the widespread use of correlation in many applications is appropriate when the objective of the research is only to understand the pattern of relationships between construct. However, the covariance matrix has the advantage of providing valid comparisons between different populations or samples as well as explaining the total variance of the construct, something not possible when models are estimated with a correlation matrix. Hair et al (1998) suggest that researchers should employ the variance/covariance matrix when a true “test of

theory” is being performed and when it is only concerned with patterns of relationships, the correlation matrix is acceptable.

In this study, since the two models (LSQ and Relationship quality) involved have different purposes; both covariance and correlation matrixes were used. For the LSQ model, the correlation matrix was used because the main interest in the LSQ model was to see the pattern of relationships. Whilst both correlation and variance/covariance matrices were used in interpreting the results of the relationship quality model because the purpose of the model was to test a proposed theoretical model, to explain the variance of constructs as well as to see the pattern of relationships.

7.3.2.4 Number of indicators per construct

The issues regarding the number of items that should be used to effectively measure a construct is still being debated (Baumgartner and Homburg, 1996). It is generally recognised that it is advantageous to have many indicators per construct. However, too many indicators can result in a non-parsimonious measurement model (Baumgartner and Homburg, 1996; Bentler and Chou, 1987; Anderson and Gerbing, 1982). While a construct can be represented with two indicators, having three indicators is regarded as the preferred minimum number. As a general rule, three indicators per construct are needed for a model to be identified (Hair et al, 1998; Baumgartner and Homburg, 1996; Bollen, 1989; Gerbing and Anderson, 1988; Bentler and Chou, 1987; Bentler and Bonett, 1980). The use of only two indicators increases chances of reaching an infeasible solution (Hair et al, 1998; Baumgartner and Homburg, 1996; Bentler and Chou, 1987) and one indicator would ignore the reliability of construct. In the LSQ model in this study, with the exception of the ordering procedures (consists of six items) and information quality (consists of five items) constructs, all constructs were measured based on three items. However, for the purpose of obtaining a

better fitting model, three items from ordering procedures and two items from information quality were deleted so that all constructs are represented with three items in the final model. The arguments are presented along with the discussion of the results.

7.3.2.5 Statistical Program used for the Analysis

Several programs including AMOS, EQS, LISREL with PRELIS, LISCOMP, Mx, SAS PROC CALIS, STATISTICA-SEPATH, and other packages support SEM. Among others, the best knowns are probably LISREL, EQS and AMOS (Hox and Bechger, 1998). AMOS is distinguished by having a very user-friendly graphical interface, including model-drawing tools, and has strong support for bootstrapped estimation while LISREL has a more comprehensive set of options. EQS, on the other hand, is noted for extensive data management features, flexible options for tests associated with re-specifying models, and estimation procedures for non-normal data (Garson, 2004). Although each program has its own strengths and weaknesses, several reviews suggest that one can use any package for standard analyses (Miles, 1998; Hox, 1995; Waller, 1993).

All data analyses in this study were conducted with AMOS 5.0 (Arbuckle, 1997). Apart from having user-friendly features, the reason for using this AMOS 5.0 is due to its direct approach in the treatment of the missing data (Byrne, 2001) (refer to Section 7.3.2.2 above).

7.4 The Logistics Service Quality (LSQ) Process Model

The fact that LSQ process model (Mentzer et al, 2001) was developed based on the customer segments of a single organisation becomes one of the major limitations of LSQ (Mentzer et al, 2001; 1999). According to Lindsay and Ehrenberg's (1993, p. 219) research findings, including those with "high" levels of statistical significance would remain "virtually meaningless and useless" in

themselves until they were generalized. Mentzer and Flint (1997) highlight that there is no single study that can ensure external validity. Instead, the external validity can only be enhanced through studies conducted under varying conditions of time and place. Thus, they suggest that replications should be encouraged.

Since the LSQ scale has not been tested outside of its original context, it is useful to first, examine closely the research procedures of the original study. This helps to establish whether it has the potential to be generalized more widely. This study sought to ensure that the variations in this study are not great enough to encourage significantly different results than those found in the original study. Table 7.1 summarises the procedures used in the present study compared with Mentzer et al's (2001) study.

Despite an attempt to keep the study as close as possible to the methodology of Mentzer et al's (2001) study, the methodology conducted for this study produced some variations from the original study due to time and cost limitations (refer to Table 7.1). First, the main objective of study of Mentzer et al's (2001) study was to determine the degrees of importance of each LSQ component in the four customer segments in a third party organisation. However, this study is conducted with the purpose of testing the generalizability of LSQ process model across industries in the UK. Secondly, since Mentzer et al (2001) conduct their study specifically for DLA, the scale of study was quite large compared to the current study. Consequently, they could attract a sufficient number of participants in the exploratory study, pre-test as well as in the main survey, leading to a robust model. However, focusing on improving other weaknesses of the LSQ process model, this study uses a 7-point instead of a 5-point Likert scale and expands the two two-item' constructs (ordering procedures and information quality).

Table 7.1: Comparison of Methodologies between the Current Study and Mentzer et al's study (2001)

LSQ US (Mentzer et al, 2001)	LSQ UK study
<i>Purpose:</i> To investigate whether different groups of customers of a particular focal organization with multiple market segments might place varying degrees of importance on LSQ components.	<i>Purpose:</i> To test the applicability and generalizability of Logistics Service Quality (LSQ) process model across industrial sectors in the UK
<i>Sample:</i> Customers who were responsible for logistics ordering from four segments of one single organisation that perform logistical functions in the US.	<i>Sample:</i> Customers of TPL providers from across industrial sectors throughout the UK.
<i>Exploratory research:</i> Focus group: 13 focus group discussions with the key buyers of logistics services	<i>Exploratory research:</i> In-depth interviews: 7 logistics-related managers from TPL customers' companies of various industries and 2 managers from a large TPL company.
<i>Pre-test:</i> The instrument was sent to a random sample of 200 DLA customers	<i>Pre-test:</i> A mail survey to a random sample of 50 logistics-related managers throughout the UK
<i>Main survey:</i> Mail survey to 8500 DLA customers from four customer segments. <i>Response rate:</i> 39.7 percent (n=3371)	<i>Main survey:</i> Mail survey to 1258 logistics-related managers throughout the UK. <i>Response rate:</i> 16.4 percent (n=183)
<i>Instrumentation:</i> 5-point Likert scale with 25 items	<i>Instrumentation:</i> 7-point Likert scale with 30 items

Sections 7.5, 7.6 and 7.7 in the following chapter report the overall, measurement and structural model evaluation in the current study. Although, generally, the results reported in this study are not comparable to the results from Mentzer et al's (2001) study due to different categorisation of respondents, their results provide guidance in the process of drawing conclusions with regard to the generalizability and robustness of the model.

7.5 Overall Model Evaluation

Hair et al (1998) suggests that the overall model fit should be first evaluated before the measurement of unidimensionality and reliability is assessed for each construct. Goodness of fit tests determine if the model being tested should be

accepted or rejected. These overall fit tests do not establish that particular paths within the model are significant. If the model is accepted, the researcher will then go on to interpret the path coefficients in the model. It is crucial that one should get a better fitting model because “significant” path coefficients in poorly fitting models are not meaningful.

In assessing the fit of a model, the value of chi-square (χ^2) is always referred to. It is the fit between the sample covariance matrix and the estimated population covariance matrix. A good fit is sometimes indicated by a non-significant chi-square (χ^2). Unfortunately, with small samples, the computed χ^2 may not be distributed resulting in inaccurate probability levels (Bentler, 1988). However, Tabachnick and Fidell (2001) provide a general “rule of thumb” that a good fitting model is indicated when the ratio of the χ^2 to the degrees of freedom is less than 2. Numerous measures of model fits have also been developed to deal with these problems. The model fits that were used to evaluate the fit of the model in this study are Non-normed Fit Index (NNFI) or Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), Incremental Fit Index {Delta2 (IFI)}, Root Mean Square Error of Approximation (RMSEA), and Goodness-of-fit Index (GFI).

The NFI, NNFI (TLI), IFI and RMSEA are in the family of comparative fit indices, in which the estimated model is placed along a continuum of the independence model (model that corresponds to completely unrelated variables) at one end and saturated model (full or perfect) at the other end. The goodness-of-fit index (GFI), however is a non-statistical measure ranging in value from 0 (poor fit) to 1.0 (perfect fit). It represents the overall degree of fit the squared residuals from prediction and compared with the actual data, but it is not adjusted for the degrees of freedom (Hair et al, 1998). As GFI is often higher compared to other fit models, some suggest using .95 as the cut-off point. By principle,

GFI values that equal or are greater than .90 are sufficient to accept the model (Garson, 2004).

To facilitate comparability with Mentzer et al's (2001) study, the chosen indices were similar to indices that were used by Mentzer et al (2001). Consequently, Comparative Fit Index (CFI), Delta2 (IFI) and Relative Non-centrality Index (RNI) were the indices of choices. However, since AMOS 5.0 program does not produce RNI, the Non-Normed Fit Index (NNFI) or Tucker-Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA) were used to analyse the results.

CFI assesses fit relative to other models and employs the non-central χ^2 distribution with the non-centrality parameters. Bentler (1990) found that using the ML method, CFI had no systematic bias when the sample size was small. High values (greater than .90) are indicative of a good-fitting model. Thus, CFI should be the index of choice. Loehlin (1998) proposed that the value of CFI of less than .90, but close to .90 is also appealing. TLI (Tucker and Lewis, 1973) or NNFI and Delta2 (IFI) were proposed to improve one of the earlier indices, Normed Fit Index (NFI) proposed by Bentler and Bonett (1980). NNFI /TLI is the adjusted of NFI, taking into consideration the degrees of freedom in the model due to the underestimation of model fit with small samples produced by NFI (Tabachnick and Fidell, 2001; Bearden et al, 1982). The values may range from 0 to 1.0. However, .90 or greater is the recommended value (Hair et al, 1998). IFI (Bollen, 1989) or Delta2 is proposed to address the problem of large variability in the TLI/NNFI. This is because although TLI/NNFI improves NFI, it can sometimes yield numbers outside of the 0 – 1 range. IFI values equal to or greater than .90 are sufficient to accept the model (Garson, 2004). RMSEA estimates the lack of fit in a model compared to a perfect (saturated) model (Browne and Cudeck, 1993) and is relatively insensitive to sample size (Loehlin,

1998). Browne and Cudeck (1993) suggest that a value of RMSEA below .05 indicates close fit and that value up to .08 or less indicates a reasonable error of approximation.

The overall model fit showed an acceptable fit with a chi-square (χ^2) of 933.45, $df = 515$, $p < .001$ ($\chi^2/df < 2$), $RMSEA = .067$, $CFI = .92$ Delta2 (IFI) = .92 and $TLI = .90$. Hair et al (1998) recommend that one should get a better fitting model before assessing the path coefficients. Therefore, for the purpose of getting a better fitting model, items OP1, OP5, and OP6 in ordering procedures and IQ1, IQ3 in information quality were deleted. This is because only the highest three factor loadings were chosen from each of those two constructs. The original items from the rest of the constructs were retained as three items. Thus the model yielded an overall $\chi^2_{(372)}$ of 608.29, $df = 360$, $p < .001$ ($\chi/df < 2$), $RMSEA = .062$, $CFI = .94$ Delta2 (IFI) = .94 and $TLI = .92$.

Once the overall model fit has been evaluated, the measurement of each construct can then be assessed for unidimensionality, reliability and validity (Hair et al, 1998).

7.6 Measurement Model Evaluation

This is an important preliminary step in the analysis of full latent variable models. A measurement model deals with the latent variables and their indicators, while the structural model involves relations among only latent variables. The purpose is to test the validity of the measurement model before making any attempt to evaluate the structural model. Validation of the measures means demonstrating the unidimensionality (have one underlying construct), consistency (model-to-data fit), reliability, and validity (Ping, 2004). According to Anderson and Gerbing (1982), good measurement of the latent variables is a prerequisite to the analysis of the causal relations among the latent variables. The task involved in

developing the measurement model is twofold: (a) to determine the number of indicators to use in measuring each construct, and (b) to identify which items to use in formulating each construct (Byrne, 2001). Accordingly, all measures in LSQ were submitted to Confirmatory Factor Analysis (CFA) to assess the constructs' unidimensionality, reliability and validity. Table 7.2 reports the results of the measurement model. Once it is known that the measurement model is operating adequately, one can then have more confidence in findings related to the assessment of the hypothesised structural model.

7.6.1 Unidimensionality and Consistency

Unidimensionality refers to the existence of a single construct underlying a set of measures. It is an assumption underlying the calculation of reliability (Bollen, 1989; Gerbing and Anderson, 1988; Hunter and Gerbing, 1982). It is important to ensure that a set of items forming the instrument measures one thing in common. Unidimensionality is considered as the most critical and basic assumption of measurement theory and should be assessed for all multiple-indicator constructs before assessing their causal relations (e.g. Hair et al, 1998; Gerbing and Anderson, 1988; Anderson and Gerbing, 1982; Aker and Bagozzi, 1979). It is defined by both internal and external consistency (Anderson and Gerbing, 1982), in which it refers to the structural equation model fitting the data (Ping, 2004; Kenny, 1979). It is important because coefficient estimates from structural equation analysis may be meaningless unless the model adequately fits the data (Bollen, 1989; Joreskog, 1993). Thus, unidimensionality is demonstrated when the indicators of a construct have an acceptable fit on a one-dimensional model. Consequently, the overall model fit shown in Section 8.4 indicates that the model fits the data reasonably well $\{\chi^2_{(360)} \text{ of } 608.29, df = 360, p < .001 (\chi/df$

Table 7.2: The Measurement Model of Logistics Service Quality

Constructs Measures	LSQ US			LSQ UK			
	Composite Reliability	Average Variance Extracted	Factor Loading	Composite Reliability	Average Variance Extracted	Factor Loading	Squared Multiple Correlations (R ²)
Personnel Contact Quality	.94 - .95	.85 - .87		.89	.73		
PQ1			.89 - .93			.90	.82
PQ2			.92 - .97			.88	.78
PQ3			.86 - .92			.78	.61
Order Release Quantities	.82 - .85	.62 - .65		.82	.60		
ORQ1			.59 - .66			.73	.53
ORQ2			.83 - .92			.86	.73
ORQ3			.78 - .86			.73	.53
Information Quality	.84 - .86	.73 - .76		.96	.83		
IQ1			.78 - .85			.88	.77
IQ2			.86 - .92			.93	.87
IQ3						.87	.76
IQ4						.94	.88
IQ5						.93	.87
Ordering Procedures	.85 - .86	.74 - .76		.96	.82		
OP1			.85 - .91			.86	.73
OP2			.79 - .85			.95	.90
OP3						.97	.94
OP4						.95	.91
OP5						.92	.84
OP6						.76	.58
Order Accuracy	.87 - .89	.68 - .73		.89	.72		
OA1			.81 - .91			.91	.83
OA2			.79 - .91			.94	.88
OA3			.72 - .79			.68	.46
Order Condition	.84 - .86	.65 - .67		.88	.71		
OC1			.81 - .93			.94	.89
OC2			.78 - .90			.84	.70
OC3			.66 - .71			.73	.53
Order Quality	.76 - .81	.52 - .59		.73	.48		
OQ1			.62 - .70			.52	.27
OQ2			.73 - .86			.76	.58
OQ3			.71 - .81			.75	.57

Table 7.2: The Measurement Model of Logistics Service Quality (cont.)

Order Discrepancy Handling	.87 - .89	.69 - .72		.92	.80		
ODH1			.79 - .89			.82	.66
ODH2			.83 - .93			.91	.82
ODH3			.73 - .77			.95	.91
Timeliness	.94 - .95	.84 - .85		.87	.70		
TI1			.88 - .93			.72	.52
TI2			.90 - .94			.87	.76
TI3			.90 - .93			.91	.83
Satisfaction	.92	.80		.93	.83		
SA1			.83 - .85			.89	.80
SA2			.92			.94	.88
SA3			.92 - .93			.90	.80

* Note: The composite reliability, average variance extracted and factor loadings for the items in the LSQ US study (Mentzer et al (2001) represent the range of values of the four segments namely, general, textiles, electronics and construction. This is with exception to the satisfaction items, in which the composite reliability and average variance extracted are similar across the four segments.

** PQ: Personnel contact quality; ORQ: Order release quantities; IQ: Information quality; OP: Ordering procedures; OA: Order accuracy; OC: Order condition; OQ: Order quality; ODH: Order discrepancy handling; TI: Timeliness; SA: Satisfaction.

Table 7.3: The Overall Model Fit Statistics of Logistics Service Quality

	Chi-square	Deg. Of Freedom	RMSEA	CFI	Delta2 (IFI)	TLI
LSQ US (25 items)	603.31 – 1231.25	350	-na-	.95 - .98	.97 - .98	-na-
LSQ UK (30 items)	608.29	360 (p<.001)	.062	.94	.94	.92

< 2), RMSEA = .062, CFI = .94 Delta2 (IFI) = .94 and TLI = .92}, demonstrating the unidimensionality of the constructs. Factor loadings on all 32 items range from .518 to .969 also underlining the unidimensionality of all constructs. The factor loadings are simply the correlations of each item with the factor/construct (Anderson and Gerbing, 1982). The value can range from 0, indicating no relationship and 1, reflecting perfect relationship.

7.6.2 Reliability

Unidimensionality alone is not sufficient to ensure the usefulness of the scale. According to the scale development paradigm proposed by Gerbing and Anderson (1988), reliability should be assessed after the unidimensionality has been acceptably established. The reliability of a construct is suggested by the agreement of two or more indicators (Hair et al, 1998). It is a necessary prerequisite for its validity. As can be derived from the confirmatory factor results, all composite reliability measures were above .70 exceeding the minimum values of .60 (Bagozzi and Yi, 1988). Composite reliability is superior to other measures of reliability because the computation takes into consideration the measurement errors by taking into account the degree of correlation among the items in a construct (Ping, 2004; Hair et al, 1998; Gerbing and Anderson, 1988), thus assessing how well the items measure the construct. Other preferred reliability measures such as Cronbach alpha tend to underestimate scale reliability and assume that all items are perfectly correlated (Ping, 2004; Bollen, 1989; Fornell and Lacker, 1981; Smith, 1974).

7.6.3 Validity

Reliability is necessary but not sufficient for construct validity (Hair et al, 1998). Construct validity is the extent to which a construct measures what it should, and a valid construct consists of valid items. Validity is important because theoretical constructs are not observable, and relationships among unobservable constructs are tested indirectly via observed variables (Joreskog, 1993; Bagozzi, 1984). Thus, validity reflects how well a measure reflects its unobservable construct. It is established using relationships between observed variables and their unobserved variable, and observed variables' relationships with other sets of observed variables (Joreskog, 1993). In producing a valid measure, convergent and discriminant validity are normally used (Heeler and Ray, 1972). Convergent and discriminant validity are notions involving the measurement of multiple items and

it is usually considered to be facets of construct validity in the social sciences (Campbell and Fiske, 1959). The ability to demonstrate convergence and discriminant validity reflect the ability to produce evidence of construct validity.

7.6.3.1 Convergent validity

Convergent validity refers to the degree in which the measures of a construct are highly correspondent (correlated) to each other (Ping, 2004; Mentzer and Flint, 1997). The correlation matrix in Table 7.4 shows that, with the exception of order quality construct (the pair of items ranges from .33 to .58), all other pairs of items indicate high convergence of between .53 and .93. As suggested by Nunally (1978), the reliabilities of all constructs that were above .70 implying convergent validity. Convergent validity was also supported as the loadings of all items showed highly statistically significant ($p < .01$). The results also demonstrate evidence that the squared multiple correlations (R^2) were larger than .50 except for IQ1, which is .27, indicating that the proportion of variance in the indicators (endogenous variable) that is accounted for by each construct is more than 50 percent (Tabachnick and Fidell, 2001; Dunn et al, 1994).

7.6.3.2 Discriminant validity

Conversely, one should be able to discriminate between dissimilar constructs to obtain discriminant validity. Correlations with other constructs below .70 are usually accepted as evidence of construct distinctness and thus discriminant validity (Anderson and Gerbing, 1982). As depicted in Table 7.4 and Table 7.5, the intercorrelations among the items and factors were all less than .67 and .726 respectively, suggesting all nine factors demonstrated discriminant validity. Discriminant validity for a construct's measure was also indicated by average variance extracted estimates of .50 or higher (Fornell and Larcker, 1981). The results demonstrated that all constructs exceeded the estimates of .50 except for order quality, which was .48. This implies that the variance accounted for by each

construct was greater than the variance accounted for by the measurement error (Hair et al, 1998). Consequently, the measurement model supports a sufficient level of discriminant validity between these constructs.

Table 7.4: The Inter-correlations among Logistics Service Quality (LSQ) Constructs

	IQ	OP	ORQ	TI	OA	OQ	OC	ODH	PCQ	SA
IQ	1									
OP	.726	1								
ORQ	.282	.305	1							
TI	.558	.624	.112	1						
OA	.535	.400	.280	.493	1					
OQ	.316	.323	.312	.214	.340	1				
OC	.533	.481	.357	.646	.601	.319	1			
ODH	.703	.600	.258	.582	.417	.156	.560	1		
PCQ	.671	.627	.303	.577	.444	.247	.484	.534	1	
SA	.683	.589	.399	.494	.526	.300	.522	.580	.709	1

In conclusion, the measures in this study provide strong evidence of unidimensionality, convergent validity, reliability, and discriminant validity. This gives a good indication to proceed to the evaluation of the structural model.

7.7 Structural Model Evaluation

Based on the data obtained in this study, this section assesses the structural paths of the LSQ process model and presents the results.

All 27 hypotheses that were grouped to H₁ to H₁₀ were tested (refer to Section 4.4 in Chapter Four). The correlation matrix is shown in Table 7.5 and Figure 7.1 displays the statistical significant relationships between latent constructs and their corresponding standardised loadings. Standardised path coefficients are used for comparing the relative strength of path coefficients.

Table 7.5: Correlation Matrix among Logistics Service Quality (LSQ) Items

	OP2	OP3	OP4	PQ1	PQ2	PQ3	ORQ1	ORQ2	ORQ3	IQ2	IQ4	IQ5	OA1	OA2	OA3	OC1	OC2	OC3	OQ1	OQ2	OQ3
OP2	1																				
OP3	.93	1																			
OP4	.89	.92	1																		
PQ1	.53	.55	.52	1																	
PQ2	.53	.54	.52	.80	1																
PQ3	.46	.47	.45	.69	.69	1															
ORQ1	.23	.24	.23	.23	.23	.20	1														
ORQ2	.27	.28	.27	.27	.27	.23	.63	1													
ORQ3	.23	.24	.23	.22	.22	.19	.53	.62	1												
IQ2	.64	.66	.63	.57	.56	.49	.21	.24	.20	1											
IQ4	.65	.67	.64	.57	.57	.49	.21	.24	.20	.87	1										
IQ5	.65	.67	.64	.57	.57	.50	.21	.25	.20	.87	.88	1									
OA1	.37	.38	.37	.40	.39	.34	.23	.27	.22	.46	.46	.47	1								
OA2	.40	.41	.39	.42	.42	.37	.24	.29	.24	.49	.50	.50	.86	1							
OA3	.28	.29	.28	.30	.30	.26	.17	.20	.17	.35	.35	.35	.60	.65	1						
OC1	.44	.45	.43	.43	.42	.40	.27	.32	.27	.48	.49	.49	.31	.33	.23	1					
OC2	.41	.42	.40	.40	.40	.35	.26	.30	.25	.45	.46	.46	.29	.31	.22	.76	1				
OC3	.35	.37	.35	.35	.34	.30	.22	.26	.22	.39	.40	.40	.25	.27	.19	.68	.63	1			
OQ1	.17	.17	.17	.13	.13	.12	.12	.14	.11	.17	.17	.17	.11	.12	.08	.12	.12	.10	1		
OQ2	.29	.30	.29	.23	.23	.20	.20	.24	.20	.30	.30	.30	.19	.21	.15	.22	.20	.18	.40	1	
OQ3	.24	.25	.24	.19	.19	.17	.17	.20	.16	.25	.25	.25	.16	.17	.12	.18	.17	.15	.33	.58	1
TI1	.41	.42	.40	.36	.36	.31	.09	.10	.08	.35	.36	.36	.28	.30	.21	.43	.40	.35	.07	.12	.10
TI2	.50	.51	.49	.44	.44	.38	.10	.12	.10	.43	.43	.44	.34	.36	.26	.52	.49	.42	.08	.14	.12
TI3	.52	.54	.51	.46	.46	.40	.11	.13	.11	.45	.45	.46	.35	.38	.27	.54	.51	.44	.08	.15	.12
ODH1	.28	.29	.28	.27	.27	.24	.18	.21	.17	.32	.32	.32	.28	.30	.21	.44	.41	.36	.10	.18	.15
ODH2	.31	.32	.30	.30	.30	.26	.19	.23	.19	.35	.35	.35	.31	.33	.23	.49	.46	.40	.12	.20	.17
ODH3	.32	.33	.32	.32	.31	.27	.20	.24	.20	.36	.37	.37	.33	.35	.25	.51	.48	.42	.12	.21	.18
SA1	.48	.49	.47	.56	.55	.48	.20	.23	.19	.46	.47	.47	.32	.35	.25	.38	.36	.31	.12	.21	.17
SA2	.51	.52	.50	.60	.59	.52	.21	.25	.21	.49	.50	.50	.35	.37	.26	.41	.38	.33	.13	.23	.19
SA3	.48	.50	.47	.57	.56	.49	.20	.24	.20	.47	.47	.47	.33	.35	.25	.39	.36	.31	.12	.21	.18

Table 7.5: Correlation Matrix among Logistics Service Quality (LSQ) Items (cont.)

	TI1	TI2	TI3	ODH1	ODH2	ODH3	SA1	SA2	SA3
TI1	1								
TI2	.62	1							
TI3	.65	.79	1						
ODH1	.38	.36	.38	1					
ODH2	.32	.40	.41	.74	1				
ODH3	.34	.41	.43	.77	.85	1			
SA1	.30	.37	.38	.34	.37	.39	1		
SA2	.32	.39	.41	.36	.40	.42	.83	1	
SA3	.31	.37	.39	.34	.38	.40	.79	.84	1

* Note: The shaded field showed evidence of convergent validity and the non-shaded field gave an indication of discriminant validity.

** OP: Ordering procedures; PQ: Personnel Contact Quality; ORQ: Order Release Quantities; IQ: Information Quality; OA: Order Accuracy; OC: Order Condition; OQ: Order Quality; TI: Timeliness; ODH: Order Discrepancy Handling; SA: Satisfaction.

The first evaluation of the structural model involves checking whether all significant path coefficients are in the hypothesised direction. The results signify that with the exception of the path from order release quantities \rightarrow timeliness (H_{1h} in Table 7.6), all other significant relationships between the latent constructs are in the hypothesised direction. According to Byrne (2001), any estimates falling outside the admissible range signal a clear indication that either the model is wrong, or the input matrix lacks sufficient information. She stresses that the reasons for parameters exhibiting unreasonable estimates are correlation > 1.00 , negative variances and covariances or correlation matrices that are positive definite. In this study, the only significant path that obtained negative estimate was path from order release quantities to timeliness. The reason for this path exhibited negative estimate could be because of the lack of sufficient information obtained by order release quantities construct as it was one of the three constructs that were largely affected by the missing data (refer to Section 7.3.3.2). This is because the measures were irrelevant to some respondents due to specific measures from a single organisation developed for LSQ. There is no evidence from the output that the correlations were more than 1.00, the variances and covariances were negative or the correlation matrices were positive definite, thus supporting the above argument. There is also no reason that the model could be wrong because the reliability and validity of the model has been tested in the original study (Mentzer et al, 2001; 1999). This signifies positive indication to proceed with further analysis.

Table 7.6: Summary of Hypotheses Supported for Logistics Service Quality

No.	Hypotheses	Parameter estimates	Std Errors	C.R. Values	Comments
1	H _{1a} : Personnel contact quality → Order accuracy	.21	.14	1.50	
2	H _{1b} : Personnel contact quality → Order condition	.19	.12	1.55	
3	H _{1c} : Personnel contact quality → Order quality	.01	.14	.05	
4	H _{1d} : Personnel contact quality → Timeliness	.18	.09	1.99	Supported*
5	H _{1e} : Order release quantities→ Order accuracy	.20	.11	1.81	
6	H _{1f} : Order release quantities → Order condition	.25	.10	2.41	Supported**
7	H _{1g} : Order release quantities → Order quality	.19	.12	1.64	
8	H _{1h} : Order release quantities → Timeliness	-.20	.08	-2.39	Supported**
9	H _{1i} : Information quality → Order accuracy	.41	.14	3.00	Supported**
10	H _{1j} : Information quality → Order condition	.32	.12	2.71	Supported**
11	H _{1k} : Information quality → Order quality	.16	.14	1.18	
12	H _{1l} : Information quality → Timeliness	-.12	.09	-1.29	
13	H _{1m} : Ordering procedures → Order accuracy	-.02	.13	-.13	
14	H _{1n} : Ordering procedures → Order condition	.09	.11	.75	
15	H _{1o} : Ordering procedures → Order quality	.11	.13	.83	
16	H _{1p} : Ordering procedures → Timeliness	.29	.09	3.37	Supported**
17	H _{2a} : Order accuracy → Order discrepancy handling	.17	.08	2.10	Supported*
18	H _{2b} : Order condition → Order discrepancy handling	.52	.09	6.06	Supported**
19	H _{2c} : Order quality → Order discrepancy handling	.10	.13	.82	
20	H ₃ : Order accuracy → Timeliness	.11	.07	1.57	
21	H ₄ : Order condition → Timeliness	.35	.09	4.03	Supported**
22	H ₅ : Order quality → Timeliness	-.06	.10	-.67	
23	H ₆ : Order discrepancy handling → Timeliness	.11	.07	1.62	
24	H ₇ : Timeliness → Satisfaction	-.03	.06	-.53	
25	H ₈ : Order discrepancy handling → Satisfaction	.11	.04	3.22	Supported**
26	H ₉ : Ordering procedures → Satisfaction	.09	.05	2.03	Supported*
27	H ₁₀ : Personnel contact quality → Satisfaction	.31	.05	5.83	Supported**

** Significant paths (p<. 01) * Significant paths (p<.05)

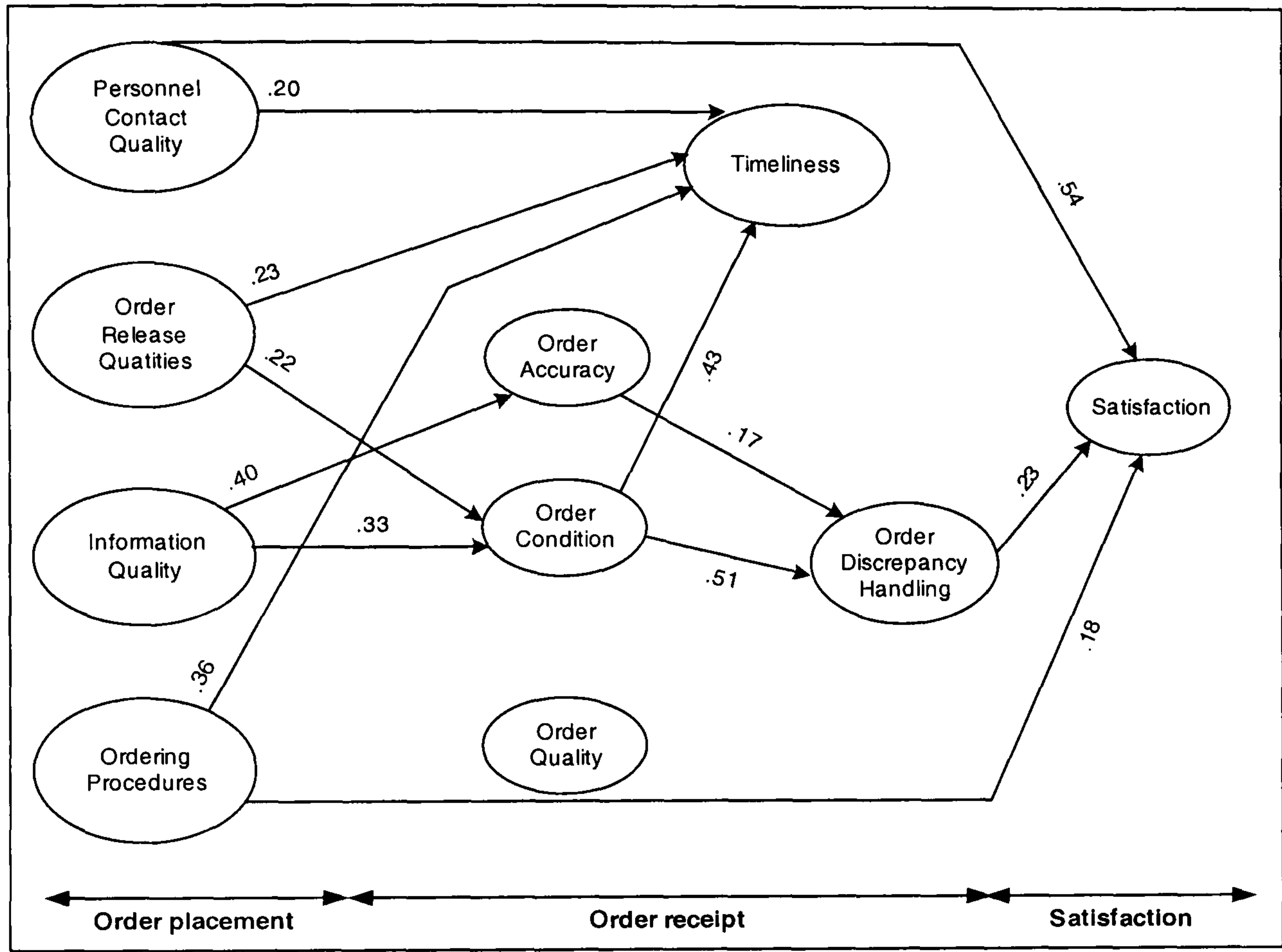
The overall model fit statistics indicate an acceptable level of fit {chi-square (χ^2)=693.77, df = 372 (χ^2 /df < 2), CFI = .921, Delta2 = .923, RMSEA = .069 and TLI = .901). Given the acceptable fit of the structural model, it is

appropriate to interpret the path estimates from the model. Table 7.6 and Figure 7.1 display the path analysis results. This study supports 12 out of twenty-seven 27 (44.4%) hypotheses at $p < .05$ level. This is almost similar to the electronic and constructions segments in Mentzer et al's (2001) study, in which 12 and 11 paths were supported in each segment. The supports were on the following relationships: personnel contact quality \rightarrow timeliness (H_{1d}), order release quantities \rightarrow order condition (H_{1e}), order release quantities \rightarrow timeliness (H_{1h}), information quality \rightarrow order accuracy (H_{1i}), information quality \rightarrow order condition (H_{1j}), ordering procedures \rightarrow timeliness (H_{1p}), order accuracy \rightarrow order discrepancy handling (H_{2a}), order condition \rightarrow order discrepancy handling (H_{2b}), order condition \rightarrow timeliness (H_4), order discrepancy handling \rightarrow satisfaction (H_8), ordering procedures \rightarrow satisfaction (H_9), personnel contact quality \rightarrow satisfaction (H_{10}) (see Table 7.6).

As indicated in the hypothesised model (see Figure 4.2 in Chapter Four), the perceptions of placing an order, which are reflected in four constructs (personnel contact quality, order release quantities, information quality and ordering procedures) affect the perceptions of receiving the order as indicated in five constructs (order accuracy, order condition, order quality, timeliness and order discrepancy handling) before the customers finally satisfied/dissatisfied with the logistics services provided by their TPL providers. Generally, as hypothesised, the results suggest that the order placement constructs are the predictors of the order receipt constructs that drive satisfaction (refer to Figure 7.1). Two order-placement constructs (order release quantities and information quality) also affect order condition through to order discrepancy handling and satisfaction. In fact, information quality also influences satisfaction through order accuracy and order discrepancy handling. However, personnel contact quality and ordering procedures exhibited only direct effects to satisfaction rather than working

through the order receipt constructs. These two constructs only linked to timeliness but did not lead to satisfaction.

Figure 7.1: Standardised Significant Paths in the Current Study



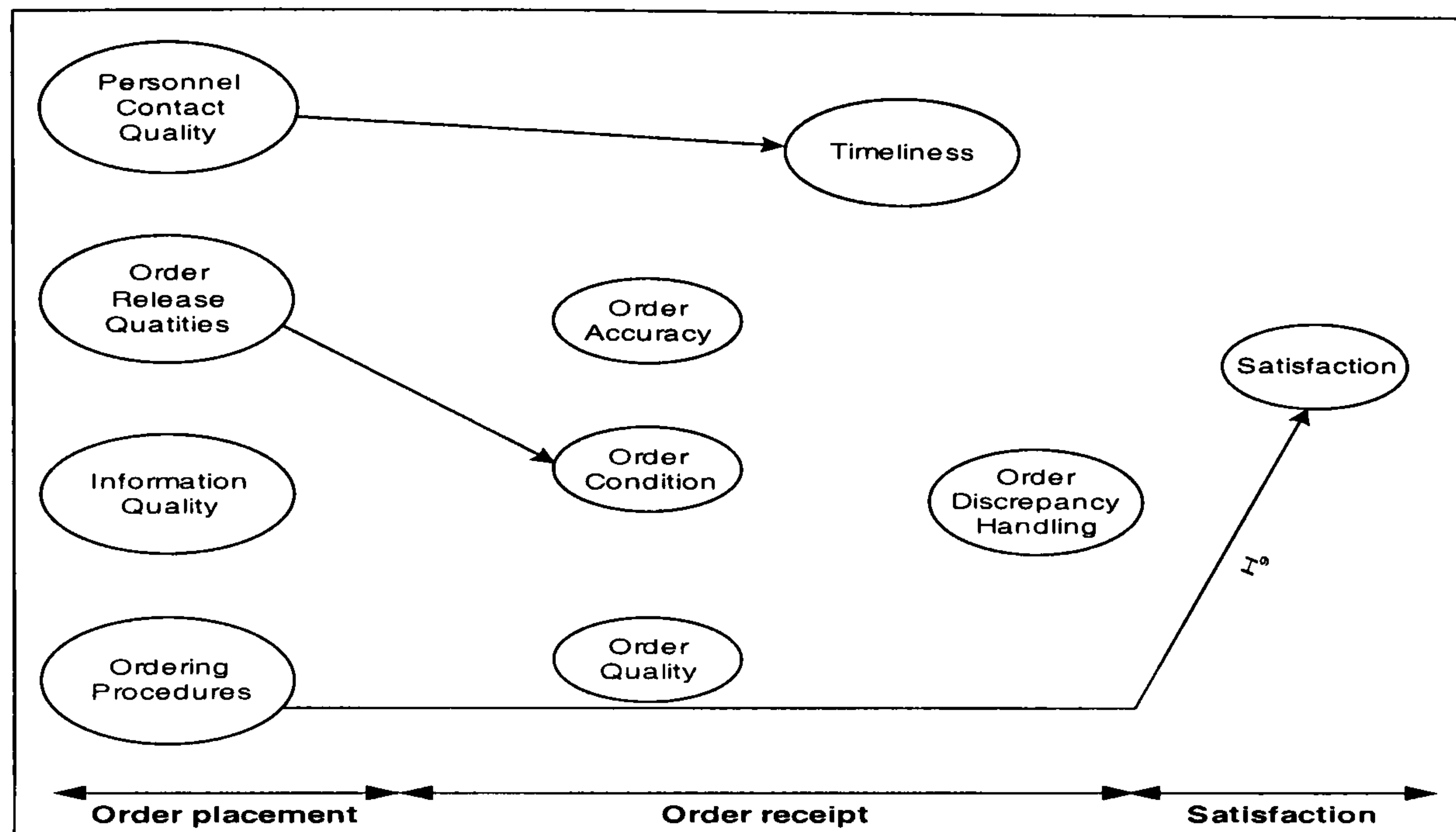
Fit Indices: $\chi^2 = 693.77$ $df = 372$ ($\chi^2/df < 2$), CFI = .921, Delta2 = .923, RMSEA = .069, TLI = .901

It is apparent from the results displayed in Figure 7.1 that out of the three order completeness constructs (order accuracy, order condition and order quality), only order condition influenced timeliness and order discrepancy handling while order accuracy was the predictor to order discrepancy handling but not timeliness. On the other hand, order quality was not connected to any other constructs in the model. As the measures of order quality refer to the conformance to product specifications and customers' need, this could possibly mean that the measures

might not be applicable to some respondents as their TPL providers are not responsible for meeting the manufacturers' technical requirements.

As indicated by the respondents across four segments in Mentzer et al's (2001) study, this study demonstrated similar results in five causal relationships. First, among all four constructs that are hypothesised to have direct effects to satisfaction (personnel contact quality, ordering procedures, timeliness and order discrepancy handling), timeliness is not a predictor of satisfaction (H_7). Mentzer et al (2001) speculate that there is something similar across the customers of the single organization under their investigation that reduces the importance of timeliness. Second, the respondents in this study as well as in Mentzer et al's study agree that information quality did not lead to timeliness (H_{10}). However, it is important to note that this study employs a different conceptualisation of information quality. Thus, it indicates that both conceptualisations of information quality did not influence timeliness. Third, out of eight constructs (personnel contact quality, order release quantities, information quality, ordering procedures, order accuracy, order condition, order quality and order discrepancy handling) that were hypothesised to affect timeliness, the respondents in both studies had the same opinion in that only personnel contact quality drives timeliness (H_{10}). Fourth, the respondents in both studies agreed that of the four order placement constructs, only order release quantities affected order condition (H_{10}). Finally, only ordering procedures drives satisfaction (H_9) instead of personnel contact quality, timeliness and order discrepancy handling (refer to Figure 7.2). The similarities of these relationships in both Mentzer et al's (2001) study and the current study indicate the importance of these dimensions and relationships for the respondents in both studies.

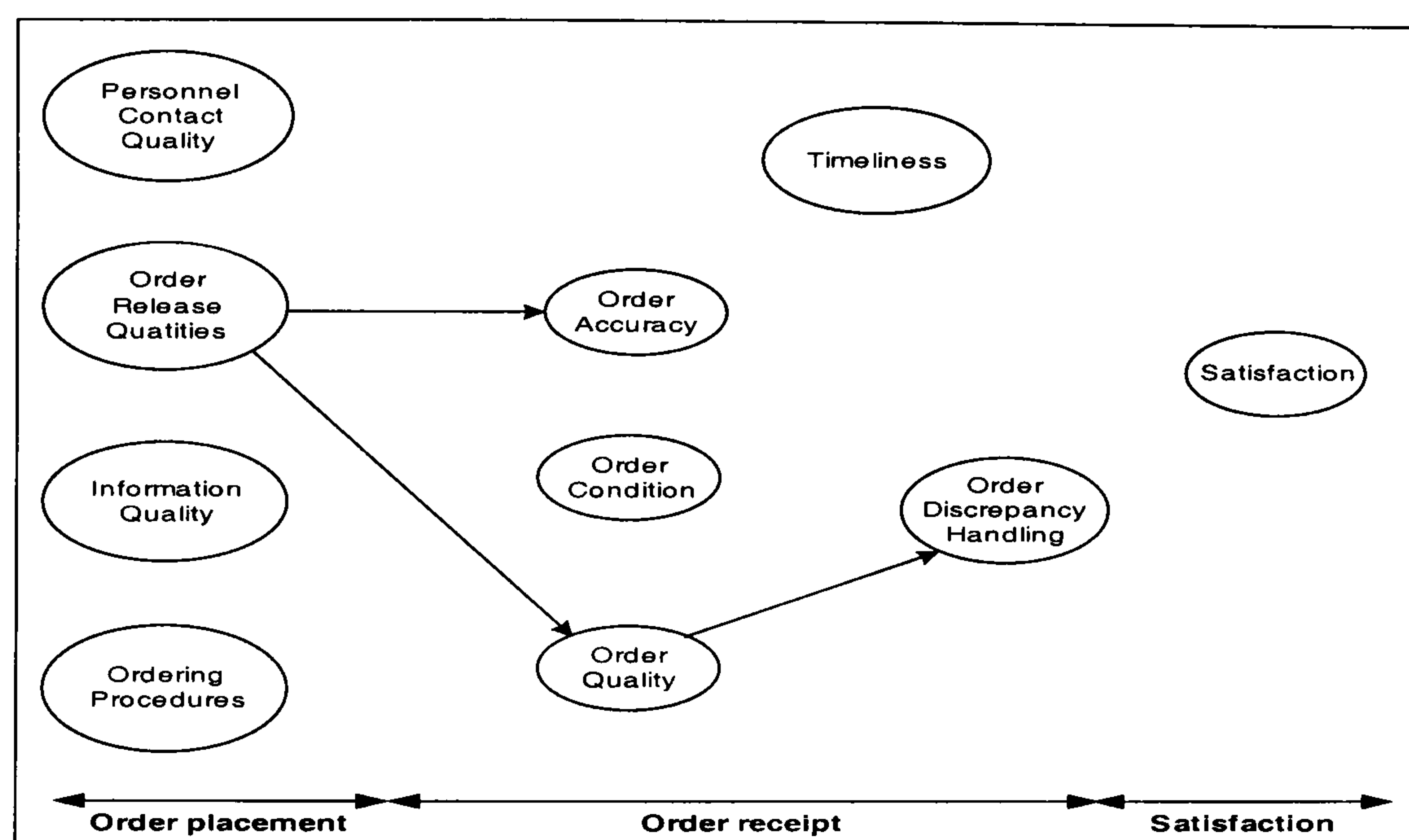
Figure 7.2: Significant Paths in Mentzer, Flint and Hult's (2001) and the Current Study



Conversely, there are several differences in the causal paths between both studies. They are as follows; first, the results reveal that three paths that were supported across segments in Mentzer et al's (2001) study were not supported in this study. They were order release quantities → order accuracy (H_{1e}), order release quantities → order quality (H_{1g}) and order quality → order discrepancy handling (H_{2c}) (see Figure 7.3). However, the only path that was not supported in all segments in Mentzer et al's (2001) study, but was supported in this study was order condition → timeliness (H_4). This is because order quality was not applicable to most respondents in this study. Unlike the Defense Logistics Agency (DLA) (the TPL provider in Mentzer et al's (2001) study), most respondents in this study were not responsible to such manufacturing defects of the products, in which order quality was conceptualised. Similarly, most respondents from this study were not accountable for the accuracy of the products unless they used their TPL provider's warehousing/storage services

such as the pick and pack service. However, order condition appears to be an important dimension in this study due to the responsibility of the TPL providers to the condition of the product. As can be seen in Chapter Three, it was conceptualised as the product's damage due to transportation services.

Figure 7.3: Significant Paths in Mentzer, Flint, Hult (2001) study but Insignificant in the Current Study



With regard to the relative strength of paths (refer Table 7.7), the strongest effect of satisfaction was from personnel contact quality (personnel contact quality (PQ) → satisfaction (SA) = 0.305) followed by ordering procedures (OP) → satisfaction (SA) = .090. The other three paths that worked through order receipt constructs were information quality (IQ) → order condition (OC) → order discrepancy handling (OD) → satisfaction (SA) = .019; order release quantities (OR) → order condition (OC) → order discrepancy handling (OD) → satisfaction (SA) = .015; information quality (IQ) → order accuracy (OA) → order discrepancy handling (OD) → satisfaction (SA) = .008.

Table 7.7: Total Variance Explained of the Causal Paths to Satisfaction

Causal Paths		Total Variance explained
PQ → SA		.305
OP → SA		.090
IQ → OC → OD → SA		(.315) (.523) (.113)
OR → OC → OD → SA		(.246) (.523) (.113)
IQ → OA → OD → SA		(.410) (.168) (.113)

7.8 Concluding remarks

This chapter exhibits the results of the application of Logistics Service Quality (LSQ) process model in the context of TPL customers across industrial sectors in the UK. The chapter began with a brief explanation of SEM followed by the rationales behind using SEM as the method of analysis. Several issues arose from the study as a result of using SEM, namely the number of indicators per construct; the use of covariance and correlation matrix, sample size, estimation method and missing data were also discussed.

The results of the measurement evaluation of the LSQ model provide evidence that with the improvement of the ordering procedures and information quality constructs, all LSQ measures are excellent and can be generalised to the customers across industrial companies in the UK. With regard to the structural evaluation of the model, 44.4 percent (12 of 27 paths) of the paths were supported. This is however, incomparable to Mentzer et al’s (2001) study due to the evaluation by segment instead of across segments. Hence, to facilitate comparative analysis, the results in Mentzer et al’s (2001) study were viewed across segments. Accordingly, some commonalities and differences of the causal relationships were identified. With regard to the commonalities, three paths were supported and two paths were not supported across respondents in both studies. On the other hand, differences appear in four paths, in which three paths that were supported in all segments in Mentzer et al’s (2001) study were not

supported in this study and only one path that was supported in Mentzer et al's (2001) was supported in this study. In conclusion, the causal relationships of personnel contact quality to timeliness, order release quantities to order condition and ordering procedures to satisfaction were found as strong across industrial sectors in both samples while information quality to timeliness and timeliness to satisfaction did not exist across both samples.

The discussion implies that the difference of findings between this study and Mentzer et al's (2001) study indicates the need for further work in the area, while the similarities promote confidence in the reliability of the results. The model in this study serves the function of assessing whether outcomes in Mentzer et al's (2001) study can be generalised beyond its original context.

Following this chapter, the results of the measurement and structural evaluation of the second part of the model, i.e. relationship quality model are presented.

Chapter 8

EMPIRICAL ANALYSIS AND RESULTS – RELATIONSHIP QUALITY

8.1 Introduction

This chapter outlines the empirical results of the hypothesised relationship quality model described in Chapter Four. The results are discussed based on two different conceptualisations of customer loyalty as outcome variables, namely, customer loyalty and intention to exit. The analyses follow similar procedures as in Chapter Seven.

8.2 Overall Model Evaluation

The estimation of the model yielded an overall $\chi^2_{(443)}$ value of 1007.69 ($\chi^2/\text{df} = 2.275$), a GFI of .734, a CFI of .878, a TLI of .863, and an RMSEA of .084. The overall model fit results nonetheless suggests that the data is not well fitted to the model. A review of the modification indices (MI) reveals some evidence of lack of fit in the model. Because the interest is solely in the causal paths of the model, only the indices related to low regression weights were analysed. Thus, in the determination of a well-fitting model, those indicators associated with large MI were deleted. Large MI flagged problems of multicollinearity. Multicollinearity arises from a situation where two or more indicators are so highly correlated that they both, essentially, represent the same underlying construct (Hair et al, 1998). Concurrently, in order to retain a minimum of three items for each construct, deletions were concentrated on the constructs that have more than three items, namely relationship satisfaction; trust, perceived opportunism and customer loyalty (see Section 7.3.2.4 for the arguments of using three items per construct). Consequently, indicators connected to constructs that

have initially three items were retained even though they showed low regression weights {item 2 of calculative commitment (CC2) (.419), item 3 (CL3) (.440) and 4 (CL4) (.442) of customer loyalty}. The deleted items were items 1 and 2 of relationship satisfaction (RS1 and RS2), item 1, 2, 3, 4, 8 of trust (T1, T2, T3, T4 and T8), item 4, 5 and 6 of perceived opportunism (PO4, PO5 and PO6) and item 3 of customer loyalty (CL3). Due to the re-specification of the model, the estimation of the new model yielded an overall $\chi^2_{(168)}$ value of 240.392 with $p < .001$ and $\chi^2/df = 1.43$, a GFI of .893, a CFI of .972, a TLI of .966, and an RMSEA of .049. The new overall model fit results indicated that the model represented good fit to the data in the analyses. The MIs related to the regression weights exhibited no outstanding values suggestive of model lack of fit, thus allowing for the assessment of the validation of measures.

8.3 The Measurement Model Evaluation

Table 8.1 reports the estimation of the measurement model. The psychometric properties of all seven constructs that formed the model were evaluated by using CFA in order to confirm the constructs' unidimensionality, validity and reliability. The model consists of four relationship quality constructs (relationship satisfaction, trust, affective commitment and calculative commitment), LSQ satisfaction, perceived opportunism and customer loyalty.

8.3.1 Unidimensionality and Consistency

Several tests were conducted to assess the unidimensionality of the measures. First, the indication of the good fitting model to the data by the overall model fit results in Section 8.2 above, exhibited the unidimensionality of the constructs. Second, with the exception of item 2 of calculative commitment (CC2) and item 4 of customer loyalty (CL4), which had regression weights of .41 and .44, all 19 items loaded on their factors (regression weights range between .50 and .96) underlining the unidimensionality for all constructs (see Table 8.1). As a result, it

Table 8.1: The Measurement Model of Relationship Quality (Customer Loyalty as Outcome)

Items	Mean	Standard Deviation	Factor Loading	Composite Reliability	Average Variance Extracted	Standard Error (S.E.)*	Squared Multiple Correlations (R ²)
**LSQ Satisfaction				.93	.83		
Sat1	3.79	.749	.88			-	.77
Sat2	3.81	.872	.94			.048	.89
Sat3	3.83	.885	.90			.046	.82
Relationship satisfaction				.93	.83		
RS3	5.05	1.542	.89			-	.79
RS4	5.07	1.385	.89			.051	.78
RS5	4.98	1.560	.95			.051	.91
Perceived Opportunism				.80	.58		
PO1	3.28	1.488	.74			.087	.55
PO2	2.99	1.449	.71			.086	.50
PO3	3.11	1.634	.82			-	.67
Trust				.90	.74		
T5	4.49	1.485	.87			-	.76
T6	4.60	1.397	.88			.058	.77
T7	5.27	1.266	.84			.056	.70
Calculative Commitment				.72	.49		
CC1	2.84	1.705	.60			-	.36
CC2	2.97	1.682	.41			.094	.17
CC3	2.56	1.717	.96			.099	.92
Affective Commitment				.76	.54		
AC1	3.27	1.701	.50			.136	.25
AC2	4.59	1.516	.96			.146	.92
AC3	4.16	1.506	.66			-	.44
Customer Loyalty				.73	.50		.01
CL1	2.19	1.406	.62			.254	.39
CL2	2.29	1.385	.95			.543	.91
CL4	2.60	1.482	.44			-	.19

Note 1: The standard error of one item from each construct was not available because the estimate of that particular item was constrained to 1.00.

Note 2: This construct is measures based on 5-point Likert scale while other constructs are based on 7-point Likert scale.

Note 3: Sat:Satisfaction; RS: Relationship satisfaction; PO: Perceived opportunism; T: Trust; CC: Calculative commitment; AC: Affective commitment; CL: Customer loyalty.

can be concluded that unidimensionality for each of the constructs was obtained.

8.3.2 Reliability

From the confirmatory results shown in Table 8.1, all the composite reliability values exceeded the commonly threshold value for acceptable reliability of .70 and Bagozzi and Yi's (1988) minimum values of .60. Consequently, it is concluded that all constructs yield high reliabilities.

8.3.3 Validity

As demonstrated in Section 7.6.3, this section displays the convergent and discriminant validity to yield the evidence of construct validity in this model.

8.3.3.1 Convergent validity

As derived from the correlation matrix in Table 8.2, all pairs of items in the shaded field exhibited an evidence of convergence validity except for two pairs of items in calculative commitment, affective commitment and customer loyalty constructs that showed quite low convergence (CC1 and CC2 = .23; CC2 and CC3 = .39; AC1 and AC2 = .48; AC1 and AC3 = .33; CL1 and CL4 = .27; CL2 and CL4 = .42). From the whole model point of view, convergent validity was supported by the good fit of the overall model (see Section 8.2). Furthermore, the critical ratio (C.R.) tests specify that all loadings were highly statistically significant ($p < .01$). Also, item-loading values within each construct were relatively high (greater than 0.5), except for item 2 of calculative commitment {CC2 (.41)} and item 4 of customer loyalty {CL4 (.44)} indicating that most items were highly correlated to the factor. With the exception of six items, {item 1 and 2 of calculative commitment (CC1: .36 and CC2: .17), item 1 and 3 of affective commitment (AC1: .25 and AC3: .44), item 1 and 3 of customer loyalty (CL1: .39 and CL3: .19)}, the squared multiple correlation (R^2) of most items were larger than .50 signifying that the proportion of variance in the indicators

that is accounted for by each construct was more than 50 percent (Mentzer et al, 1999; Steenkamp and van Trijp, 1991; Hildebrandt, 1987).

8.3.3.2 Discriminant validity

Evidence of discriminant validity is also demonstrated in the correlation matrix in Table 8.2 indicating that all pairs of items of different constructs have a value below .79, a value that is required to be below .90 for bivariate multicollinearity. A stronger test of discriminant validity suggested by Fornell and Larcker (1981) is that the average variance extracted for each construct should be higher than .50, which implies that the variance accounted for by each is greater than the variance accounted for by measurement error (Hair et al, 1998). All constructs met this criterion except for calculative commitment construct, which demonstrated a value of .49. However, this value is sufficiently close to the cut-off point. Consequently, it can be concluded that the measurement model supports a sufficient level of discriminant validity among these constructs.

Having demonstrated strong evidence of unidimensionality, convergent validity, reliability, and discriminant validity, the next stage is to proceed with the evaluation of the structural model.

8.4 Structural Model Evaluation

This section evaluates the structural paths of the hypothesised model presented in Chapter Four followed by a discussion on the robustness of the structural paths.

Table 8.2: Correlation/Covariance Matrix among Items of Relationship Quality (Customer Loyalty as Outcome)

	Sat1	Sat2	Sat3	RS3	RS4	RS5	PO1	PO2	PO3	T5	T6	T7	CC1	CC2	CC3	AC1	AC2	AC3	CL1	CL2	CL4
Sat1	.56	.54	.52	.79	.71	.85	-.41	-.38	-.48	.69	.65	.56	-.27	-.18	-.45	.40	.68	.46	.02	.03	.02
Sat2	.83	.76	.65	.99	.89	1.07	-.52	-.48	-.60	.86	.81	.70	-.34	-.23	-.56	.50	.85	.58	.03	.04	.02
Sat3	.79	.85	.78	.96	.86	1.03	-.50	-.46	-.59	.83	.79	.68	-.33	-.22	-.55	.48	.82	.56	.03	.04	.02
RS3	.68	.73	.70	2.36	1.67	2.01	-.98	-.90	-1.14	1.66	1.57	1.36	-.68	-.45	-1.11	.96	1.64	1.12	.05	.07	.04
RS4	.68	.73	.70	.79	1.91	1.81	-.88	-.81	-1.03	1.50	1.41	1.22	-.61	-.41	-1.00	.86	1.47	1.01	.05	.07	.03
RS5	.73	.79	.75	.85	.84	2.42	-1.06	-.97	-1.23	1.80	1.70	1.47	-.73	-.49	-1.20	1.04	1.77	1.21	.06	.08	.04
PO1	-.39	-.42	-.40	-.42	-.42	-.45	2.20	1.16	1.47	-.97	-.92	-.79	.40	.26	.65	-.56	-.96	-.65	-.03	-.04	-.02
PO2	-.37	-.40	-.40	-.40	-.40	-.43	.53	2.09	1.35	-.89	-.84	-.73	.36	.24	.60	-.51	-.88	-.60	-.03	-.04	-.02
PO3	-.42	-.46	-.44	-.46	-.46	-.49	.61	.58	2.66	-1.13	-1.07	-.92	.46	.31	.76	-.65	-1.12	-.76	-.04	-.05	-.03
T5	.61	.65	.62	.72	.72	.77	-.43	-.41	-.47	2.19	1.54	1.33	-.67	-.45	-1.10	.94	1.61	1.10	.05	.07	.04
T6	.61	.66	.63	.73	.72	.78	-.43	-.41	-.47	.77	1.94	1.26	-.63	-.42	-1.04	.89	1.52	1.04	.05	.07	.04
T7	.58	.63	.60	.69	.69	.74	-.41	-.39	-.45	.73	.74	1.60	-.55	-.36	-.89	.77	1.31	.90	.04	.06	.03
CC1	-.22	-.24	-.23	-.26	-.26	-.28	.22	.21	.24	-.27	-.28	-.26	2.89	.69	1.69	-.39	-.66	-.45	.04	.06	.03
CC2	-.15	-.16	-.15	-.18	-.18	-.19	.15	.14	.16	-.19	-.19	-.18	.23	2.81	1.13	-.26	-.44	-.30	.03	.04	.02
CC3	-.35	-.38	-.36	-.41	-.41	-.44	.35	.33	.38	-.43	-.44	-.42	.58	.39	2.93	-.63	-1.08	-.74	.07	.10	.05
AC1	.34	.36	.35	.38	.38	.41	-.22	-.21	-.24	.37	.37	.35	-.12	-.08	-.19	2.88	1.23	.84	.05	.08	.04
AC2	.65	.69	.66	.73	.73	.78	-.42	-.40	-.46	.70	.70	.67	-.23	-.16	-.37	.48	2.29	1.44	.09	.13	.07
AC3	.45	.48	.46	.51	.50	.54	-.29	-.27	-.32	.48	.49	.46	-.16	-.11	-.25	.33	.64	2.26	.06	.09	.05
CL1	-.02	-.02	-.02	.03	.03	.03	.07	.07	.08	.05	.05	.04	.01	.01	.02	.03	.05	.04	1.97	1.15	.60
CL2	-.02	-.03	-.02	.05	.05	.05	.11	.11	.12	.07	.07	.07	.02	.01	.03	.04	.08	.06	.60	1.90	.85
CL4	-.01	-.01	-.01	.02	.02	.02	.05	.05	.06	.03	.03	.03	.01	.01	.02	.02	.04	.03	.27	.42	2.18

Note 1: The shaded field showed an evidence of convergent validity and the non-shaded field gave an indication of discriminant validity.

Note 2: Correlations are below the diagonal, covariances on and above the diagonal.

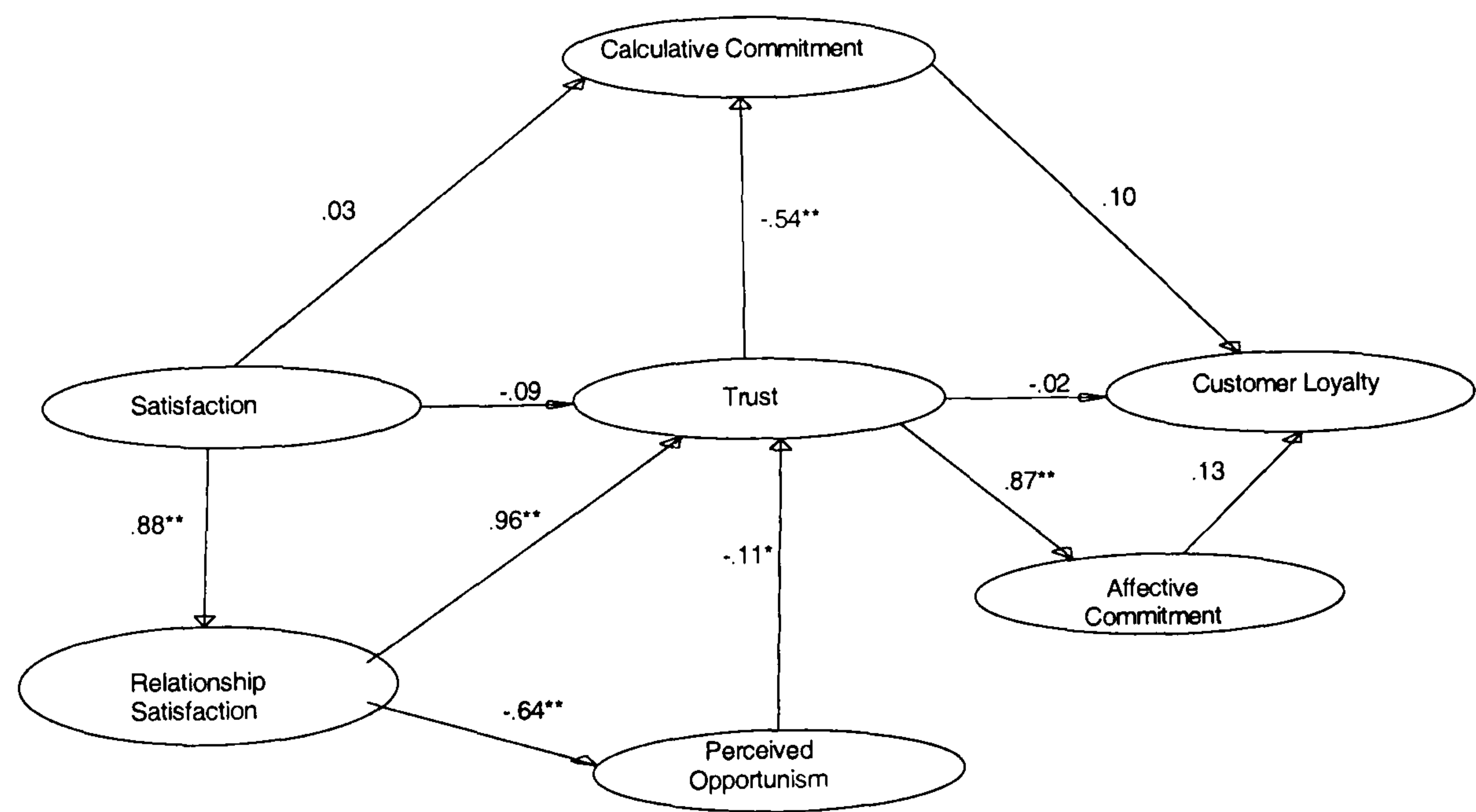
Note 3: Sat: LSQ satisfaction; RS: Relationship satisfaction; PO: Perceived opportunism; T: Trust; CC: Calculative commitment; AC: Affective commitment; CL: Customer loyalty

8.4.1 Structural Evaluation of the Hypothesised Model

The hypothesised structural model was tested using AMOS 5.0 (Arbuckle, 1996) and the correlation and covariance matrix shown in Table 8.2. The estimated structural paths are visualised in Figure 8.1. The model shows the statistical significant relationships between latent constructs and their corresponding standardised loadings. Standardised path coefficients or regression weights are used for comparing the relative strength of the paths.

The first evaluation of the structural model involves checking whether all significant path coefficients are in the hypothesised direction. In this study, all significant relationships between latent constructs are in the hypothesised direction, providing strong evidence for our conceptual model and its related hypotheses.

Figure 8.1: The Structural Results of the Hypothesised Model (Customer Loyalty as the Outcome Variable)



Fit Indices: $\chi^2 = 270.43$ $df = 178$ ($\chi^2/df = 1.52$), GFI = .879, CFI = .965, TLI = .958, RMSEA = .053

* Path significant at a $p < .05$ level. ** Path significant at a $p < .01$ level

Secondly, the structural model related to testing each of the hypotheses formulated in Chapter Four was evaluated. Table 8.3 summarises the results of the structural parameters for the model. The results indicate support for five of the eleven (45.5%) hypothesised paths of the model at $p < .01$ levels and six of the eleven (54.5%) at $p < .05$ levels. The proposed structural model's $\chi^2_{(179)}$ value, CFI and TLI, of 270.43 with $p < .001$ ($\chi^2/df = 1.52$), .965 and .958 indicates excellent fit while GFI and RMSEA, of .879 and .053 reflects moderate fit. The modification indices (i.e. less than 10) and the standardised residuals (i.e. less than 4) signify that no additional paths are called for and there is no problematic item (Anderson and Gerbing, 1988; MacCallum, 1986). Overall, the model performs well.

As high path coefficients can be indicative of multicollinearity problems, the strength of path coefficients between the latent constructs were checked. This is the final means of examining the structural model results. As indicated in Section 8.2, multicollinearity is the extent to which a variable can be explained by the other variable in the analysis. As multicollinearity rises, the ability to define any variable's effects is diminished (Hair et al, 1998). Hence, although no limit has been set that determines when a path coefficient can be considered high; values exceeding .90 are considered to be indicative of multicollinearity problems (Hair et al, 1998). From the results, it is apparent that the path between relationship satisfaction and trust could indicate multicollinearity when the structural path coefficient is .96. However, as has been demonstrated in Section 8.3.3.2, there exists sufficient discriminant validity between these constructs, thus they are considered as two distinct constructs.

Table 8.3: Structural Parameters of Relationship Quality (Customer Loyalty as outcome)

No. of hypotheses	Hypotheses	Parameter Estimates	Std Errors	C.R. Values	
1	H ₁₁ : LSQ satisfaction → Relationship satisfaction	1.83**	.13	13.84	Supported
2	H ₁₂ : LSQ satisfaction → Trust	-.18	.19	-.93	
3	H ₁₃ : LSQ satisfaction → Calculative commitment	.05	.21	.22	
4	H ₁₄ : Relationship satisfaction → Trust	.90**	.11	8.23	Supported
5	H ₁₅ : Relationship satisfaction → Perceived opportunism	-.61**	.08	-7.90	Supported
6	H ₁₆ : Perceived opportunism → Trust	-.11*	.05	-2.02	Supported
7	H ₁₇ : Trust → Affective commitment	.67**	.08	8.71	Supported
8	H ₁₈ : Trust → Calculative commitment	-.43**	.13	-3.33	Supported
9	H ₁₉ : Trust → Customer Loyalty	-.01	.11	-.09	
10	H ₂₀ : Calculative commitment → Customer loyalty	.06	.67	.96	
11	H ₂₁ : Affective commitment → Customer loyalty	.09	.13	.64	

Note: Fit Indices: $\chi^2 = 270.43$ df = 178 ($\chi^2/\text{df} = 1.52$), GFI = .879, CFI = .965, TLI = .958, RMSEA = .053

* Path significant at a p < .05 level. ** Path significant at a p < .01 level

With regard to the path linkages, surprisingly, there is no significant path linked from any of the commitment constructs or trust to the outcome variable, customer loyalty. Hence, the causal paths of the model only end up with either calculative or affective commitment. The non-existent effects to the customer loyalty behaviour may signal either weak customer loyalty measures or a less important construct in the context of TPL providers – customers’ relationships in the UK. It may also be possible that neither affective nor calculative commitment do not affect the customer loyalty behaviour in this study. From a

statistical point of view, the fact that one of the customer loyalty items (CL4) has a regression weight of only .44, the composite reliability and average variance extracted was on or just exceeding the cut-off point of .70 and .50, indicating that customer loyalty construct constitutes weak measures (refer to Table 8.1). The low value of squared multiple correlations (SMC) for customer loyalty construct ($SMC = .013$) showed that only 1.3 percent of the variance in customer loyalty was explained by calculative commitment, affective commitment and trust. The SMC is a useful statistic that is independent of units of measurement. The value represents the proportion of variance that is explained by the predictors of the variable in question. Accordingly, calculative commitment, affective commitment and trust were not good predictors of customer loyalty as conceptualised in this study.

As exhibited in Table 8.4, the calculative commitment and affective commitment constructs were determined by either the paths from satisfaction, relationship satisfaction and trust or alternatively from satisfaction with LSQ, relationship satisfaction, perceived opportunism and trust. The strongest causal paths were found in satisfaction with \rightarrow relationship satisfaction \rightarrow trust \rightarrow affective commitment (causal path 1 in Table 8.4) and the weakest were discovered in satisfaction with LSQ \rightarrow relationship satisfaction \rightarrow perceived opportunism \rightarrow trust \rightarrow calculative commitment causal links (causal path 4 in Table 8.4). The fact that affective commitment has a stronger relationship relative to calculative commitment is not surprising because most studies that show significant relationships between trust and commitment conceptualise commitment as affective commitment.

Table 8.4: Total Variance Explained in the Causal Paths to Affective and Calculative Commitment

No. of Causal Paths	Causal Paths	Total Variance Explained
1	LSQ satis. → RSAT → TRUST → ACOMM (0.88) (0.96) (0.87)	0.735
2	LSQ satis. → RSAT → TRUST → CCOMM (0.88) (0.96) (- 0.54)	- 0.456
3	LSQ satis. → RSAT → OPP → TRUST → ACOMM (0.88) (- 0.64) (- 0.11) (0.87)	0.054
4	LSQ satis. → RSAT → OPP → TRUST → CCOMM (0.88) (- 0.64) (- 0.11) (- 0.54)	- 0.033

8.4.2 Evaluation of an Alternative Model

In SEM, it is generally agreed upon that researchers should compare alternative models and not just test the performance of the proposed model (Bollen and Long, 1992; Hair et al, 1998; Morgan and Hunt, 1994). Since customer loyalty appears to have weak measures and thus, not a good outcome for the model, an alternative model, which posited exit intention as the outcome variable was evaluated. Exit intention, propensity to leave, intention to leave are commonly used as an alternative outcome in the literature (e.g. Hocutt, 1998; Morgan and Hunt, 1994; William and Hazer, 1986). As posited in the literature, the level of commitment determines the relationship strength and the intention of the parties to remain in the relationship. Accordingly, the stronger the level of commitment to a service provider relationship, the less likely either partner in the relationship will voluntarily dissolve that relationship. Morgan and Hunt (1994), for example provide empirical support for a strong negative effect from relationship commitment to the likelihood of relationship dissolution (propensity to leave).

The hypothesised model was compared with the alternative model based on the measurement and structural criteria. The measurement model was assessed with regard to: (1) the efficiency of the outcome variable measures, namely customer loyalty and exit intention based on the factor loadings and reliability of both outcome variables (2) the overall model fit, and (3) the squared multiple correlations.

8.4.2.1 The Measurement Evaluation of the Alternative Model

The regression weights and squared multiple correlation (SMC) of the three exit intention items that were mentioned in Chapter Six ranged from .77 to .88 and .59 to .77 respectively (see Table 8.5). The composite reliability and an average variance extracted of .88 and .70 of the exit intention construct reveals that it consists of good measures (see Table 8.5). In contrast to the customer loyalty items, the regression weight and SMC ranged from .44 to .95 and .192 to .904, with composite reliability and an average variance extracted of .73 and .50 (see Table 8.1) indicating further that exit intention construct is more reliable than customer loyalty. The SMC value of .700 shows the direct effects from trust, affective commitment and calculative commitment explained 70 percent variance in exit intention construct as compared to customer loyalty, which only has an SMC value of .013. This reflects that in the context of this study, exit intention construct serves well as the outcome variable.

With respect to the assessment of the overall model fit, the values of $\chi^2 = 314.184$ with $p < .001$; $df = 219$ ($\chi^2/df = 1.435$), $GFI = .870$, $CFI = .970$, $TLI = .965$, $RMSEA = .049$ reflects that the data fit of the alternative model is slightly better than the originally hypothesised model. The modification indices showed that the deletion of two exit intention items, i.e. EX1 and EX2 would improve the model fit, thus led to the fit values of $\chi^2 = 253.012$ with $p < .001$; $df = 178$ ($\chi^2/df = 1.421$), $GFI = .882$, $CFI = .975$, $TLI = .970$, and $RMSEA = .048$. Although

the improvement in model fit appeared to be trivial on the basis of GFI, CFI, TLI and RMSEA values, the χ^2 difference in the model nonetheless was statistically significant ($\Delta\chi^2_{(41)} = 61.172$) at $p < .001$ level. The average variance extracted also improved from .60 to .70, therefore led to the confirmation of the deletion of items 1 and 2 of exit intention.

Table 8.5: The Measurement Model of Exit Intention as the Outcome Variable

Items	Mean	S.D.**	Standardised Regression Weight	Composite Reliability	Ave. Variance Extracted	Standard Error (S.E.)*	Squared Multiple Correlations (R^2)
Exit Intention				.88	.70		.70
Exit3	3.51	1.851	.88			.068	.77
Exit4	2.99	1.874	.87			-	.75
Exit5	2.73	1.798	.77			.069	.59

* The standard error of one item from each construct was not available because the estimate of that particular item was constrained to 1.00.

** S.D.: Standard Deviation

Note: This construct was based on 7-point Likert scale

8.4.2.2 *The Structural Evaluation of the Alternative Model*

As can be seen from Table 8.6 and Figure 8.2, the alternative model supported seven of eleven (63.6 percent) hypothesised paths at $p < .01$ and one (9.1 percent) at $p < .05$. In contrast, only five (45.5 percent) of eleven hypothesised paths were supported at $p < .01$ and one (9.0 percent) supported at $p < .05$. Importantly, two of the paths {trust \rightarrow exit intention (H_{19}) and affective commitment \rightarrow exit intention (H_{21})}, which did not significantly affect the customer loyalty construct in the hypothesised model were significantly linked to the exit intention in the alternative model (see Figure 8.2).

As is clear from Table 8.7, the strongest causal paths were from satisfaction with LSQ → relationship satisfaction → trust → exit intention, which shows a total variance explained of .448. On the other hand, the weakest were from satisfaction with LSQ → relationship satisfaction → perceived opportunism → trust → affective commitment → exit intention with a total variance explained of .018.

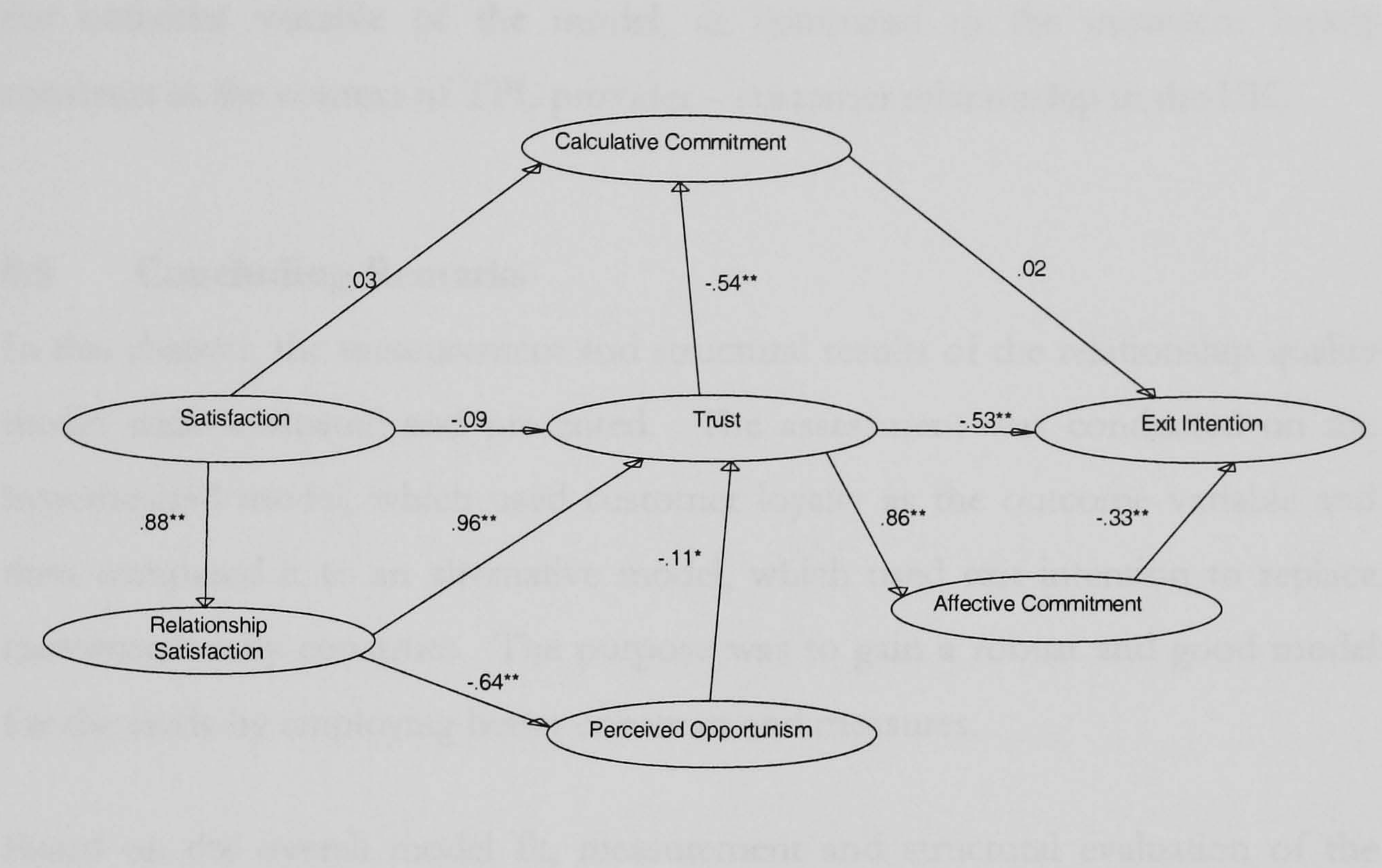
Table 8.6: Structural Parameters of Relationship Quality (Exit Intention as outcome)

Hypotheses	Parameter Estimates	Std Errors	C.R. Values	Comments
H ₁₁ : LSQ satisfaction → Relationship satisfaction	1.83**	.13	13.84	Supported
H ₁₂ : LSQ satisfaction → Trust	-.18	.19	-.96	
H ₁₃ : LSQ satisfaction → Calculative commitment	.03	.21	.15	
H ₁₄ : Relationship satisfaction → Trust	.90**	.11	8.32	Supported
H ₁₅ : Relationship satisfaction → Perceived opportunism	-.61**	.08	-7.90	Supported
H ₁₆ : Perceived opportunism → Trust	-.11*	.05	-1.98	Supported
H ₁₇ : Trust → Affective commitment	.71**	.08	9.36	Supported
H ₁₈ : Trust → Calculative commitment	-.43**	.13	-3.30	Supported
H ₁₉ : Trust → Exit Intention	-.58	.15	-3.78	Supported
H ₂₀ : Calculative commitment → Exit Intention	.09	.08	1.06	
H ₂₁ : Affective commitment → Exit Intention	-1.14**	.15	-7.73	Supported

Note: Fit Indices: $\chi^2 = 253.012$ $df = 178$ ($\chi^2/df = 1.42$), GFI = .882, CFI = .975, TLI = .970, RMSEA = .048

* Path significant at a $p < .05$ level. ** Path significant at a $p < .01$ level

Figure 8.2: The Structural Model of the Alternative Model (Exit Intention as the Outcome Variable)



Fit Indices: $\chi^2 = 253.012$ df = 178 ($\chi^2/\text{df} = 1.42$), GFI = .882, CFI = .975, TLI = .970, RMSEA = .048

* Path significant at a p < .05 level. ** Path significant at a p < .01 level

Table 8.7: Total Variance Explained of Causal Paths to Exit Intention

No. of Causal Paths	Causal Paths	Total Variance Explained
1	LSQ satis. → RSAT → TRUST → EXIT INTENTION (.88) (.96) (-.53)	-0.448
2	LSQ satis. → RSAT → TRUST → ACOMM → EXIT INTENTION (.88) (.96) (.86) (-.33)	- 0.240
3	LSQ satis. → RSAT → OPP → TRUST → EXIT INTENTION (.88) (- .64) (- .11) (-.53)	-0.033
4	LSQ satis. → RSAT → OPP → TRUST → ACOMM → EXIT INTENTION (.88) (- .64) (- .11) (.86) (-.33)	- 0.018

Finally, it can be concluded that in terms of validation of measures and the structural evaluation point of view, exit intention construct serves much better as the outcome variable of the model, as compared to the customer loyalty construct in the context of TPL provider – customer relationship in the UK.

8.5 Concluding Remarks

In this chapter, the measurement and structural results of the relationship quality model were evaluated and presented. The assessment was conducted on the hypothesised model, which used customer loyalty as the outcome variable and then compared it to an alternative model, which used exit intention to replace customer loyalty construct. The purpose was to gain a robust and good model for the study by employing better construct and measures.

Based on the overall model fit, measurement and structural evaluation of the hypothesised and alternative model, it was found that both models performed well in the context of this study. However, from a statistical point of view and suitability of the construct in the context of study, exit intention performs better as the outcome variable of the model. It reflects that the exit intention is a better construct and more suitable in the context of the TPL provider – customer relationships in the UK.

In the next chapter, the results of this study are discussed by comparing them with the findings from the existing studies and highlighting how these findings fill in the gap in the literature.

Chapter 9

DISCUSSION

9.1 Introduction

This chapter discusses the empirical results of the models estimated in Chapters Seven (refer to Section 7.5 and 7.6) and Eight (refer to Section 8.2, 8.3 and 8.4). The discussions are built upon the theoretical model and hypotheses developed for the study as well as the previous studies in the literature.

9.2 Discussion of Model Estimation and Hypotheses Tests Results

In this section, the main effects of the hypothesised model, Logistics Service Quality (LSQ) and Relationship Quality (RQ) were discussed. It explains how these effects may conform or vary from the existing literature.

9.2.1 Logistics Service Quality

The purpose of employing the LSQ process model in this study is to empirically and theoretically assess the robustness and generalisation of the model in an across industrial context for TPL providers and their customers. Thus, the results from LSQ may be summarised by pointing out three major issues. First, owing to the fact that LSQ was developed based on a single organisation, the generalisability of the measures remains a question. Based on the evaluation of the measurement model displayed in Chapter Seven, the applicability and generalisability of the measures were discussed. Secondly, in relation to the structural evaluation of the model, the structure of effects among the order placement constructs, order receipt constructs and satisfaction was also put forward. Finally, a different conceptualisation of the LSQ model in predicting satisfaction is explained. It is based on the proposed conceptualisation of service

quality in providing a better measure and understanding of the importance of each dimension in contributing to satisfaction.

9.2.1.1 The generalisability of LSQ measures

It is acknowledged in Section 7.5 that LSQ measures are applicable and generalisable to the customers of TPL providers in the UK context. Lindsay and Ehrenberg (1993) argue that, with a “close replication”, the differences of the method used may not be expected to prompt different results. However, stronger evidence of theory of generalisation may only be obtained through “differentiated replication” that produces similar results. Since the intent of this study was to make comparisons only in a different operational context, it was necessary to keep the measures identical in both studies in the first attempt at replication (Lindsay and Ehrenberg, 1993) of LSQ. By improving the two two-item’ constructs and using exactly the same seven out of nine LSQ measures, the results lend strong support that the LSQ measures are a valid and form a reliable scale across industrial sector in the UK. The composite reliabilities of all the seven constructs range from .73 to .93, exceeding 0.70 cut-off levels and both improved constructs had composite reliabilities of .96 each. Although, there was a slight problem with the order quality construct where the average variance extracted and R^2 were slightly lower than the acceptable levels (.47 and .268), it is argued that LSQ is reliable and valid measure in this study as the composite reliability demonstrated an acceptable level of .73. This is not surprising because Mentzer et al (2001) found that order quality was the only construct with composite reliability below .79. With the exception of information quality and ordering procedures constructs, the results provide strong evidence that LSQ measures could be generalised in the context of TPL providers – customers in the UK and the measures are excellent in both studies. One possible explanation for this is that it could be the outcome of using a 7-point Likert scale as compared to a 5-point Likert scale in the original study as the reliability of a scale

increases with an increase in the number of response categories (Churchill and Peter, 1984).

Goodness of fit tests determines whether the model being tested should be accepted or rejected. Although sample size has to be large for the parameter estimates and test statistics to be valid, based on the three indices CFI, TLI/NNFI and RMSEA that are least affected by sample size (Fan et al, 1999), LSQ model appears to fit the data reasonably well in this study. The use of full information maximum likelihood (FIML) method estimation in AMOS 5.0 program has also contributed to the full use of the incomplete data that was generated in the study.

Based on the above discussion, by overcoming several limitations of the LSQ process model as highlighted in Mentzer et al (2001; 1999), it is concluded that LSQ is a robust, valid and reliable scale in the context of this study.

9.2.1.2 The structure of effects among order placement, order receipt and satisfaction constructs

Based on the previous studies (e.g. Byrne and Markham, 1991; Mentzer et al, 1989; Persson, 1995), Mentzer et al (2001) conceptualise LSQ model as a complete process beginning with customers placing an order, orders being processed, orders being shipped and until orders are received. The contacts with personnel are involved when customers place and receive orders and when order receipt is not as expected; customers stay engaged in the logistics process through discrepancy handling. Thus, order placement constructs, which comprise of personnel contact quality, order release quantities, information quality and ordering procedures were hypothesised to affect the order completeness constructs (order accuracy, order condition, order quality), which in turn have effects on timeliness (H_3 , H_4 and H_5) and order discrepancy handling (H_{2a} , H_{2b} and H_{2c}) (please refer Figure 7.1). However, the order placement constructs do not

have direct association with order discrepancy handling. Four constructs were hypothesised to have direct effects on satisfaction. Two of the constructs came from order placement constructs {personnel contact quality (H_{10}) and ordering procedures (H_9)} while the other two originated from order receipt constructs {timeliness (H_7) and order discrepancy handling (H_8)}.

Mentzer et al (2001) emphasise that the process conceptualisation that includes those dimensions examined in the LSQ process model has not been tested in any studies. They conducted their study on four customer segments, i.e. general merchandise, textiles, electronic and construction. They argue that different segments place emphasis on each dimension differently. However, the robustness and validity of the model can only be enhanced through the external validation of the measures and model. In response to this need, this study explores similarities and differences based on across-industrial customers of the TPL providers in the UK

Due to the differences in types of respondents between this study and Mentzer et al's (2001) study, a sufficient comparability of the results may not have been fully exploited. However, to assist discussion, the results obtained in this study were compared with the results obtained by all four segments in Mentzer et al's (2001) study.

The results appear to have some commonalities and variations with the results found by Mentzer et al (2001). Customers across segments and across industrial sectors of both DLA in the US and TPL providers in the UK agree that there is no interrelationship that works through the process of order placement, order receipt and satisfaction. Only three out of twenty-seven hypothesised relationships were supported across all segments in Mentzer et al's (2001) study and across industrial sectors in this study. Out of eight constructs that were hypothesised to affect timeliness, only one, i.e. personnel contact quality

influenced timeliness (H_{1d}) (refer to Figure 7.1 in Chapter Seven). Order release quantities, on the other hand only affected order condition (H_{1e}) rather than affecting order accuracy (H_{1c}), order quality (H_{1g}) and timeliness (H_{1h}). And only ordering procedures drove satisfaction (H_9) rather than being driven by personnel contact quality (H_{10}), timeliness (H_7) and order discrepancy handling (H_8). This study confirms that there is no direct interrelationship found along information quality, timeliness and satisfaction ($H_{11} \rightarrow H_7$). Further explanations could be found in the following section, Section 9.2.1.3.

With regard to the variations of results found in both studies, this study did not support the relationships from order release quantities to order accuracy (H_{1c}) as well as the interrelationships from order release quantities to order discrepancy handling through order quality ($H_{1g} \rightarrow H_{2c}$). The results were contrary to Mentzer et al's (2001) findings where these relationships were supported in all segments examined in their study. On the other hand, order condition was found to be a strong predictor of timeliness (H_4) in this study but was not supported in all segments examined by Mentzer et al (2001). One reason could be that most respondents in this study were engaged in transportation and warehousing services (82.5 percent and 53 percent – refer to Figure 6.1 in Chapter Six), which reflects that most TPL providers are not responsible for the accuracy and quality of the products/materials delivered to the final customers.

Apart from the conceptualisation of logistics service quality as a process of order placement – order receipt through to satisfaction that has been conceptualised by Mentzer et al (2001), certain issues that still remain questionable might be better explained from an alternative conceptualisation of service quality in the following section.

9.2.1.3 The Effects of Service Quality Components (Functional and Technical) in Predicting Satisfaction

As can be derived from Chapter Two, the formulation of all LSQ constructs are based on the integration of various conceptualisation of logistics customer service and service quality studies particularly physical distribution service (PDS), marketing customer service (Mentzer et al, 1989), physical distribution service quality (PDSQ) (Bienstock et al, 1997), SERVQUAL (Parasuraman et al, 1988) and Technical/Functional Quality (Gronroos, 1984). Although in developing PDSQ, Bienstock et al (1997) have emphasised the technical and functional component of physical distribution/logistics service, they have stressed that PDSQ consists mainly of the technical component of the service. Mentzer et al (2001) put stronger emphasis on SERVQUAL (Parasuraman et al, 1988) in their discussions but lack explanations from Technical/Functional Quality perspective. Thus, this study goes a step further in providing an alternative conceptualisation towards the LSQ process model in predicting satisfaction from Technical/Functional Quality (Gronroos, 1984) perspective.

Mentzer et al (2001) highlight that out of four constructs that were hypothesised to have direct effects on satisfaction {personnel contact quality (H_{10}), ordering procedures (H_9), timeliness (H_7), and order discrepancy handling (H_8)}, timeliness is not a predictor of satisfaction (H_7). They speculate that there is something similar across the customers of the single organization under their investigation that reduces the importance of timeliness. As this study demonstrated similar results, it was found from the exploratory study that there seem to exist two different sets of factors in driving customer satisfaction. The first set of factors may prevent dissatisfaction, but when present may not lead to satisfaction. On the other hand, the absence of the second set of factors may not cause dissatisfaction but when fulfilled may lead to satisfaction. The first set of factors could be regarded as the order qualifying criteria, that is achieving the minimum

standard of delivering logistics service, while the latter refers to the order winning criteria that is achieving the aspects of service that can satisfy customers. Technical/Functional Quality model of service quality as conceptualised by Gronroos (1984) underlines that technical quality involves “what” is provided and functional quality considers “how” it is provided. Although all constructs in LSQ have been produced in such a way that physical distribution service (PDS), marketing customer service (Mentzer et al, 1989) and SERVQUAL (Parasuraman et al, 1988) are integrated; the distinction of technical and functional components of the logistics service in analysing the results has been given less emphasis. It is expected that in both service quality models, Technical/Functional and SERVQUAL work differently in predicting customer satisfaction. In this study, timeliness is a measure of technical quality (Bienstock et al, 1997) that refers to the order qualifying factors and that personnel contact quality, ordering procedures and order discrepancy handling are the measures of functional quality that represents the order winning criteria in logistics service delivery. This could be why timeliness was not a predictor of satisfaction.

As laid down in Table 7.7 in Chapter Seven, the strongest effect on satisfaction was from personnel contact quality ($PQ \rightarrow SA$; .305), followed by ordering procedures (.090) and order discrepancy handling ($IQ \rightarrow OC \rightarrow OD \rightarrow SA = .019$; $OR \rightarrow OC \rightarrow OD \rightarrow SA = .015$; and $IQ \rightarrow OA \rightarrow OD \rightarrow SA = .008$). Examination of the definitions of order placement constructs suggests that the order placement constructs are composed of largely functional quality elements, which includes the process of “how” service is delivered. On the other hand, the order receipt constructs contains most technical quality elements, which essentially “what” the customer receives from the TPL provider. This explains why order receipt constructs exhibit weaker paths to satisfaction ($OC \rightarrow OD \rightarrow SA = .059$ and $OA \rightarrow OD \rightarrow SA = .019$) rather than the constructs (PQ and OP) that work directly to satisfaction. Several researchers agree that a Technical/Functional Quality

based model is better suited to predict customer satisfaction (e.g. Lassar et al, 2000).

It was hypothesised that order accuracy, order quality and order condition affects timeliness. However, only order condition drove satisfaction across order discrepancy handling from order release quantities and information quality (refer to Figure 8.1). The results could be due to the positive effects from order release quantities and information quality constructs on order condition and the fact that order release quantities and information quality are functional types of constructs.

Therefore, the results from this study suggest that Gronroos (1984) Technical/Functional description for service quality provides an additional explanation of service quality outcomes.

9.2.2 Relationship Quality

The discussion of relationship quality model addresses four major issues. First, the degree to which satisfaction with LSQ and relationship satisfaction complement each other in explaining relationship quality. Second, the structure of effects among the relationship quality constructs (relationship satisfaction, trust and commitment) related to the framework tested here. Third, the effect of perceived opportunism in deteriorating the quality of relationships and finally, the effects of relationship quality constructs on two different behavioural relationship outcomes (customer loyalty and intention to exit).

9.2.2.1 The interaction between LSQ satisfaction and relationship satisfaction and their effects on relationship quality

While in Chapter Three, the importance of relationship quality in industrial marketing has been highlighted; Chapter Two noted that the relational elements have been neglected in the LSQ reflecting such a need for the inclusion of those

elements. Thus, LSQ model was extended to include relationship quality elements.

In this relationship quality model (refer to Figure 4.4), satisfaction was conceptualised as two distinct constructs. Based on the arguments presented in Chapter Three (refer to Section 3.6.2.1), satisfaction with LSQ represents satisfaction with the technical and functional quality of logistics services provided by TPL providers, while relationship satisfaction signified customers' satisfaction with the TPL providers' relationships. Accordingly, it was hypothesised that satisfaction with LSQ was the predictor of all three constructs of relationship quality namely, relationship satisfaction, trust and calculative commitment. However, the results lend support to the hypothesis that higher satisfaction with LSQ leads to a higher relationship satisfaction (path coefficient of 0.88). The strong influence of satisfaction with LSQ on relationship satisfaction weakens the effect of satisfaction with LSQ on trust due to strong dependency of relationship satisfaction on trust (.96). An indication of this is that if the path from relationship satisfaction to trust is removed, the effect of satisfaction with LSQ on trust becomes significant (.68). This implies that relationship satisfaction has a stronger effect on trust as compared to satisfaction with LSQ.

Although the path coefficient value of 0.88 may have some indications of multicollinearity between the two satisfaction constructs (satisfaction with LSQ and relationship satisfaction), this is not surprising as there are some relational components in functional quality that are also measured by components in relationship quality. Multicollinearity is the extent to which a variable can be explained by the other variables in the analysis. As multicollinearity rises, the ability to define any variable's effects is diminished (Hair et al, 1998). In the case of satisfaction discussed here, item sat2 that measures satisfaction with LSQ may also be a good measure of relationship satisfaction construct as shown in the

correlation coefficient that ranged from .73 to .79 (see Table 8.2 in Chapter Eight). The average variance extracted values of .83 in both satisfaction constructs (refer to Table 8.1) provides strong discriminant validity for the two constructs supporting that satisfaction with LSQ and relationship satisfaction are two distinct constructs. As the relationship between satisfaction with LSQ and relationship satisfaction as conceptualised in this study has never been tested in any other studies, this study provides further evidence that relative to satisfaction with the quality of service, satisfaction with relationship provides stronger influence on trust.

9.2.2.2 The structure of effects among relationship quality constructs

The results on the discriminant validity presented in Section 8.3.3.2 in the previous chapter clearly support that the three dimensions of relationship quality, namely relationship satisfaction, trust and affective commitment can be discriminated among each other. As most authors suggest, (Hennig-Thurau, 2000; Baker et al, 1999; Smith, 1998; Dorsch et al, 1998; Hennig-Thurau and Klee, 1997; Bejou et al, 1996; Kumar et al, 1995; Crosby et al, 1990) this study incorporates relationship satisfaction, trust and commitment as constructs of relationship quality. Accordingly, this model hypothesises that relationship satisfaction positively influences trust (H_{14}), which in turn positively affects affective commitment (H_{17}) and negatively affects calculative commitment (H_{18}). These interrelationships are confirmed in that relationship satisfaction positively influences trust, which is in line with previous conceptual (Narayandas and Rangan, 2004; Tax et al, 1998; Bendapudi and Berry, 1997; Storbacka et al, 1994; Crosby et al, 1990) and empirical research (Selnes, 1998; Ganesan, 1994; Anderson and Narus, 1990). It also added evidence to the meta-analysis results by Geyskens (1998) in that it reveals the significant influence of relationship satisfaction on trust.

With regard to trust – affective commitment relationships, strong empirical support was found for a positive path from trust to affective commitment, which verifies most research findings (Ruyter et al, 2001; Garbarino and Johnson, 1999; Geyskens et al, 1996; Morgan and Hunt, 1994; Moorman et al, 1992; Achrol, 1991; Anderson and Weitz, 1989;). Accordingly, trust leads to positive attitude among the customers towards their TPL service provider in the relationship that is reflected in affective commitment. On the other hand, the results found a strong negative impact from trust to calculative commitment. This implies that the less confidence a customer has in their TPL provider, motivates customers more towards the calculation of costs and benefits. Although this relationship has not been widely explored, the results support previous research findings by some researchers such as Ruyter et al (2001) and Geyskens et al (1996).

Although the correlation coefficients among these relationship quality constructs (satisfaction with LSQ \rightarrow relationship satisfaction, satisfaction with LSQ \rightarrow trust, relationship satisfaction \rightarrow trust, relationship satisfaction \rightarrow affective commitment and trust \rightarrow affective commitment) exhibited high values (ranging from .82 to .95) (see Table 9.1), it is not that surprising such high values of correlation among relationship quality constructs were obtained. This is because some authors consider these constructs measure the same underlying idea, i.e. the attitudinal type of relationship outcomes (Dwyer and Oh, 1987; Geyskens, 1998; Rylander et al, 1997) and it is difficult to discriminate these constructs when they have attributes in common. Thus, they consider these three dimensions of relationship quality as a global construct.

However, as referred to in the correlation matrix in Table 8.2 in Chapter Eight, the correlation coefficient among the items of these constructs showed values of below .80, which is the most frequently, cited threshold correlation value (Lewis-beck, 1980). Concerning these results, according to Nancy (1994), there is no

agreement about what constitutes “too high” a correlation between independent variables, and there is no magic number. The point at which a problem is created varies according to the data in hand. The threshold value of .80 is probably misleading, because problems can occur at lower levels of correlation, even at a moderate correlation of .40 in some samples. Thus, this study found that relationship satisfaction, trust, affective commitment and calculative commitment are distinctive from each other.

Table 9.1: Correlation Matrix among Relationship Constructs

	Satis	Rsat	Opp	Trust	Acomm	Ccomm	Loy	
Satis	1.00							
Rsat	0.88	1.00						
Opp	-0.56	-0.64	1.00					
Trust	0.82	0.95	-0.68	1.00				
Acomm	0.71	0.83	-0.59	0.87	1.00			
Ccomm	-0.41	-0.49	0.35	-0.52	-0.45	1.00		
Loy	0.036	0.04	-0.03	0.04	0.07	0.05	1.00	
Exit	-0.67	-0.78	0.56	-0.82	-0.79	0.45	-	1.00

9.2.2.3 *The effect of perceived opportunism in deteriorating the quality of relationships*

The possibility that perceived opportunism could have some negative relation to relationship quality constructs was also investigated. Consequently, the model hypothesises a negative path from relationship satisfaction to perceived opportunism (H_{15}) before it negatively affects trust (H_{16}). The results from the sample support two of the hypotheses quite strongly that perceived opportunism is negatively influenced by relationship satisfaction (at $p < .01$ level) and eventually affects trust negatively (at $p < .05$ level). Thus, it appears in this data that a positive customers’ satisfaction with the TPL providers’ relationship has a significant inhibiting effect on the customers’ perception of their TPL provider being opportunistic and ultimately increases the customers’ trust on their TPL providers. This phenomenon provides an analogue to most existing relationship quality studies where perceived opportunism is inversely affected from

relationship satisfaction, and provides a negative impact on trust. Thus, opportunistic behaviour can be viewed as an endogenous variable that is affected by attitudes within a long-run relationship (John, 1984) (here, it refers to relationship satisfaction), which in turn reduces the level of trust (Yilmaz and Hunt, 2001; Dorsch et al, 1998; Morgan and Hunt, 1994).

*9.2.2.4 The effects of relationship quality on the behavioural relationship outcomes
(customer loyalty and intention to exit)*

In Chapter Four, the relationship quality constructs were hypothesised to have causal effects on the behavioural relationship outcome, namely customer loyalty. An alternative model that posits exit intention as the outcome is provided in case that customer loyalty does not perform well as the outcome variable of the model. It serves the purpose of investigating which of the two conceptualisations and operationalisations of variable outcome produce a better and more robust model.

With particular reference to calculative commitment, affective commitment and trust constructs, trust and affective commitment were hypothesised to positively influence customer loyalty (H_{19} and H_{20}) while calculative commitment negatively affects customer loyalty (H_{21}). The effects were reversed when the behavioural relationship outcome was replaced with exit intention, where trust and affective commitment were hypothesised to be negatively related to exit intention and calculative commitment positively leads to exit intention.

Although some existing research found support for the relationships between relationship quality constructs and loyalty (e.g. De Wulf et al, 2001), this study provides findings that are contrary to their belief. This is based on the empirical evidence in this study that no relationship quality constructs were found to have a connection to customer loyalty (refer Section 8.4.1 in Chapter Eight). However, as mentioned in the previous chapter, it is important to note the difference in the

conceptualisation of loyalty used in the previous studies and this may have caused the results to vary. From a statistical point of view, the weakness of loyalty measures used in this study and the unsuitability of the measures in the context of this study may also be the possibilities of the insignificant links. The concept of the customer loyalty construct used in this study may be only suitable to problematic relationships as has been emphasised by Ping (1997; 1999).

The results were contradicted in the alternative model as trust and affective commitment were found to have a strong (at $p < .01$ level) negative effect on exit intention, while calculative commitment remained as not having any significant relationship with exit intention. This confirms previous empirical results found in the literature between the level of customer's commitment and their propensity to leave (e.g. Brashear et al, 2003; Morgan and Hunt, 1994; Brown and Peterson, 1993). Zeithaml et al (1996) emphasise the importance of measuring future customer behavioural intentions to assess their potential to remain with or leave the organisation. While these interrelationships have been explored to a large extent in previous research, these findings are also in accordance with the previous empirical findings concerning the effects of trust on intention to stay (e.g. Ruyter et al, 2001; Garbarino and Johnson, 1999; Kim and Frazier, 1997) and affective commitment on intention to stay in the relationship (e.g. Ruyter et al, 2001; Garbarino and Johnson, 1999; Kim and Frazier, 1997; Gundlach et al, 1995; Kumar et al, 1994).

9.3 Concluding remarks

In conclusion, the chapter demonstrates that LSQ measures are generalisable and robust. The results from the structural model exhibit some commonalities and variations to the findings by Mentzer et al (2001). It also contributes explanations in exploring the interaction effects of service quality components, particularly

Technical/Functional Quality perspective in predicting customer satisfaction from a logistics service quality point of view.

The discussion on the relationship quality model follows by explaining the distinct concept of both LSQ satisfaction and relationship satisfaction and how they complement each other. The views on the way each relationship quality construct affects other constructs are also included. It highlights the role of perceived opportunism in deteriorating the quality of relationship, in which perceived opportunism was inversely affected from relationship satisfaction, and provides negative impact on trust. Finally, it discusses the effects of relationship quality constructs on two different concepts of outcome variable, namely customer loyalty and exit intention. It was found that exit intention was more suitable in the context of this study and that it has better measures in producing such a robust model for this study.

The final chapter addresses the conclusions that can be drawn from the results of the study and how these results would be beneficial to the industry and theory at large.

C h a p t e r 1 0

CONCLUSIONS

10.1 Introduction

The final chapter draws conclusions with regard to the research questions and hypotheses. The significance of contributions to theory and practice are also addressed along with the limitations of the research. Finally, it indicates the directions for further research.

10.2 Research Questions Addressed

The concept of logistics service quality is an important tool for delivering superior logistics service performance (Stock and Lambert, 2001; Miyazaki et al, 1999; Kent and Flint, 1997). There are increasing number of studies focusing on the definitions and descriptions of how logistics creates customer satisfaction and hence competitive advantage (Mentzer et al, 2001; Novack et al, 1994; Mentzer and Firman, 1994; Mentzer, 1993; Coyle et al, 1992; Mentzer et al, 1989; Ackerman, 1989; Stock and Lambert, 1987; Shapiro and Heskett, 1985; La Londe and Zinszer, 1976; Perrault and Russ, 1974). Various methods have been used including two service quality instruments, namely Technical/Functional Quality (Gronroos, 1984) and SERVQUAL (Parasuraman et al, 1985). Concurrently, considerable evidence has already been accumulated that relationship marketing, particularly relationship quality is useful in industrial and channel context in developing customer loyalty (e.g. Geyskens et al, 1996; Kumar et al, 1995; Anderson and Narus, 1990; Bitner, 1990; Crosby and Stephens, 1987). A few authors conceptually suggest that relationship quality construct is an important mediator in the relationship between satisfaction and customer loyalty (Christopher and Peck, 2004; Hennig-Thurau, 2000; Hennig-Thurau and Klee,

1997), which indirectly explains the weak and non-existent relationship between satisfaction and customer loyalty in some empirical studies (e.g. Anderson et al, 1994; Bitner, 1990; Reichheld and Sasser, 1990). However, empirical research investigating the effects of the relationships among logistics, service quality, customer satisfaction, relationship quality and customer loyalty has received relatively less attention in the literature. It is crucial as it helps researchers and practitioners better understand the customers' perceptions of how these dimensions affect one another and eventually lead to customer loyalty.

This study employs Mentzer et al's (2001) LSQ scale for measuring logistic service quality that takes into consideration the service quality instrument, SERVQUAL developed by Parasuraman et al (1985) and other service quality research in marketing. It comprises of nine dimensions (personnel contact quality, order release quantities, information quality, ordering procedures, order accuracy, order condition, order quality, timeliness and order discrepancy handling) and has been empirically validated on the customers of a single large logistics provider firm in the United States. However, the recent emphasis of many business strategies given on the strategic role of the relational elements in influencing customer loyalty have caused the LSQ model became slightly incomplete. By adding the relationship quality dimensions onto the LSQ process model, this study produces its hypothesised model. This led to the formulation of the research questions (refer to Section 1.3 in Chapter One). In the course of this study, it became evident that technical and functional quality plays crucial roles in driving customer satisfaction while relationship quality brings significant effects to customer loyalty and intention to exit. Consequently, the research questions formulated in Chapter One are addressed as follows.

10.2.1 What are the Effects of Technical Quality Dimensions in LSQ on Customer Satisfaction?

The technical quality aspects of logistics service in LSQ, namely order quality, order accuracy, order condition and timeliness form the basic but important determinants of service quality perceptions. This is what logistics service is all about, that is creating and enhancing the product's value by delivering the right product at the right time and right place with the right condition, right price, right amount and the right information. Previous studies underline that it is these values that create customer satisfaction (Coyle et al, 1992; Shapiro and Heskett, 1985; Stock and Lambert, 1987). However, the results from the exploratory and empirical study provide evidence that technical quality of logistics service dimensions do not drive customers' satisfaction, but only serve as the order qualifiers.

10.2.2 What are the Effects of Functional Quality Dimensions in LSQ on Customer Satisfaction?

The evidence gained from both the exploratory and empirical study showed that it is functional quality of the logistics service elements that drives customer's satisfaction. Functional quality refers to "how" logistics service is delivered to the customers rather than "what" and "when" it is delivered. Referring to this situation, "the contact person" of TPL providers' firm plays an important role in the way they give the required information to the customers at the time they require them and how much information is required. The procedures for obtaining the service appear to be critical in driving customer's satisfaction. These effects have been demonstrated from the empirical analysis that the strongest effect on satisfaction was from the quality of the contact personnel (standardised regression weight of .305) followed by the ordering procedures (standardised regression weight of .090). Due to this, the functional quality dimensions, namely personnel contact quality, information quality, ordering

procedures, order release quantities and order discrepancy handling have been regarded as consisting the order winning criteria that differentiates TPL providers' excellence for customer satisfaction.

10.2.3 What are the Effects of LSQ Satisfaction on Relationship Quality?

Mentzer et al (2001) suggest that further research should conceptualise LSQ with other related constructs such as customer loyalty or other similar concepts. However, several studies indicate that relationship quality acts as mediator between satisfaction and customer loyalty (Christopher and Peck, 2004; Hennig-Thurau, 2000; Hennig-Thurau and Klee, 1997). Although satisfaction with LSQ was hypothesised to affect three relationship quality constructs, i.e. relationship satisfaction, trust and calculative commitment, the empirical results exhibit strong support that satisfaction with LSQ only influences relationship satisfaction, which in turn affects trust followed by positive and negative influence on affective and calculative commitment respectively (see Table 8.4 in Chapter Eight).

10.2.4 What are the Effects of Relationship Quality Dimensions on Customer Loyalty and Exit Intention?

The empirical results exhibit strong support for the existing theoretical relationship studies (e.g. Christopher and Peck, 2004; Hennig-Thurau, 2000; Hennig-Thurau and Klee, 1997) in that the relationship quality dimensions would produce loyal customers who would have a higher intention of staying in the business relationships (refer to Section 8.4.2 for the results of the alternative model) as the results show significant paths to exit intention. However, the results suggest the relationship quality dimensions do not lead customers to remain silent and confident that things will get better (see Section 8.4.1 for the evaluation of the hypothesised model). Thus, satisfaction with the service and relationships, trust, and commitment prevents the customer's intention from exiting from the business relationships. These intermediaries also prevent any

tendency to engage in the opportunistic behaviour or to develop alternatives to the TPL provider.

10.3 Significance for Theory and Practice

The purpose of the study was to develop an understanding of how various dimensions of the logistics service process drive customers' satisfaction followed by an understanding of how customers' satisfaction with logistics services predicts customers' loyalty/exit through the exploration of relationship quality dimensions. The findings from this study have implications for both theory and practice.

10.3.1 Theoretical Implications

The success in integrating the service quality concept into logistics (Bienstock et al, 1997; Mentzer et al, 2001; 1999) has led to calls for further research. LSQ process model has been one of the recent models that measures logistics service quality developed by Mentzer et al (2001). Mentzer et al (2001) recommend that replication studies should be conducted on LSQ process models supporting the contention that the concepts measured in their study were stable. Consequently, this study extended the LSQ process model in several aspects.

First, this study expanded the applicability of Logistics Service Quality (LSQ) model that was conducted in the United States to another country (i.e. the UK) through the replication of the model and re-testing of the hypotheses. As quoted by several researchers, replicability is an important criterion of genuine scientific knowledge (Collins, 1985; Rosenthal and Rosnow, 1984) and that it is the key to generalisation for the advancement of science (Hubbard and Armstrong, 1994; Lindsay and Ehrenberg, 1993). Although all LSQ components were found to be robust in the original study, the fact that it was developed on a single large service provider requires for further replication and extension studies. According to

Lindsay and Ehrenberg (1993, p.219), research findings including those with high levels of statistical significance would remain “virtually meaningless and useless in themselves until they were generalised”. Mentzer and Flint (1997) highlight that there is no single study that can ensure external validity. Instead, the external validity can only be enhanced through studies conducted under varying conditions of time and place. Thus, this study adds to the body of knowledge by confirming that, with the replacement of the two original two-item’ constructs (information quality and ordering procedures) with the new ones, LSQ measures are valid and reliable across industrial sectors in the UK, reflecting the generalisability of the measures.

Secondly, in relation to the above, Mentzer et al (2001) highlight the need to improve the two constructs that were operationalised with only two items. Accordingly, this study expands these two constructs, i.e. information quality and ordering procedures. With reference to information quality, the inapplicability of the measures to the current context of study has led to changes to the entire conceptualisation and operationalisation measures of the construct. The complexity of logistics operations and practice that involves inter-organisational information systems such as the Internet and Electronic Data Interchange (EDI) in exchanging information, the quality of information should be evaluated in a more rigorous manner. The information quality measures developed by Mohr and Spekman (1994) were found to be appropriate in this study and were therefore adopted. On the other hand, due to a more complex situation of an across-industrial situation, ordering procedures construct requires a broader conceptualisation and operationalisation of the construct rather than being based only on efficiency and effectiveness. Thus, by adopting measures by Dabholkar (1994), this study included other ordering procedures items that are deemed important such as easiness, flexibility and simplicity of the procedures. By

improving these two constructs, this study improves the reliability of the instrument and its generalisability across the sample in this study.

Third, this study contributes a different explanation of the effects of service quality components by focusing on Technical/Functional Quality in predicting customer satisfaction from a logistics service quality point of view, which was not been emphasised in Mentzer et al (2001). This study suggests a solution as to why timeliness does not drive to satisfaction in Mentzer et al's (2001) research in that timeliness is a technical quality measure that is considered as an order qualifier rather than differentiator or order winning criteria. Accordingly, this study implies that the Technical/Functional Quality (Gronroos, 1984) approach is better in providing understanding of the interaction effects of service quality components as a process in predicting customer satisfaction. This would provide a better understanding of the importance of each attribute in contributing to satisfaction.

Fourth, a number of authors recognise the importance of service quality and relationship quality in influencing business profitability and that the concepts of service quality, customer satisfaction, relationship quality, customer loyalty are inter-related with each other (Dadzie et al, 2005; Christopher and Peck, 2004; Stank et al, 2003; Daugherty et al, 1998; Innis and La Londe, 1994). In fact, more research has been conducted on service quality and relationship quality confirming the effect on customer satisfaction and customer loyalty respectively. However, they have been conducted in isolation (De Wulf et al, 2001). Christopher and Peck (2004) elaborate the theoretical links of these dimensions stretching from logistics capability - customer service/satisfaction – relationship quality – customer retention and finally profitability (refer to Figure 3.1 in Chapter Three). However, there have been few attempts to empirically validate these relationships and clarify the crucial role played by the technical, functional

and relationship quality from a holistic point of view. Consequently, this study adds to the empirical and theoretical knowledge by providing insights into the relationships between the technical, functional and relationship quality. It provides evidence that these three dimensions of quality are related to each other, but serve different functions. It supports the idea suggested by Crosby et al (1990) in that the relational nature in service quality is insufficient for a relationship quality condition. Referring to the five phases of relationship life cycle (refer to Section 3.6.5 in Chapter Three) as underlined by Dwyer et al (1987), the technical and functional quality occupies only the first and the second phase of the cycle while relationship quality extend to the third and fourth phase of the cycle. The fulfilment of technical quality only forms the basic service quality perceptions and does not drive customer satisfaction while the fulfilment of functional quality influences customer satisfaction. Relationship quality, however, may only take effect if customers are satisfied with the service and that if relationship satisfaction, trust and commitment have been fulfilled and that perceived opportunism is deterred. Thus, it is the relationship quality dimensions that strongly drive the customers to stay in the business relationships.

Fifth, Mentzer et al (2001) suggest that LSQ should be linked to other customer outcome measures such as loyalty, word of mouth and price sensitivity. This is important as logistics researchers begin to include more behavioural issues such as customer satisfaction and relationship management apart from the traditional operational aspects of logistics. However, some researchers suggest that satisfaction is not sufficient to keep customers loyal (Hennig-Thurau, 2000; Hennig-Thurau and Klee, 1997). As stated by Deming (1986, p.141), “it will not suffice to have customers that are merely satisfied”. Jones and Sasser (1995, p.91) commented that “merely satisfying customers that have the freedom to make choices is not enough to keep them loyal,” and Stewart (1997, p. 112) suggests that the assumption that “satisfaction and loyalty move in tandem” is simply

incorrect. A shift in emphasis from satisfaction to loyalty appears to be a worthwhile change in strategy for most firms because businesses understand the profit impact of having a loyal customer base (Reichheld, 1996). Others have noted that the relative costs of customer retention are substantially less than those of acquisition (e.g. Oliver, 1999; Fornell and Wernerfelt, 1987). Thus, the contribution of this study emerges from the linking of relationship quality with elements of LSQ and explores the impact of customer satisfaction with logistics service quality on customer loyalty/exit through the interaction of relationship quality dimensions. This study is among the few studies (e.g. Wetzels et al, 1998) that measure the impact of service quality and relationship quality on customer loyalty/exit. It expands the understanding of the role of service quality and relationship quality.

Sixth, while the previous research has focused on the relationships between the channel members, this study contributes empirically by investigating relationships in a third party relationship context viewed from the customers' perspective. The increasingly importance of logistics outsourcing as a useful approach to lowering costs and gaining competitive advantage has long been realised by both industrial and consumer marketers (Mc Kinnon, 2001; Elmuti et al, 1998; Razzaque and Sheng, 1998; Bowersox and Daugherty, 1995; Gentry, 1995; La Londe and Cooper, 1989) (refer to Section 1.2.1). In fact, the increasing trends of partnerships between the industrial firms and TPL providers reflects the vital needs of more studies conducted on third party relationships as these areas of research have been given less attention (refer to Section 3.5 in Chapter Three). Consequently, this study adds to the body of knowledge through the enrichment of empirical literature on third party relationships.

Seventh, this study contributes to the body of knowledge by providing support for the causal links among the relationship quality constructs, namely trust,

commitment and relationship satisfaction. Previously, these three constructs have been treated as a global measure in many empirical studies (e.g. De Wulf et al, 2001; Kumar et al, 1995a). As there is still exist ambiguity with regard to which dimensions make up relationship quality, this study contributes to the theoretical description of these constructs in that relationship quality is viewed as consisting of five dimensions, namely relationship satisfaction, trust, affective commitment, calculative commitment and perceived opportunism. Although the path coefficients from LSQ satisfaction to relationship satisfaction, from relationship satisfaction to trust and from trust to affective commitment were .88, .96 and .87, this was not alarming as the percentages of variance by those constructs were above .50, thus supporting the relevance of making such a distinction to these constructs. These may also suggest that respondents could not distinguish between these three relationships quality constructs (trust, commitment and relationship satisfaction) and perhaps a global measure of relationship quality might be more appropriate. However, the emphasis of using separate relationship quality constructs in this study allows other researchers to tailor future research to investigate and find better measures so as to distinguish these three constructs.

The eighth contribution relates to the inclusion of relationship satisfaction dimension. This relationship has not been tested in any existing studies. In a consumer marketing study, Oliver (1997) argues that for satisfaction to affect loyalty, frequent or cumulative satisfaction is required so that individual satisfaction episodes become aggregated or blended. As a result, this study implies that satisfaction with service quality is not sufficient to evaluate satisfaction with relationship; it provides strong evidence that these two constructs are different from each other. As these two constructs were demonstrated to play different roles in this study, future research should regard these two constructs as two distinct constructs.

Finally, consistent with most studies in industrial relationships (e.g. Ruyter et al, 2001; Kim and Frazier, 1997; Gundlach and Mentzer, 1995; Ganesan, 1994; Kumar et al, 1994), the results add to existing knowledge by confirming that customers usually expect a longer-term continuance of relationships to stay profitable in their business and thus customer retention is the key to business maintenance and profitability for the TPL providers. However, they would be willing to stay in the relationships provided that the technical quality has been fulfilled and that they are satisfied with the service delivery. The other customer loyalty measures, however, may only be suitable in problematic relationships that are going through the process of dissolution of relationships as suggested by Ping (1999).

10.3.2 Managerial Implications

This study brings several important benefits to the TPL providers' industry.

The model of this study can greatly assist logistics managers in understanding how their customers assess the quality of logistics services and relationship experiences in receiving logistics services from their TPL providers. Essentially, the results address the key issue of what defines quality perceptions, how quality perceptions are formed and what outcomes are brought out by different quality efforts. It provides insights into the importance of satisfaction with logistics service quality as well as the significance of relationship quality in preventing the customer's intention to exit from the TPL provider's business relationships. This clarification requires managerial attention in efforts to improve the perceptions of TPL customers of the quality that the TPL companies provide. Therefore, the framework of this study can guide managers as they endeavour to enhance customers' logistics services and relationship experiences.

The model may also provide guidance as to which quality effort that the TPL provider firms should emphasise. The results highlight the need for TPL

providers to view the delivering of qualities as a process, in which the three different qualities of technical, functional and relationships play different but subsequent roles. It indicates practitioners as to the best process or alternative of preventing customer's intention to exit by achieving and improving the standard of service such as providing timely delivery, precise number of orders delivery, and minimum damaged on products/materials delivery to the customers. Achieving this is crucial as these are the dimensions that form quality perceptions, which signifies the TPL providers to focus on further efforts on the quality of service delivery process. Such efforts could be done by improving the quality of the interactions of the contact personnel, the ability to deal with discrepancies and to provide useful and accurate information as well as ease and effectiveness of the ordering procedures. Once these two quality criteria have been achieved, TPL providers could start building up good relationships with their customers. A quality relationship is built upon cumulative satisfactions with service and relationships that would in turn build customers trust on the TPL providers. Trust produces committed customers and prevents them from any intention to exit from these relationships. The logistics managers could use the instrument developed here to benchmark the internal operational specifications and their performance as perceived by customers and focus to the issues that they might find critical.

Further, the findings show that achieving the technical quality (**what** is being delivered) of the logistics service such as providing order quality, order condition, order accuracy and timeliness does not drive customer satisfaction. Instead, the drive to customer satisfaction is developed from a different set of factors, which is known as order winning factors. These factors refer to how the logistics service is being delivered (functional quality) by the TPL providers. In specific, the findings in this study suggest that customer satisfaction with a TPL provider firm is strongly based on encounters with the TPL provider's contact personnel

as well as the process of logistics service delivery that includes the after-sales services such as the way order discrepancies are dealt with satisfactorily. Thus, TPL provider firms should put their training efforts towards developing contact personnel whom can deliver excellent service as required by the customers such as technical skills necessary to convey expert services to the customers. Satisfaction may also be achieved if effective and efficient procedures of service that include simplicity, easiness and flexibility are provided and adhered. Further, issues such as timeliness, order accuracy, order adequacy, order completeness, and credible information with regard to the condition and delivery of the goods/materials that are communicated to the customers promptly may also lead to customer satisfaction. These are the criteria that differentiate one TPL provider from another. However, customers would not be dissatisfied with their TPL providers if these criteria are not met, but dissatisfaction occurs if the standard of the logistics service (i.e. technical quality) does not meet customers' expectations. Thus, the technical quality dimensions may be regarded as the order qualifying criteria. As such, meeting the customers' standard of delivering logistics service (**what** is delivered) is the basic requirement in providing a quality logistics service before attaining customers' satisfaction that is by focusing on **how** the logistics service process is delivered.

The results on satisfaction-customer loyalty interrelationships in the relationship quality model suggest that in order to prevent customers' intention to exit, managers should ensure continuous reliable logistics service so that cumulative satisfaction could be gained. As suggested from the path analysis, it is cumulative satisfaction that builds customers' trust in their TPL providers and help reduces customers' perceptions that their TPL providers are being opportunistic towards them. Trust that is built on these customers in turn, produces customers' commitment and prevents the development of any intention to withdraw from the business relationships. The results, however, imply to the managers that

when customers' trust is low, decisions on whether to maintain the relationship is more likely to be based on the calculation of immediate benefits relative to costs. Furthermore, customer's intention to maintain the relationship due to significant switching costs would not prevent customer's intention to leave the relationships. This indicates managers that customers are greatly concerned on the value that they obtained for the sacrifice and price that they have paid.

Finally, the sequential conceptualisation of the model is unique in that it allows analysis at several levels of abstraction. For example, a manager interested in perceptions of service or relationships on a cumulative basis could use global measures to determine overall quality evaluation. For researchers who focus on the quality of specific dimensions, the items of the nine constructs of logistics service quality and six constructs of relationship quality could be used as effective quality measures. Or if a manager desires a comprehensive quality analysis, the complete framework could be used both to determine an overall quality assessment and to identify specific areas that are in need of attention. Analyses performed in this fashion enable managers to devote resources for improving either quality collectively or specific aspects of the service act.

In brief, these implications provide some suggestions to the TPL provider on how to improve their efforts towards understanding and retaining their customers and finally gaining profitability.

10.4 Limitations of the Study and Directions for Future Research

The choice of research design forced certain trade-offs that could limit the findings.

The goal of this research is to develop a model that identifies the structure of effects of technical, functional and relationship quality dimensions exhibiting

different levels of outcomes that are considered by customers when evaluating a logistics service delivered by TPL providers in the context of across industrial sectors in the UK. In doing so, this study offers a unifying theory, which was drawn from the data gathered and literature to date. The analyses in the study supported the significance of relationships among technical, functional, customer satisfaction, relationship quality and intention to exit from the samples surveyed. However, caution should be taken in extrapolating the results to a specific industrial sector or channel member as this study acknowledged that it might be impossible to develop a model that is equally applicable across industrial sectors due to several reasons. First, the way the sampling frame was drawn produced results that were biased to certain industrial sectors. The inability to obtain an equal sample from each industrial sector was constrained by the lack of TPL customers' directory, the legal restriction to access the current database of the CILT members and the lack of control of the responses received. Second, the use of the SEM as the data analysis technique has constrained the data analysis to that different industrial sector could not be compared due to its feature of a large sample data analysis technique. Third, the diversity of logistics operations across different industrial sectors and the tendency of TPL providers to customize their services to a specific industry or customer limited the number of potential respondents to be drawn from the population. Due to these constraints, certain industrial sectors would only require the evaluation of only a subset of the constructs discussed here or certain industry sector might need some modifications of the measures or constructs. Therefore, it is stressed that further modifications, extensions, refinement of the dimensions in this study are required as to account for industry-specific constructs, which is critical for future research. Future research should also consider using other sampling technique such as snowballing technique as to obtain the required sample size and reliable sample of TPL customers from each industrial sector.

Secondly, although this research supported the generalisability of the LSQ constructs and expanded the LSQ to include the relationship quality constructs and found that the constructs were all reliable and valid; the dimensions and interrelationships in this study might not be the only dimensions and interrelationships that represent LSQ and relationship quality. Further research ought to explore other important dimensions or interrelationships that may provide new insights into the interrelationships of the model developed in this study. Along these lines, dimensions such as the rate of technological change in an industry that was not examined in this study may also moderate the relationship between customer satisfaction and customer loyalty. This is due to the fact that when technological change is rapid or when an industry is at the growth stage, customers may be constantly looking for changes in offering and hence, previous satisfaction with a TPL's service may not guarantee customer loyalty. In contrast, when technological change is slow or when an industry is in the mature stage, the relationship between customer satisfaction and customer loyalty could be stronger. As such, these issues merit further investigations.

Furthermore, with specific reference to LSQ, the development of specific measures for outbound movement of products/materials for the LSQ appears worthy of research consideration. This is because in a global TPL provider's context, outbound logistics constitute a higher proportion compared to the inbound movement of products/materials (refer to Section 6.2.2.6). In this study, the decision to conduct a close replication has resulted in 15.3 percent of incomplete data. The evidence suggested that several measures, especially those associated with technical quality of the scale such as order quality, order release quantities, order accuracy were developed specifically for inbound movement of products/materials and these may not appropriate for outbound movement of products/materials. Thus, by incorporating constructs that represent both the

inbound and outbound logistics, a true picture of the logistics service quality of the TPL logistics industry could be obtained.

Along these lines, the inclusion of other industrial-related constructs in the relationship quality framework such as dependence, adaptations, and co-operation warrants a discussion so as to view the patterns of impacts on relationship quality constructs. This is because the relationship quality constructs chosen for this study were viewed from the perspective of individual working relationships of the contact personnel of the TPL provider's firm and the logistics manager of a customer's firm and not from the organisation's working perspective. Since this study focused on individual as the unit of analysis, future research may consider the organisation as the unit of analysis to obtain a more complete representation of the quality of relationships in the business-to-business context.

Finally, it is important to note that the results obtained from this study are based on survey, which is a cross-sectional in nature. This approach has its own shortcoming as it captures a situation or an event at a point in time. This shortcoming may be embedded with the data gathered from a more qualitative approach, such as a case study and a longitudinal study in future research. Also, since no experimental research was conducted, no definite conclusions can be drawn concerning the causality of the relationships in the conceptual model. Thus, longitudinal research can improve understanding of the process dynamics and cumulative effects of relationships between the TPL providers and their customers that are not apparent in 'snapshots' of current relationships.

References

A

-
- Achrol, R.S. (1991). Evolution of the Marketing Organisation: New Forms for Turbulent Environments, *Journal of Marketing*, **55** (October), pp. 77-93.
- Achrol, R.S. and Gundlach, G.T. (1999). Legal and Social Safeguards Against Opportunism in Exchange, *Journal of Retailing*, **75**(1), pp. 107-124.
- Ackerman, K.B. (1989). Value-Added Warehousing Cuts Inventory Costs, *Transportation and Distribution*, **30** (July), pp. 32-35.
- Africk, J. and Calkins, C. (1994). Does Asset ownership mean better service? *Transportation and Distribution*, May, pp. 49-61.
- Aker, D.A. and Bagozzi, R.P. (1979). Unobservable Variables in Structural Equation Models with an Application in Industrial Selling, *Journal of Marketing Research*, **16**(2), pp. 147-58.
- Allen, N.J. and Meyer, J.P. (1990). The Measurement and Antecedents of Affective, Continuance, and Normative Commitment to the Organisation, *Journal of Occupational Psychology*, **63**(1), pp. 1-18.
- Allison, P.D. (1987). Estimation of Linear Models with Incomplete Data, in *Sociological Methodology*, C. Clogg (ed.), Jossey-Bass, San Francisco, pp. 71-103.
- AMR Research, Intelligent Logistics – Logistics in an E-business world – Reality vs. Hype, The Logistics Forum 2000 was held from 11 – 14 October 2000 on board P&O's superliner Aurora, Richmond Events Limited, Retrieved October 20, 2002 from <http://www.logisticsandsupplychainforum.com>.
- AMR Research, Intelligent Logistics – Pathways to Progress, The Logistics Forum 2001 was held from 17 - 20 October 2001 on board P&O's superliner Oriana, Richmond Events Ltd, Retrieved October 20, 2002 from <http://www.logisticsandsupplychainforum.com>
- Analytiqa. (2004). Growth Strategies and Trends in UK Logistics, Retrieved July 14, 2005 from www.analytiqa.com
- Andaleeb, S.S. (1995). Dependence Relations and the Moderating Role of Trust: Implications for Behavioural Intentions in Marketing Channels, *International Journal of Research in Marketing*, **12**(2), pp. 157-172.
- Andaleeb, S.S. (1996). An Experimental Investigation of Satisfaction and Commitment in Marketing Channels: The Role of Trust and Dependence, *Journal of Retailing*, **72**(1), pp. 77-93.
- Anderson, E and Weitz, B. (1989). Determinants of Continuity in Conventional Industrial Channel Dyads, *Marketing Science*, **8**(Fall), pp. 310-23.
- Anderson, E. and Weitz, B. (1992). The Use of Pledges to Build and Sustain Commitment in Distribution Channels, *Journal of Marketing Research*, **29**(February), pp. 18-34.

- Anderson, E. W., Fornell, C. and Rust, R.T. (1997). Customer Satisfaction, Productivity, and Profitability: Differences between Goods and Services, *Marketing Science*, **16**(2), pp. 129-45.
- Anderson, E.W., Fornell, C. and Lehmann, D.R. (1994). Customer Satisfaction, Market Share, and Profitability: Findings from Sweden, *Journal of Marketing*, **58**(July), pp. 53-66.
- Anderson, J.C. and Narus, J.A. (1984). A Model of the Distributor's Perspective of Distributor-Manufacturer Working Relationships, *Journal of Marketing*, **48**(January), pp. 62-74.
- Anderson, J.C. and Narus, J.A. (1990). A Model of Distributor Firm and Manufacturer Firm Working Partnerships, *Journal of Marketing*, **54** (January), pp. 42-58.
- Anderson, J.C. and Gerbing, D.W. (1982). Some Methods for Re-specifying Measurement Models to Obtain Uni-dimensional Construct Measurement, *Journal of Marketing Research*, **19**(4), pp. 453-60.
- Anderson, E., Lodish, L.M. and Weitz, B.A. (1987). Resource Allocation Behaviour in Conventional Channels, *Journal of Marketing Research*, **24**(1), pp. 85-97.
- Anderson J.C. and Narus J.A. (1988). Strengthen Distributor Performance through Channel Positioning, *Sloan Management Review*, **29**(2), pp. 31-40.
- Anonymous. (1995). Third Parties, *Distribution*, March, pp. 35-44.
- Anonymous. (1999). UK Top on Outsourcing, *Supply Management*, **4**(14), p. 13.
- Arbuckle, J.L. (1996). Full Information Estimation in the Presence of Incomplete Data, in *Advanced Structural Equation Modeling*, Marcoulides, G.A. and Schumacker, R.E. (Eds), Mahwah: NJ, pp. 243-277.
- Arbuckle, J. L. (1999). *Amos Users' Guide, Version 4.0*, SmallWaters Corporation, Chicago.
- Armstrong, J.S. and Overton, T.S. (1977). Estimating Non-response Bias in Mail Surveys, *Journal of Marketing Research*, **14**(3), pp. 396-402.
- Assael, H. (1987). *Consumer Behaviour and Marketing Action*, 3rd. Edition, Boston, Kent.

B

- Babakus, E. and Boller, G.W. (1992). An Empirical Assessment of the SERVQUAL Scale, *Journal of Business Research*, **24**(May), pp. 253-268.
- Babakus, E. and Mangold, W.G. (1992). Adapting the SERVQUAL Scale to Health Care Services: An Empirical Examination, *Health Service Research*, **25**(6), pp. 767-780.
- Bagchi, P. and Virum, H. (1998). Logistics Alliances: Trends and Prospects in Integrated Europe, *Journal of Business Logistics*, **19**(1), pp. 191-212.
- Bagchi, P.K. and Larsen T. S. (1995). European Logistics in Transition: Some Insights, *International Journal of Logistics Management*, **6**(2), pp. 11-24.
- Bagozzi, R.P. (1994). ACR Fellow Speech, *Advances in Consumer Research*, **21**, pp. 8-11.

- Bagozzi, R.P. and Heatherton, T.F. (1994). A General Approach to Representing Multifaceted Personality Constructs: Application to State Self-Esteem, *Structural Equation Modelling*, **1**, pp. 35-67.
- Bagozzi, R.P. and Yi, Y. (1988). On the Evaluation of Structural Equation Models, *Journal of Academy of Marketing Science*, **16**(Spring), pp. 7-94.
- Bagozzi, R. P. (1980). Performance and Satisfaction in an Industrial Sales Force: An Examination of their Antecedents and Simultaneity, *Journal of Marketing*, **44**(2), pp. 65-77
- Bagozzi, R.P. (1984). A Prospectus for Theory Construction in Marketing, *Journal of Marketing*, **48**(1), pp. 11-49.
- Baker, W. E. and Sinkula, J.M. (1999). The Synergistic Effect of Market Orientation and learning Orientation on Organisational Performance, *Journal of the Academy of Marketing Science*, **27**(Fall), pp. 411-27.
- Bartlett, J.E.II, Kortlik, J.W. and Higgins, C.C. (2001). Organisational Research: Determining Appropriate Sample Size in Survey Research, *Information Technology, Learning, and Performance Journal*, **19**(1), pp. 43-50.
- Bask A.H. (2001). Relationships among TPL Providers and Members of Supply Chains - a Strategic Perspective, *Journal of Business and Industrial Marketing*, **16**(6), pp. 470-486.
- Baumgartner, H. and Homburg, C. (1996). Applications of Structural Equation Modelling in Marketing and Consumer Research: A Review, *International Journal of Research in Marketing*, **13**, pp. 139-161.
- Bearden, W. O., Sharma, S. and Teel, J.E. (1982). Sample Size Effects on Chi-Square and Other Statistics Used in Evaluating Causal Models, *Journal of Marketing Research*, **19**(4), pp. 425-430.
- Bearden, W., O., Netemeyer, R.G. and Mobley M.F. (1993). *Handbook of Marketing Scales, Multi-Item Measures for Marketing and Consumer Behaviour Research*, Sage Publications, London.
- Bejou, D., Wray, B. and Ingram, T.N. (1996). Determinants of Relationship Quality: An Artificial Neural Network Analysis, *Journal of Business Research*, **36**(2), pp. 137-143.
- Bendapudi, N. and Berry, L.L. (1997). Customers' Motivations for Maintaining Relationships with Service Providers, *Journal of Retailing*, **73**(1), pp. 15-37.
- Bennett, R. and Rundle-Thiele, S. (2002). A Comparison of Attitudinal Loyalty Measurement Approaches, *Journal of Brand Management*, **9**(3), pp. 193-207.
- Bentler, P.M. (1990). Comparative Fit Indexes in Structural Models, *Psychological Bulletin*, **107**(2), pp. 238 – 246.
- Bentler, P.M. and Bonett, D.G. (1980). Significance Tests and Goodness of Fit in the Analysis of Covariance Structures, *Psychological Bulletin*, **88**(3), pp. 588-606.
- Bentler, P.M. and Chou, C.P. (1987). Practical Issues in Structural Modelling, *Sociological Methods & Research*, **16**, pp. 78-117
- Berglund, M., Laarhoven van, P., Sharman, G. and Wandel, S. (1999). Third-Party Logistics: Is There a Future?, *The International Journal of Logistics Management*, **10**(1), pp. 59-70.
- Berry, L.L. and Parasuraman, A. (1991). *Marketing Services: Competing Through Quality*, Free Press, New York.

- Berry, L.L. (1983). Relationship Marketing, in *Emerging Perspectives of Services Marketing*, Berry, L.L., Shostack, G.L. and Upah, G.D. (Eds.), American Marketing Association, Chicago IL, pp. 25-28.
- Berry, L.L. (1995). Relationship Marketing of Services – Growing Interest, Emerging Perspectives, *Journal of the Academy of Marketing Science*, **23**(4), pp. 236-45.
- Bethlehem, J. (1999). Cross-sectional Research, in *Research Methodology*, J Ader, H. and J Mellenbergh, G. (Eds.), Sage Publications, London.
- Bhatnagar, R. and Viswanathan, S. (2000). Re-engineering Global Supply Chains: Alliances between Manufacturing and Global Logistics Service Providers, *International Journal of Physical Distribution and Logistics Management*, **30**(1), pp. 13-34.
- Bhatnagar R., Sohal A.S. and Millen R. (1999). Third-party Logistics Services: A Singapore Perspective, *International Journal of Physical Distribution and Logistics Management*, **29**(9), pp. 569-587.
- Bienstock, C.C., Mentzer, J.T. and Bird, M.M. (1997). Measuring Physical Distribution Service Quality, *Journal of the Academy of Marketing Science*, **25**(1), pp.31-44.
- Biong, H. (1993). Satisfaction and Loyalty to Suppliers within the Grocery Trade, *European Journal of Marketing*, **27**(7), pp. 21-38.
- Bitner, M.J. (1990). Evaluating Service Encounters The Effects of Physical Surroundings and Employee Responses, *Journal of Marketing*, **54**(2), pp. 69-82.
- Bitner, M.J., Booms, B.H. and Mohr, L.A. (1994). Critical Service Encounters: The Employee's View, *Journal of Marketing*, **58** (October), pp. 95-106.
- Bollen, K.A., (1989), *Structural Equations with Latent Variables*, John Wiley & Sons, New York.
- Bollen, Kenneth E., and J. Scott Long. (1992). Tests for Structural Equation Models: Introduction, *Sociological Methods and Research*, **21**(November), pp. 123-31.
- Bolumole, Y.A. (2001). The Supply Chain Role of Third-party Logistics Providers, *International Journal of Logistics Management*, **12**(2), pp. 87-102.
- Boulding, W., Kalra A., Staelin R., and Zeithaml V.A. (1993). A Dynamic Model of Service Quality: from Expectations to Behavioural Intentions, *Journal of Marketing Research*, **30**(February), pp.7-27.
- Bowersox, D. (1990). The Strategic Benefits of Logistics Alliances, *Harvard Business Review*, **68**(4), pp. 36-45.
- Bowersox, D.J., Mentzer, J.T., Speh, T.W. (1995). Logistics Leverage, *Journal of Business Strategies*, **12** (Spring), pp. 36-49.
- Bowersox, D. J., and Daugherty, P.J. (1995). Logistics Paradigms: The Impact of Information Technology, *Journal of Business Logistics*, **16**(1), pp. 65-80.
- Boyson, S., Corsi, T., Closs, D.J. and Stank, T.P. (1999). Managing Effective Third Party Logistics Partnerships: What Does It Take?, *Journal of Business Logistics*, **20**(1), pp. 73-100.
- Bradley, P. (1994). Cozy up, but Stay Tough, *Purchasing*, 17 March, pp. 47-51.
- Brady, M.K. and Cronin, Jr. J.J. (2001). Some New Thoughts on Conceptualising Perceived Service Quality: A Hierarchical Approach, *Journal of Marketing*, **65** (July), pp. 34-49.

- Brady, M.K. and Robertson, C.J. (2001). Searching for a Consensus on the Antecedent Role of Service Quality and Satisfaction: An Exploratory Cross-National Study, *Journal of Business Research*, **51**(1), pp. 53-60.
- Brashear, T.G., Boles, J.S., Bellenger, D.N., Brooks, C.M. (2003). An Empirical Test of Trust-Building Processes and Outcomes in Sales Manager – Salesperson Relationships, *Journal of the Academy of Marketing Science*, **31**(2), pp. 189-200.
- Brensinger, D.P. and Lambert, D.M. (1990). Can the SERVQUAL Scale Be Generalised to Business-to-Business Services?, in *Enhancing Knowledge Development in Marketing*, Chicago: American Marketing Association, p. 289.
- Brown, J.R., Dev., C.S. and Lee, D. (2000). Managing Marketing Channel Opportunism: The Efficacy of Alternative Governance Mechanisms, *Journal of Marketing*, **64**(April), pp. 51-65.
- Brown, S.P. and Peterson, R.A. (1993). Antecedents and Consequences of salesperson Satisfaction: Meta Analysis and Assessment of Causal Effects, *Journal of Marketing Research*, **30**(February), pp. 63-77.
- Brown, T.J., Churchill, G.A., Peter, J.P. (1993). Research Note: Improving the Measurement of Service Quality, *Journal of Retailing*, **69**(Spring), pp. 127-139.
- Brown, J.R., Lusch, R.F. and Nicholson, C.Y. (1995). Power and Relationship Commitment: Their Impact on Marketing Channel Member Performance, *Journal of Retailing*, **71**(4), pp. 363-92.
- Browne, M.W. and Mels, G. (1992). *RAMONA User's Guide*, Department of Psychology, Ohio State University, Columbus, Ohio.
- Browne, B.M. and Cudeck, R. (1993). Alternative Ways of Assessing Model Fit, in *Testing Structural Models*, Bollen, K.S. and Long, J. S. (Eds), Sage Publications, Newbury Park.
- Bruner, G. C. and Hensel, P.J. (1992). *Marketing Scales Handbook: A Compilation of Multi-Item Measures*, American Marketing Association, Chicago III.
- Buchanan II, B. (1974). Building Organisational Commitment: The Socialisation of Managers in Work Organisations, *Administrative Science Quarterly*, **19**, pp. 533-546.
- Byrne, P.M. and Markham, W.J. (1991). *Improving Quality and Productivity in the Logistics Process*, Council of Logistics Management, Oak Brook, IL.
- Byrne, B.M., (2001), *Structural Equation Modelling with AMOS – Basic Concepts, Applications and Programming*, Lawrence Erlbaum Associates, Inc., Publishers, New Jersey.

C

- Campbell, D.T. and Fiske, D.W. (1959). Convergent and Discriminant Validation by the Multi-trait Multi-method Matrix, *Psychological Bulletin*, **56**, pp. 81-105.
- Cavusgil, S. T., Seyda D. and Chun Z., (2004). Curbing Foreign Distributor Opportunism: An Examination of Trust, Contracts, and the Legal Environment in International Channel Relationships, *Journal of International Marketing*, **12**(2), pp. 7-27.

- Chandrashekar M., McNeilly K., Russ F.A., and Marinova D. (2000). From Uncertain Intentions to Actual Behaviour: A Threshold Model of Whether and When Salespeople Quit, *Journal of Marketing Research*, **11**(August), pp. 459-479.
- Chaudhuri, A. (1999). Does Brand Loyalty Mediate Brand Equity Outcomes?, *Journal of Marketing Theory and Practice*, **7**(2), pp. 136-146.
- Christopher M. (1985). *The Strategy of Distribution Management*, Gower Publishing Company Limited, Hants, England.
- Christopher M., (1986), *The Strategy of Distribution Management*, Butterworth, Heinemann, Oxford.
- Christopher M. (1990). Dedicated Contract Distribution: An Assessment of the UK Marketplace, *The International Journal of Physical Distribution and Logistics Management*, **20**(1).
- Christopher M. (1993) Logistics and Competitive Strategy, in *Strategy Planning in Logistics and Transportation*, Cooper J. (Ed.), Kogan Page, London.
- Christopher M. (1997). *Marketing Logistics*. Butterworth-Heinemann, Oxford.
- Christopher, M. and Peck, H. (2003). *Marketing Logistics*. Butterworth-Heinemann, Oxford.
- Churchill, G. A., Jr. (1979). A Paradigm for Developing Better Measures of Marketing Constructs, *Journal of Marketing Research*, **16**(February), pp. 64-73.
- Churchill, G.A. (1999). *Marketing Research: Methodological Foundations*, The Dryden Press, Forth Worth.
- Churchill, G.A. and Peter, J.P. (1984). Research Design Effects on the Reliability of Rating Scales: A Meta Analysis, *Journal of Marketing Research*, **21**(November), pp. 360-75.
- Collins, H.M. (1985). *Changing Order: Replication and Induction in Scientific Practice*, Sage Publications, Beverly Hills, CA.
- Cooper, M.C. and Gardner, J.T. (1993). Building Good Business Relationships-More than Just partnering or Strategic Alliances?, *International Journal of Physical Distribution and Logistics Management*, **23**(6), pp. 14-26.
- Cooper, J. and Johnstone, M. (1990). Dedicated Contract Distribution: An Assessment of the UK Market Place, *International Journal of Physical Distribution and Logistics Management*, **20**(1), pp. 25-31.
- Cooper J. (1990). The Transport Structure in Europe after 1992 - EEC and EFTA, *Cranfield School of Management Working Paper*.
- Cooper J. (1991). The Paradox of Logistics in Europe, *International Journal of Logistics Management*, **2**(2), pp. 42-54.
- Coyle, J.J., Bardi, E.J. and Langley Jr., C.J. (1992). *The Management of Business Logistics*, 5th. Edition, West Publishing Company, St. Paul, MN.
- Cronin J.J. and Taylor, S.A. (1992). Measuring Service Quality: A Re-examination and Extension, *Journal of Marketing*, **56**(July), pp. 55-68.
- Crosby, L.A. and Stephens, N. (1987). Effects of Relationship Marketing on Satisfaction, Retention, and Prices in the Life Insurance Industry, *Journal of Marketing Research*, **24**(November), pp. 404-11.

- Crosby, L.A., Evans, K.R. and Cowles, D. (1990). Relationship Quality in Services Selling: An Interpersonal Influence Perspective, *Journal of Marketing*, **54**(July), pp. 68-81.
- Crosby, L. A. (1991). Building and maintaining Quality in the Service Relationship, in *Service Quality: Multidisciplinary and Multinational Perspectives*, Brown S.W., Gummesson E., Edvardsson B., and Gustavsson, B. (Eds.), Lexington Books, Lexington, MA, pp. 269-87.
- Crosby, L. A., and Stephens, N. (1987). Effects of Relationship Marketing on Satisfaction, Retention, and Prices in the Life Insurance, *Journal of Marketing Research*, **24**(November), pp. 404-11.
- Crosby, L. A. (1989). Building and Maintaining Quality in the Service Relationship, in *Quality of Services*, Brown S.W. and Gummesson E. (Eds.), Lexington Books, Lexington.
- Crossthwaite, N. (2001). Logistics Services Providers, in *Logistics and Transport Management*, Cambridge Market Intelligence Ltd./The Institute of Logistics and Transport, London.
- Croucher P. (1998). Insourcing, *Logistics Focus*, **6**(2).
- Crouse, H.J. (1991). The Power of Partnerships, *The Journal of Business Strategy*, **12**(6), pp. 4-8.

D

- Dabholkar P.A. (1994). Incorporating Choice into an Attitudinal Framework: Analysing Models of Mental Comparison Processes, *Journal of Consumer Research*, **21** (June), pp. 100-118
- Dadzie, K.Q., Chelariu, C. and Winston, E. (2005). Customer Service in the Internet-Enabled Logistics Supply Chain: Website Design Antecedents and Loyalty Effects, *Journal of Business Logistics*, **26**(1), pp. 53-78.
- Datamonitor (2001), “*Market Capsules and Profiles- UK Logistics*”, Retrieved December 28, 2001 from <http://www.datamonitor.com>.
- Datamonitor. (2002). UK Market Overview, Retrieved May 12, 2002 from <http://www.datamonitor.com>
- Daugherty, P.J., Stank, T.P. and Ellinger, A.E. (1998). Leveraging Logistics/Distribution Capabilities: The Effect of Logistics Service on Market Share, *Journal of Business Logistics*, **19**(2), pp. 35-51.
- Daugherty, P.J., Stank, T.P. and Rogers, D.S. (1996). Third Party Logistics Service Providers: Purchasers’ Perceptions, *International Journal of Purchasing and Materials*, (May), pp. 23-29
- De Wulf, K., Odekerken-Schroder, G, Iacobucci, D. (2001). Investments in Consumer Relationships: A Cross-Country and Cross-Industry Exploration, *Journal of Marketing*, **65**(October), pp. 33-50.
- Deming, W. E. (1986). *Out of the Crisis*, Massachusetts Institute of Technology Centre for Advanced Engineering Study, Cambridge:MA.

- DeVellis, R.F. (1991). Scale Development – Theory and Applications, in *Applied Social Research Methods Series*, 26.
- Dick, A.S. and Basu K. (1994). Customer Loyalty: Toward an Integrated Conceptual Framework, *Journal of the Academy of Marketing Science*, **22**(2), pp. 99-113.
- Dillman D.A. (2000). *Mail and Internet Surveys – The Tailored Design Method*: John Wiley: New York.
- Dillon W.R., Maden T.J. and Firtle, N.H. (1987). *Marketing Research in a Marketing Environment*, Times Mirror, St. Louis.
- Donaldson, B. (1995). Customer Service as a Competitive Strategy, *Journal of Strategic Marketing*, **3**(2), pp. 113-126.
- Doney P.M. and Cannon J.P. (1997). An Examination of the Nature of Trust in Buyer-Seller Relationships, *Journal of Marketing*, **61**(2), pp. 35-51.
- Dorsch, M.J., Swanson, S.R. and Kelley, S.W. (1998). The Role of Relationship Quality in the Stratification of Vendors as Perceived by Customers, *Journal of Academy of Marketing Science*, **26**(2), pp. 128-142.
- Dunn S.C., Seaker R.F. and Waller M.A. (1994). Latent Variables in Business Logistics Research, *Journal of Business Logistics*, **15**(2), pp. 145-172.
- Dwyer F. R. and Oh S. (1987). Output Sector Munificence Effects on the Internal Political Economy of Marketing Channels, *Journal of Marketing Research*, **24**(4), pp. 347-58
- Dwyer, F.R. and Gassenheimer, J.B. (1992). Relational Roles and Triangle Dramas: Effects on Power Play and Sentiments in Industrial Channels, *Marketing Letters*, **3**(2), pp. 187-200.
- Dwyer, F.R., Schurr, P.H. and Oh, S. (1987). Developing Buyer-Seller Relationships, *Journal of Marketing*, **51**(April), pp. 11-27.

E

- Eborall C. (1991). The Collection of Primary Data, in *Researching Business Markets – A Handbook of Business-to-Business Marketing Research*, Sutherland K. (Ed.), Kogan Page, London, pp. 95-139.
- Ehrenberg, A. (1998). *Repeat Buying: Theory and Applications*, 2nd. Edition, Charles Griffin, London.
- Ellram L. M. and Hendrick T. E. (1995). Partnering Characteristics: A Dyadic Perspective, *Journal of Business Logistics*, **16**(1), pp. 41-64.
- Ellram L.M. (1990). The Supplier Selection Decision in Strategic Partnerships, *International Journal of Purchasing and Materials Management*, **26**(4), pp. 8-14.
- Ellram L.M. (1991). Key Success Factors and Barriers in International Purchasing Partnerships, *Management Decision*, **29**(7), pp. 38-44.
- Ellram L.M. (1992). Patterns in International Alliances, *Journal of Business Logistics*, **13**(1), pp. 1-25.

- Ellram L.M. and Cooper M.C. (1990). Supply Chain Management, Partnerships, and the Shipper-Third Party Relationship, *International Journal of Logistics Management*, **1**(2), pp. 1-10.
- Elmuti D., Kathawala Y. and Maonippallil M. (1998). Outsourcing to Gain a Competitive Advantage, *Industrial Management*, **40**(3), pp. 20-24.
- Emerson C. J. and Grimm C.M. (1996). Logistics and Marketing Customer Service: An Empirical Test of the Mentzer, Gomez, and Krapfel Model, *International Journal of Physical Distribution and Logistics Management*, **26**(9), pp. 29-42.
- Emerson, C. J. and Grimm, C.M. (1998). The Relative Importance of Logistics and Marketing Customer Service: A Strategic Perspective, *Journal of Business Logistics*, **19**(1), pp. 17-32.
- Enders C.K. (2001). The Impact of Non-normality on Full Information Maximum-Likelihood Estimation for Structural Equation Models with Missing Data”, *Psychological Methods*, **6**(4), pp. 352-370.

F

- Fan X., Thompson B. and Wang L. (1999). Effects of Sample Size, Estimation Methods and Model Specification on Structural Equation Modelling Fit Indexes, *Structural Equation Modelling*, **6**(1), pp. 56-83.
- Farrel, D. (1983). Exit, Voice, Loyalty, and Neglect as Responses to Job Dissatisfaction: A Multidimensional Scaling Study, *Academy of Management Journal*, **26**(4), pp. 596-607.
- Fernie, J. (1989). Contract Distribution in Multiple Retailing, *International Journal of Physical Distribution and Materials Management*, **19**(7), pp. 1-35.
- Fernie, J. (2004). Relationships in the Supply Chain, in *Logistics and Retail Management*, Fernie, J. and Sparks, L. (Eds.), Kogan Page Limited, London, pp. 26-47.
- Fernie, J. (1999). Outsourcing Distribution in U.K. Retailing, *Journal of Business Logistics*, **20**(2), pp. 83-95.
- Fornell, C. and Larcker, D.F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error, *Journal of Marketing Research*, **18**(3), pp. 39-50
- Fornell, C. and Wernerfelt, B. (1987). Defensive Marketing Strategy by Customer Complaint Management, *Journal of Marketing Research*, **24** (November), pp. 337-46.
- Foster, T.A. and Armstrong, R. (2005). Top 25 Third Party Logistics Provider: Bigger and Broader, *Global Logistics and Supply Chain Strategies*, May, pp. 30-40.
- Fournier, S. and Yao, J.L. (1997). Reviving Brand Loyalty: A Re-conceptualisation within the Framework of Consumer-Brand Relationships, *International Journal of Research in Marketing*, **14**(5), pp. 437-472.
- Franceshini, F. and Rafele, C. (2000). Quality Evaluation in Logistics Services, *International Journal of Agile Manufacturing Systems*, **2**(1), pp. 49-53.
- Frazier, G.L., Gill, J.D. and Kale, S.H. (1989). Dealer Dependence Levels and Reciprocal Actions in a Channel of Distribution in a Developing Country, *Journal of Marketing*, **53**(January), pp. 50-69.

G

-
- Ganesan, S. (1994). Determinants of Long-term Orientation in Buyer-Seller Relationships, *Journal of Marketing* **58**(2), pp. 1-19.
- Garbarino, E. and Johnson, M.S. (1999). The Different Roles of Satisfaction, Trust and Commitment in Customer Relationships, *Journal of Marketing*, **63** (April): 70-87.
- Gardner, J. and Cooper, M. (1994). Partnerships: a Natural Evolution in Logistics, *Journal of Business Logistics*, **15**(2), pp. 121-144.
- Gardner, J.T., Cooper, M.C. and Noordewier, T. (1994). Understanding Shipper-Carrier and Shipper-Warehouser Relationships: Partnerships Revisited, *Journal of Business Logistics*, **15**(2), pp. 121-143.
- Garson, G.D. (2004). Multivariate Analysis for Applied Social Science, Retrieved March 14, 2004 from <http://www2.chass.ncsu.edu/garson/pa765/path.htm>.
- Garvin, D.A. (1988). *Managing Quality: The Strategic and Competitive Edge*, The Free Press, New York.
- Gaski, J.F. and Nevin, J.R. (1985). The Differential Effects of Exercised and Unexercised Power Sources in a Marketing Channel, *Journal of Marketing Research*, **22** (May), pp. 130-142.
- Gassenheimer, J.B. and Ramsey, R. (1994). The Impact of Dependence on dealer satisfaction: A Comparison of Reseller-Supplier Relationships, *Journal of Retailing*, **71**(3), pp. 253-266.
- Gattorna, J.L. (1991). Building Relationships in Distribution Channels, *International Journal of Physical Distribution and Logistics Management*, **21**(2), pp. 36-39.
- Gecker, R. (2004). The State of Logistics Goes Global, *Inbound Logistics*, **24**(7), pp. 16-20.
- Gentry, J.E. (1996a). The Role of Carriers in Buyer-suppliers Strategic Partnerships: A Supply-chain Management Approach, *International Journal of Logistics Management*, **17**(2), pp. 35-55.
- Gentry, J.J. (1996b). Carrier Involvement in Buyer-Supplier Strategic Partnerships, *International Journal of Physical Distribution and Logistics Management*, **26**(3), pp. 14-25.
- Gentry, J.J. and Vellenge, D.B. (1996). Using Logistics Alliances to Gain a Strategic Advantage in the Marketplace, *Journal of Marketing Theory and Practice*, **4**(2), pp. 37-43.
- Gentry, J. J. (1995). *Role of Carriers in Buyer/ Supplier Strategic Alliances*, Centre for Advanced Purchasing Studies/National Association of Purchasing Management, Tempe, Arizona.
- Gerbing, D.W. and Anderson, J.C. (1988). An Updated Paradigm for Scale Development incorporating Unidimensionality and Its Assessment, *Journal of Marketing Research*, **25**(May), pp. 186-192.
- Geyskens, I. and Steenkamp, J.B.E.M. (2000). Economic and Social Satisfaction: Measurement and Relevance to Marketing Channel Relationships, *Journal of Retailing*, **76**(1), pp. 11-32.
- Geyskens, I. Steenkamp, J.B.E.M. and Kumar, N. (1999). A Meta-Analysis of Satisfaction in Marketing Channel Relationships, *Journal of Marketing Research*, **36**(May), pp. 223-238.

- Geyskens, I., Steenkamp, J.E.M., Scheer, L.K. and Kumar, N. (1996). The Effects of Trust and Interdependence on Relationship Commitment: A Trans-Atlantic Study, *International Journal of Research in Marketing*, **13**(4), pp. 303-317.
- Geyskens, Inge (1998). Trust, Satisfaction, and Equity in Marketing Channel Relationships, *doctoral dissertation*, Catholic University of Louvain.
- Gilmour, P. (1982). Customer Service: Differentiating by Market Segment, *International Journal of Physical Distribution and Materials Management*, **12**(3), pp. 37-44
- Goff, B.G., Boles, J.S., Bellenger, D.N. and Stojack, C. (1997). The Influence of Salesperson Selling Behaviours on Customer Satisfaction with Products, *Journal of Retailing*, **73**(2), pp. 171-83.
- Grant, D.B. (2003). A Study of Customer Service, Customer Satisfaction and Service Quality in the Logistics Function of the UK Food Processing Industry, *Unpublished PhD Thesis*, The University of Edinburgh.
- Grant, D.B. (2004). A Quarter-Century of Logistics Customer Service Research: Where are we now?, *Proceedings of the 9th Logistics Research Network Conference*, 9-10th September 2004, Quinn Business School, University College Dublin, Ireland.
- Gronroos, C. (1982). *Strategic management and Marketing in the Service Sector*, Swedish School of Economics and Business Administration, Helsingfors.
- Gronroos, C. (1994). Quo Vadis, Marketing? Towards a Relationship Marketing Paradigm, *Journal of Marketing Management*, **10**(5), pp. 347-360.
- Gronroos, C. (1995). Relationship Marketing: The Strategy Continuum, *Journal of Academy of Marketing Science*, **23**(4), pp. 252-255.
- Gronroos, C. (1984). A Service Quality Model and Its Marketing Implications, *European Journal of Marketing*, **18**(4), pp. 36-44.
- Gruen, T.W., Summers, J.O. and Acito, F. (2000). Relationship Marketing Activities, Commitment, and membership Behaviours in Professional Associations, *Journal of Marketing*, **64** (July), pp. 34-49.
- Guadagnoli, E., and Velicer, W.F. (1988). Relation of Sample Size to the Stability of Component Patterns, *Psychological Bulletin*, **103**(2), pp. 265-275.
- Gummesson, E. (1987). The New Marketing: Developing Long-Term Interactive Relationships, *Long Range Planning*, **20**(4), pp. 10-20.
- Gundlach, G.T., Achrol, R.S. and Mentzer, J.T. (1995). The Structure of Commitment in Exchange, *Journal of Marketing*, **59** (January), pp. 78-92.

H

- Hair, J.F., Rolph, E.A., Ronald, L.T. and William, C.B. (1998). *Multivariate Data Analysis*. Prentice Hall, Upper Sadle River, NJ.
- Halldorsson, A. and Skjott-Larsen, T. (2004). Developing Logistics Competencies through Third Party Logistics Relationships, *International Journal of Operations and Productions Management*, **24**(2), pp. 192-206.
- Harding, F.E. (1998). Logistics Service Provider Quality: Private Measurement, Evaluation and Improvements, *Journal of Business Logistics*, **19**(1), pp. 103-120.

- Hartline, M.D., Ferrel, O.C. (1996). The Management of Customer Contact Employees: An Empirical Investigation, *Journal of Marketing*, **69**(October), pp. 52-70.
- Hartline, M.D., Maxham III, J.G. and McKee, D.O. (2000). Corridors of Influence in the Dissemination of Customer-Oriented Strategy to Customer Contact service Employees, *Journal of Marketing*, **64**(April), pp. 35-50.
- Hausman, A. (2001). Variations in Relationship Strength and Its Impact on Performance and Satisfaction in Business Relationships, *Journal of Business and Industrial Marketing*, **16**(7), pp. 600-616.
- Hawkes, P. (1994). Building Brand Loyalty and Commitment, *Journal of Business and Management*, **1**, pp. 337-347.
- Heeler R.M. and Ray M.L. (1972). Measure Validation in Marketing, *Journal of Marketing Research*, **9**(November), pp. 361-70.
- Heide J.B. and John G. (1992). Do Norms Really Matter?, *Journal of Marketing*, **56**(2), pp. 32-44.
- Hennig-Thurau T. and Klee A. (1997). The Impact of Customer Satisfaction and Relationship Quality and Customer Retention: A Critical Reassessment and model Development, *Psychology and Marketing*, **14**(8), pp. 737-64.
- Hennig-Thurau T. (2000). Relationship Quality and Customer Retention through Strategic Communication of Customer Skills, *Journal of Marketing Management*, **16**(1-3), pp 55-79.
- Hennig-Thurau, T., Langer, M.F. and Hansen, U. (2001). Modelling and Managing Student Loyalty - An Approach Based on the Concept of Relationship Quality, *Journal of Service Research*, **3**(4), pp. 331-344.
- Hennig-Thurau, T.; Gwinner, K.P. and Gremler, D.D. (2002). Understanding Relationship Marketing Outcomes, *Journal of Service Research*, **4**(3), pp. 230-247.
- Heskett, J.L., Jones, T.O., Loveman, G.W., Sasser, Jr., W.E. and Schlesinger, L.A. (1994). Putting the Service-Profit Chain to Work, *Harvard Business Review*, (March-April), pp. 165-174.
- Hildebrandt, L. (1987). Consumer Retail Satisfaction in Rural Areas: A Reanalysis of Survey Data, *Journal of Economic Psychology*, **8**(1), pp. 19-42.
- Hirschman, Albert O. (1970). *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organisations, and States*, Harvard University Press: Cambridge, MA.
- Hocutt, M.A. (1998). Relationship Dissolution Model: Antecedents of Relationship Commitment and the Likelihood of Dissolving a Relationship, *International Journal of Service Industry Management*, **9**(2), pp. 189-200.
- Hoelter, J.W. (1983). The Analysis of Covariance Structures: Goodness-of-Fit Indices, *Sociological Methods and Research*, **11**, pp. 325-344
- Holmes, J.G. and Rempel, J.K. (1989). Trust in Close Relationships, in *Close Relationships. Review of Personality and Social Psychology* 10, Hendrick (Ed.), Sage, Newbury Park, pp. 187-220.
- Holmlund, M. and Kock, S. (1995). Buyer Perceived Service Quality in Industrial Networks, *Industrial Marketing Management*, **24**(2), pp. 109-21.
- Holmlund, M. and Strandvik, T. (1999). Perception Configurations in Business Relationships, *Management Decision*, **37**(9/10), pp. 686-696.

- Holmlund, M. (2001). The D & D Model – Dimensions and Domains of Relationship Quality Perceptions, *The Service Industries Journal*, **21**(3), pp. 13-36.
- Homer, P. M. and Kahle L.R. (1988). A Structural Equation Test of the Value-Attitude-Behaviour Hierarchy, *Journal of Personality and Social Psychology*, **54**(4), pp. 638-46
- Hox, J.J. and Bechger, T.M. (1998). An Introduction to Structural Equation Modelling, *Family Science Review*, **11**, pp. 354-373.
- Hox, J.J. (1995). AMOS, EQS and LISREL for Windows: A Comparative View, *Structural Equation Modelling*, **2**, pp. 79-91.
- Hoyt, J. and Huq F. (2000). From Arms Length to Collaborative Relationships in the Supply Chain – An Evolutionary Process, *International Journal of Physical Distribution and Logistics Management*, **30**(9), pp. 750-764.
- Hubbard, R. and Armstrong, J.S. (1994). Replications and Extensions in Marketing- Rarely Published but Quite Contrary, *International Journal of Research Marketing*, **11** (June), pp. 223-248.
- Hubbard, R. and Vetter, D.E. (1996). An Empirical Comparison of Published Replication Research in Accounting, Economics, Finance, Management, and Marketing, *Journal of Business Research*, **35**(2), pp. 153-164.
- Hult, G.T.M. (1998). Managing the International Strategic Sourcing Process as a Market-Driven Organisational Learning System, *Decision Sciences*, **29**(1), pp. 193-216.
- Hult, G.T.M., Hurley, R.F., Giunipero, L.C. and Nichols, Jr. E.L. (2000). Organisational Learning in Global Purchasing: A Model and Test of Internal Users and Corporate Buyers, *Decision Sciences*, **31**(2), pp. 293-325.
- Hunt, S., Wood, V.R. and Chonko, L.B. (1989). Corporate Ethical Values and Organisational Commitment in Marketing, *Journal of Marketing*, **53**(July), pp. 79-90.
- Hunter, J.E. and Gerbing, D.W. (1982). Uni-dimensional Measurement, Second-order Factor Analysis and Causal Models, in *Research in Organisational Behaviour*, B.M. Staw and L.L. Cummings (Eds.), IV, JAI Press, Greenwich (CT), pp. 267-320.

I

- Innis D.E. and La Londe, B.J. (1994). Modelling the Effects of Customer Service Performance on Purchase Intentions in the Channel, *Journal of Marketing Theory and Practice*, **2**(2), pp. 45-60.

J

- Jacob, J. and Chestnut, R. (1978). *Brand Loyalty: Measurement and Management*, John Wiley and Sons, New York.
- Jamshidian, M. and Bentler, P.M. (1999). ML Estimation of Mean and Covariance Structures with Missing Data Using Complete Data Routines, *Journal of Educational and Behavioural Statistics*, **24**(1), pp. 21-41.
- Jap, S.D. and Anderson, E. (2003). Safeguarding Inter-organisational Performance and Continuity under Ex Post Opportunism, *Management Science*, **49**(12), pp. 1684-1701.

- Jap, S.D. (2001). Pie Sharing in Complex Collaboration Contexts, *Journal of Marketing Research*, **38** (February), pp. 86-99.
- Jaros, S.J., Jermier, J.M., Koehler, J.W. and Sincich, T. (1993). Effects of Continuance, Affective and Moral Commitment on Withdrawal Process: An Evaluation of Eight Structural Equation Models, *Academy of Management Journal*, **36**(5), pp. 951-995.
- Jarvelin, A. and Lehtinen, U. (1996). Relationship Quality in Business-to-Business Service Context, in *QUIS 5 Advancing Service Quality: A Global Perspective*, Edvardsson, B.B., Johnston, S.W. and Scheuing, E.E. (Eds.), Warwick Printing Company Ltd., pp. 243-54.
- John, G. (1984). An Empirical Investigation of Some Antecedents of Opportunism in a Marketing Channel, *Journal of Marketing Research*, **21**(August), pp. 278-89.
- Johnson, J.L. (1999). Strategic Integration in Industrial Distribution Channels: Managing the Inter-firm Relationship as a Strategic Asset, *Journal of the Academy of Marketing Science*, **27**(1), pp. 4-18.
- Johnson, C. J., Krapfel, Jr., R. E., and Grimm, C. M. (2001). A Contingency Model of Supplier-Reseller Satisfaction Perceptions in Distribution Channels, *Journal of Marketing Channels*, **8** (1/2), pp. 65-90
- Johnson J. L., Ravipreet S. S., and Rajdeep G. (2004). The Role of Relational Knowledge Stores in Inter-firm Partnering, *Journal of Marketing*, **68** (July), pp. 21-36
- Johnston, M. W., Parasuraman A., Futrell C.M., and Black W.C. 1990). A Longitudinal Assessment of the Impact of Selected Organisational Influences on Salespeople's Organisational Commitment During Early Employment, *Journal of Marketing Research*, **27** (August), pp. 333-344.
- Joreskog, K.G. (1993). Testing Structural Equation Models, in *Testing Structural Equation Models*, K.A. Bollen and J.S. Long (Eds.), Sage, Newbury Park, CA, pp. 294-316.
- Joreskog, K.G. and Sorbom, D. (1989). *LISREL 7: A Guide to the Program and Applications*, Jorekog and Sorbom/SPSS Inc., Chicago.
- Joreskog K.G. and Sorbom, D. (1993). *LISREL8: User's Reference Guide*, Scientific Software Mooresville, IN.

K

- Kanter, R.M. (1994). Collaborative Advantage: The Art of Alliances, *Harvard Business Review*, July-August, pp. 96-105.
- Keebler, J.S., Manrodt, K.B., Durtsche, D.A. and Ledyard, D.M. (1999). *Keeping Score: Measuring the Business Value of Logistics in the Supply Chain*, Council of Logistics Management, Chicago.
- Keller, S.B., Savitskie, K, Stank, T.P., Lynch, D.F. and Ellinger, A.E. (2002). A Summary and Analysis of Multi-Item Scales Used in Logistics Research, *Journal of Business Logistics*, **23**(2), pp. 83-270
- Kenny, D.A. (1979). *Correlation and Causality*, Wiley, New York.
- Kent, Jr.J.L. and Flint, D.J. (1997). Perspective on the Evolution of Logistics Thought, *Journal of Business Logistics*, **18**(2), pp. 15-29.

- Kerlinger, F.N. (1986). *Foundations of Behavioural Research*, Harcourt Brace Jovanovich College Publishers, Fort Worth.
- Kim, K and Frazier, G.L. (1997). On Distributor Commitment in Industrial Channels of Distribution: A Multi-component Approach, *Psychology and Marketing*, **14**(8), pp. 847-877.
- Knemeyer, A.M. and Murphy, P.R. (2005). Exploring the Potential Impact of Relationship Characteristics and Customer Attributes on the Outcomes of Third-party Logistics Arrangements, *Transportation Journal*, **44**(1), pp. 5-19.
- Knemeyer, A.M. and Murphy, P.R. (2004). Evaluating the Performance of Third-Party Logistics Arrangements: A Relationship Marketing Perspective, *The Journal of Supply Chain Management: A Global Review of Purchasing and Supply*, Winter, pp. 35-51.
- Knemeyer, A.M.; Corsi, T.M. and Murphy, P.R. (2003). Logistics Outsourcing Relationships: Customers' Perspectives, *Journal of Business Logistics*, **24**(1), pp. 77-110.
- Korgaonkar, P. K., Lund D., and Price B., (1985), A Structural Equations Approach toward Examination of Store Attitude and Store Patronage Behaviour, *Journal of Retailing*, **61**(2), pp. 39-60
- Kumar, N., Hibbard, J.D. and Stern, L.W. (1994). *An Empirical Assessment of the Nature and Consequences of Marketing Channel Intermediary Commitment*, Report No. 94-115, Cambridge MA: Marketing Science Institute.
- Kumar, N., Scheer, L.K. and Steenkamp, J.B.E.M. (1995b). The Effects of Perceived Interdependence on Dealer Attitudes, *Journal of Marketing Research*, **32**(3), pp. 348-56.
- Kumar, N., Scheer, L.K. and Steenkamp, J.E.M. (1995a). The Effects of Supplier fairness on Vulnerable Sellers, *Journal of Marketing Research*, **32**(February), pp. 54-65.
- Kyj, L.S. and Kyj, M.J. (1994). Customer Service: Product Differentiation in International Markets, *International Journal of Physical Distribution and Logistics Management*, **24**(4), pp. 41-50.
- Keebler, J.S., Mandrodt, K.B., Durtsche, D.A. and Ledyard, D.M. (1999). *Keeping Score: Measuring the Business Value of Logistics in the Supply Chain*. Chicago: Council of Logistics Management.
- Kyj, M.J. (1987). Customer Service as a Competitive Tool, *Industrial Marketing Management*, **16**(3), pp. 225-230.

L

-
- Lassar, W.M., Manolis, C. and Winsor, R.D. (2000). Service Quality Perspectives and Satisfaction in Private Banking, *International Journal of Bank Marketing*, **18**(4), pp. 181-199
- La Londe, B.J. and Cooper, M.C. (1989). *Partnerships in Providing Customer Service: A Third Party Perspective*, Council of Logistics Management, Oak Brook, IL.
- La Londe, B.J. and Zinszer, P.H. (1976). *Customer Service: Meaning and Measurement*, National Council of Physical Distribution Management, Chicago, IL: 156-9
- La Londe, B.J., cooper, M.C. and Noordeweir, T.G. (1988). *Customer Service: A Management Perspective*, Council of Logistics Management, Oak Brook, IL.

- Laarhoven van, P. and Sharman, G. (1994). Logistics Alliances: The European Experience, *The McKinsey Quarterly*, **1**, pp. 39-49.
- Laarhoven van, P., Berglund, M. and Peters, M. (2000). Third Party Logistics in Europe – Five Years Later, *International Journal of Physical Distribution and Logistics Management*, **30**(5), pp. 425-442.
- LaBarbera, P. and Mazursky, D. (1983). A Longitudinal Assessment of Consumer Satisfaction/Dissatisfaction: The Dynamic Aspect of the Cognitive Process, *Journal of Marketing Research*, **20**(4), pp. 393-404.
- Lages, C., Lages, C.R. and Lages, L.F. (2005). The RELQUAL Scale: A Measure of Relationship Quality in Export Market Ventures, *Journal of Business Research*, **58**(8), pp. 1040-1048.
- Lal, S., Laarhoven van, P. and Sharman, G. (1995). Making Logistics Alliances Work, *The McKinsey Quarterly*, **3**, pp. 188-190.
- Lambert D., Emmelhainz M. and Gardner J. (1999). Building Successful Logistics Partnerships, *Journal of Business Logistics*, **20**(1), pp. 165-181.
- Lambert, D.M. and Harrington, T.C. (1989). Establishing Customer Service Strategies Within the Marketing Mix: More Empirical Evidence, *Journal of Business Logistics*, **10**(2), pp. 44-60.
- Lambert, D.M. and Harrington, T.C. (1990). Measuring Non-response Bias in Customer Service Mail Surveys, *Journal of Business Logistics*, **11**(2), pp. 5-25.
- Lambert, D.M. and Stock, J.R. (1993). *Strategic Logistics Management – 3rd. Edition*, Irwin. Inc., Homewood. IL, p. 11.
- Lambert, D.M., Cooper, M.C. and Pagh, J.D. (1998). Supply Chain Management: Implementation Issues and Research Opportunities, *The International Journal of Logistics Management*, **9**(2), pp. 1-19.
- Lambert, D.M., Emmelhainz, M.A. and Gardner J.T. (1996). So You Think You Want A Partner? *Marketing Management*, **5**(2), pp. 24-41.
- Lambert, D. M., Stock J.R. and Sterling J.U. (1990). A Gap Analysis of Buyer and Seller Perceptions of the Importance of Marketing Mix Attributes in *Enhancing Knowledge Development in Marketing*, A. Parasuraman et al (Eds.), American Marketing Association, Chicago, p.208.
- Landis, R.S., Beal, D.J. and Tesluk, P.E. (2000). A Comparison of Approaches to Forming Composite Measures in Structural Equation Models, *Organisational Research Methods*, **3**(2), pp. 186-207.
- Langley Jr., John C., Dobrey R.F. and Newton B.F. (1997). Third Party Logistics: Key Market/Key Customer Perspectives, *Proceedings of the 26th Annual Educators' Conference of the Council of Logistics Management*, Chicago, October.
- Laarhoven van, P., Berglund M., Peters M. (2000). Third party Logistics in Europe - five years later, *International Journal of Physical Distribution & Logistics Management*, **30**(5), pp. 425-442.
- Langley, C.J., Newton, B. and Allen, G. (2000). Third Party Logistics Services: Views from the Customers on Globalisation, E-Commerce and Convergence, Retrieved September 20, 2002 from <http://www.logisticsforum.co.uk/research/>

- Larzelere, R.E. and Huston, T.L. (1980). The Dyadic Trust Scale: Toward Understanding Interpersonal trust in Close Relationships, *Journal of Marriage and Family*, (August), pp. 595-604.
- Leahy, S.E., Murphy, P.R. and Poist, R.F. (1995). Determinants of Successful Logistical Relationships: A Third-Party Provider Perspective, *Transportation Journal*, **35**(2), pp. 5-13.
- Leonidou, L.C. and Theosidou, M. (2002). An Integrated Model of Seller-Buyer Relationships in Industrial Markets in *Proceedings of the 31st. EMAC Conference*, European Marketing Academy, 28-31 May, Braga, Portugal
- Leuthesser, L. (1997). Supplier Relational Behaviour: An Empirical Assessment, *Industrial Marketing Management*, **26**(3), pp. 245-54.
- Levitt, T. (1983). *The Marketing Imagination*, The Free Press, New York.
- Lewis-Beck, M. (1980). *Applied Regression: An Introduction*, Sage Publications, Beverly Hill, CA.
- Lieb R.C. and Randall H.L. (1996). A Comparison of the Use of Third Party Logistics Services by Large American Manufacturers, *Journal of Business Logistics*, **17**(1), pp. 305-320.
- Lieb R.C. (1992). The Use of Third Party Logistics Services by Large American Manufacturers, *Journal of Business Logistics*, **13**(2), pp. 29 - 42.
- Lieb, R. and Bentz, B.A. (2005). The Use of Third-Party Logistics Services by Large American Manufacturers: The 2004 Survey, *Transportation Journal*, Spring, pp. 5-15.
- Lieb, R. and Miller, J. (2002). The Use of Third-party Logistics Services by Large US Manufacturers, the 2000 Survey, *International Journal of Logistics – Research and Applications*, **5**(1), pp. 1-12.
- Lieb, R.C., Millen, R.A. and Van Wassenhove, L.N. (1993). Third-party Logistics Services: A Comparison of Experienced American and European Manufacturers, *International Journal of Physical Distribution and Logistics Management*, **23**(6), pp. 35-44
- Likert, R. (1932). A Technique for the Measurement of Attitudes, *Archives of Psychology*, no.140.
- Lindsay, R.M. and Ehrenberg, A.S.C. (1993). The Design of Replicated Studies, *American Statistics*, **47**(August), pp. 217-228.
- Loehlin, J.C. (1998). *Latent Variable Models: An Introduction to Factor, Path, and Structural Analysis*, 3rd Edition, Lawrence Erlbaum Associates, Malwah, NJ.
- Lorange, P. and Roos, J. (1991). Road Blocks to the Success of Strategic Alliance (and How to go around them), *BI-Handelshoyskolen I Oslo, Working Paper*.
- Lovelock, C.H. (1983). Classifying Services to Gain Strategic Marketing Insights, *Journal of Marketing*, **47**(Summer), pp. 9-20.
- Lusch, R.F. and Brown, J.R. (1996). Interdependency, Contracting and Relational Behaviour in Marketing Channels, *Journal of Marketing*, **60**(October), pp. 19-38.

M

-
- MacCallum, R.C., Browne, M.W., & Sugawara, H.M. (1996). Power Analysis and Determination of Sample Size for Covariance Structure Modelling, *Psychological Methods*, **1**(2), pp. 130-149.
- Macneil, I. R., (1980), *The New Social Contract: An Inquiry Into Modern Contractual Relations*, Yale University Press, New Haven CT.
- Malhotra, N.K., (1996), *Marketing Research. An Applied Orientation*, Prentice Hall, Upper Saddle, New Jersey.
- Maltz, A. and Maltz, E. (1998). Customer Service in the Distributor Channel Empirical Findings, *Journal of Business Logistics*, **19**(2), pp. 103-129.
- Mathieu, J.E. and Zajac, D.M. (1990). A Review and Meta-Analysis of the Antecedents, Correlates and Consequences of Organisational Commitment, *Psychological Bulletin*, **108**(2), pp. 171-194
- McArdle, J.J. (1994). Structural Factor Analysis Experiments with Incomplete Data, *Multivariate Behavioural Research*, **29**(4), pp. 409-454
- McKinnon A. (2001). Integrated Logistics Strategies, in *Handbook of Logistics and Supply Chain Management*, Brewer et al (Eds.), Elsevier Science Ltd.
- McKinnon, A. and Forster, M. (2000). *Full Report of the Delphi 2005 Survey: European Logistical and Supply-Chain Trends: 1999 - 2005*, Heriot-Watt University, School of Management, Edinburgh.
- McKinnon, A. C. (1998). The Abolition of Quantitative Controls on Road Freight Transport, *Transport Logistics*, **1**(3), pp. 211-223.
- McKinnon, A. C. (1999). The Outsourcing of Logistical Activities, in *Global Distribution and Logistics Planning: Strategies for Management*, Walters D. (Ed.), Kogan Page, London.
- McQuitty, S. (2004). Statistical Power and Structural Equation Models in Business Research, *Journal of Business Research*, **57**(2), pp. 175-183.
- Meczes, R. (2002). Room for Third Party Improvement?, *Distribution*, April, pp. 12-13.
- Menon M. K., McGinnis M.A., Ackerman K.B. (1998). Selection Criteria for Providers of third-party logistics services: An exploratory study, *Journal of Business Logistics*, **19**(1), pp. 121-137.
- Mentzer, J.T. and Firman, J. (1994). Logistics Control Systems in the 21st Century, *Journal of Business Logistics*, **14**(1), pp. 215-218.
- Mentzer, J.T. and Flint, D.J. (1997). Validity in Logistics Research, *Journal of Business Logistics*, **18**(1), pp. 199-216.
- Mentzer, J.T. and Kahn, K.B. (1995). A Framework of Logistics Research, *Journal of Business Logistics*, **16**(1), pp. 231-250.
- Mentzer, J.T. and Williams, L.R., (2001). The Role of Logistics Leverage in Marketing Strategy, *Journal of Marketing Channels*, **8**(3/4), pp. 29-48.
- Mentzer, J.T. (1993). Managing Channel Relations in the 21st Century, *Journal of Business Logistics*, **14**(1), pp. 27-42.
- Mentzer, J.T., Flint, D.J. and Kent, J.L. (1999). Developing A Logistics Service Quality Scale, *Journal of Business Logistics*, **20**(1), pp. 9-32.

- Mentzer, J.T., Flint, D.J. and Hult, T.M. (2001). Logistics Service Quality as a Segment-Customised Process, *Journal of Marketing*, **65**(October), pp. 82-104.
- Mentzer, J.T., Gomes, R. and Krapfel Jr., R.E. (1989). Physical Distribution Service: Fundamental Marketing Concept?, *Journal of Academy of Marketing Science*, **17**(1), pp. 53-62.
- Mentzer, J.T., Min, S. and Zacharia, Z.G. (2000). The Nature of Inter-firm Partnering in Supply Chain Management, *Journal of Retailing*, **76**(4), pp. 549-568.
- Mentzer, J.T., Rutner, S.M. and Matsuno, K. (1997). Application of the Means-End Value Hierarchy Model of Understanding Logistics Service Quality, *International Journal of Physical Distribution and Logistics Management*, **27**(9/10), pp. 230-43.
- Meyer, J.P. and Allen, N.J. (1991). A Three-Component Conceptualisation of Organisational Commitment, *Human Resource Management Review*, **1**(1), pp. 61-89.
- Milburn, T. and Murray, W. (1993). Saturation in the Market for Dedicated Contract Distribution, *Logistics Focus*, **1**(5), pp. 6-9.
- Miles, J. (1998). Review Type: Statistical Analysis/Structural Equation Modelling, *Psychology Software News*, **8**(2), pp. 58-65.
- Min, S. and Mentzer, J.T. (2000). The Role of Marketing in Supply Chain Management, *International Journal of Physical Distribution and Logistics Management*, **30**(9), pp. 765-787.
- Mittal, B. and Lasser, W. (1995). The Disjunction between Satisfaction and Loyalty: Understanding when Satisfaction is not Enough, paper presented to the *Frontiers in Services Conference*, 5-7 October, Nashville, Tennessee.
- Miyazaki, A.D., Phillips, J.K. and Phillips, D.M. (1999). Twenty Years of JBL: An Analysis of Published Research, *Journal of Business Logistics*, **20**(2), pp. 1-19.
- Mohr, J. and Spekman, R. (1994). Characteristics of Partnership Success: Partnership Attributes, Communication Behaviour and Conflict Resolution, *Strategic Management Journal*, **15**(2), pp. 135-152.
- Mohr, J.J., Fisher, R.J. and Nevin, J.R. (1996). Collaborative Communication in Inter-firm Relationships: Moderating Effects of Integration and Control, *Journal of Marketing*, **60**(3), pp. 103-15.
- Moore, K.R. and Cunningham III, W.A. (1999). Social Exchange Behaviour in Logistics Relationships: A Shipper Perspective, *International Journal of Physical Distribution and Logistics Management*, **29**(2), pp. 103-121.
- Moore, K.R. (1998). Trust and Relationship Commitment in Logistics Alliances: A Buyer Perspective, *International Journal of Purchasing and Materials Management*, (January): 24-37.
- Moorman, C., Rohit, D. and Gerald, Z. (1993). Factors Affecting Trust in Market Research Relationships, *Journal of Marketing*, **57**(January), pp. 81-101.
- Moorman, C., Zaltman, G. and Deshpande, R. (1992). Relationships between Providers and Users of Market Research: The Dynamics of Trust within and Between Organisations, *Journal of Marketing Research*, **29**(August), pp. 314-28.
- Morash, E.A., Droge, C.L.M. and Vickery, S.K. (1996). Strategic Logistics Capabilities for Competitive Advantage and Firm Success, *Journal of Business Logistics*, **17**(1), pp. 1-22.
- Morgan, R.M. and Hunt, S.D. (1994). The Commitment-Trust Theory of Relationship Marketing, *Journal of Marketing*, **58**(July), pp. 20-38.

- Morris, M.H. & Davis, D.L. (1992). Measuring and Managing Customer Service in Industrial Firms, *Industrial Marketing Management*, **21**(4), pp. 343-353.
- Muller, E.J. (1993). The Top Guns of Third-party Logistics, *Distribution*, March, pp. 30-38.
- Muller, R. (1992). The Distribution Revolution, *Forbes*, **149**(11), pp. 54-57.
- Murphy P.R. & Poist R.F. (1998). Third Party Logistics Usage: An Assessment of Propositions Based on Previous Research, *Transportation Journal*, **37**(4), pp. 26-35.
- Murphy, P.R. and Poist, R.F. (2000). Third Party Logistics: Some User versus Provider Perspectives, *Journal of Business Logistics*, **21**(1), pp. 121-133.
- Muthen, B., Kaplan, D., & Hollis, M. (1987). On Structural Equation Modelling with Data that are not Missing Completely at Random, *Psychometrika*, **52**(3), pp. 431-462.

N

- Nancy, M. (1994). The M Word: Multicollinearity in Multiple Regression, *Social Work Research*, **18**(4), pp. 247-251.
- Narayandas, D. and Rangan, V.K. (2004). Building and Sustaining Buyer-Seller Relationships in Mature Industrial Markets, *Journal of Marketing*, **68**(July), pp. 63-77.
- Netemeyer, Richard G., James S. Boles, and Robert McMurrian (1996). Development and Validation of Work-Family Conflict and Family-Work Conflict Scales, *Journal of Applied Psychology*, **81**(June), pp. 400-410.
- Newman, J.W. and Werbel, R.A. (1973). Multivariate Analysis of Brand loyalty for Major Household Appliances, *Journal of Marketing*, **10**(4), pp. 404-409.
- Nix, N.W. (2001). Customer Service in a Supply Chain Management Context, in *Supply Chain Management*, Mentzer J.T. (Ed.), Sage Publications Ltd., London.
- Noordewier, T.G., John, G. and Nevin, J.W. (1990). Performance Outcomes of Purchasing Arrangements in Industrial Buyer-Vendor Relationships, *Journal of Marketing*, **54**(4), pp. 20-35.
- Novack, R.A., Rinehart, L.M. and Langley Jr., C.J. (1994). An Internal Assessment of Logistics Value, *Journal of Business Logistics*, **15**(1), pp. 113-152.
- Nunnally, J.C. (1978). *Psychometric Theory*, McGraw-Hill, New York.

O

- Odekerken-Schroder, G. and Bloemer, J. (2002). Constraints and Dedication as Drivers for Relationship Commitment: An Empirical Study in a Health-Care Context, in *Proceedings of the 31st EMAC Conference*, European Marketing Academy, 28-31st May, Braga Portugal.
- Ohmae, K. (1989). The Global Logic of Strategic Alliances, *Harvard Business Review*, **89**(2), pp. 143-54.
- Oliva, T.A., Oliver, R.L., MacMillan, I.C. (1992). A Catastrophe Model For Developing Service Satisfaction Strategies, *Journal of Marketing*, **56**(July), pp. 83-95.

- Oliver, R.L. and Swan, J.E. (1989). Equity and Dis-confirmation Perceptions as Influences on Merchant and Product Satisfaction, *Journal of Consumer Research*, **16**(December), pp. 372-383.
- Oliver, R.L. (1980). A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions, *Journal of Marketing Research*, **17**(November), pp. 460-469.
- Oliver, R.L. (1993). Cognitive, Affective, and Attribute Bases of the Satisfaction Response, *Journal of Consumer Research*, **20**(December), pp. 418-430.
- Oliver, Richard L. (1997). *Satisfaction: A Behavioural Perspective on the Consumer*, Irwin/McGraw-Hill, New York.
- Oliver, Richard L. (1999). Whence Consumer Loyalty?, *Journal of Marketing*, **63**(Special Issue 1999), pp. 33-44.
- Olsen, S.O. (2002). Comparative Evaluation and the Relationship between Quality, Satisfaction and Repurchase Loyalty, *Journal of Academy of Marketing Science*, **30**(3), pp. 240-249.

P

- Palmer, A. and Bejou, D. (1994). Buyer-Seller Relationships: A Conceptual Model and Empirical Investigation, *Journal of Marketing Management*, **10**(6), pp. 495-512.
- Parasuraman, A, Zeithaml, V.A. and Berry, L.L. (1988). SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality, *Journal of Retailing* **63**(1), pp. 12-37.
- Parasuraman, A, Zeithaml, V.A. and Berry, L.L. (1991). Refinement and Reassessment of the SERVQUAL Scale, *Journal of Retailing*, **67**(4), pp. 420-450.
- Parasuraman, A. (1991). *Marketing Research*, Addison-Wesley, Reading, Massachusetts.
- Parasuraman, A., Zeithaml, V. and Berry, L. (1985). SERVQUAL: A Conceptual Model of Service Quality and its Implication for Future Research, *Journal of Marketing*, **49**(Fall), pp. 41-50.
- Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1993). Research Note: More on Improving Service Quality Measurement, *Journal of Retailing*, **69**(1), pp. 140-147.
- Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1994). Reassessment of Expectations as a Comparison Standard in Measuring Service Quality: Implications for Future Research, *Journal of Marketing*, **58**(January), pp. 111-124.
- Parson, A.L. (2002). What Determines Buyer-Seller Relationship Quality? An Investigation from the Buyer's Perspective, *The Journal of Supply Chain Management*, **38**(2), pp. 4-12.
- PE Consulting. (1996). *The Changing Role of Third-Party Logistics - Can the Customer Ever be Satisfied*, The Institute of Logistics, Corby.
- PE International, (1993), *Contracting out or selling out?*, PE International: Egham.
- PE International, (1990), *Contract distribution in the UK – What the customers really think?*, PE International, Egham.

- Perreault, W.D. Jr and Russ, F.A. (1974). *Physical Distribution Service: A Neglected Aspect of Marketing Management*, Michigan State University Business Topics, **22**(Summer), pp. 37-45.
- Persson, G. and Virum, H. (2001). Growth Strategies for Logistics Service Providers: A Case Study, *The International Journal of Logistics Management*, **12**(1), pp. 53-64.
- Persson, G. (1995). Logistical Process Redesign: Some Useful Insights, *International Journal of Logistics Management*, **6**(1), pp. 13-26.
- Peters, M.J., Lieb, R.C. and Randall, H.L. (1998). The Use of Third-Party Logistics Services by European Industry, *Transportation Logistics*, **1**(3), pp. 167-179.
- Ping, R.A. (1993). The Effects of Satisfaction and Structural Constraints on Retailer Exiting, Voice, Loyalty, Opportunism, and Neglect, *Journal of Retailing*, **69**(3), pp. 320-352.
- Ping, R.A. (2004). On Assuring Valid Measures for Theoretical Models Using Survey Data, *Journal of Business Research*, **57**(2), pp. 125-141.
- Ping, Robert A., Jr. (1994). Does Satisfaction Moderate the Association between Alternative Attractiveness and Exit Intention in a Marketing Channel?, *Journal of the Academy of Marketing Science*, **22**(Fall), pp. 364-71.
- Ping, Robert A., Jr. (1999). Unexplored Antecedents of Exiting in a Marketing Channel, *Journal of Retailing*, **75**(2), pp. 218-241.
- Ping, Robert A., Jr. (1997). Voice in Business-to-Business Relationships: Cost-of-Exit and Demographic Antecedents, *Journal of Retailing*, **73**(2), pp. 261-81.
- Pressley, M.M. (1983). Try these tips to get 50% to 70% response rates from mail surveys of commercial population, *Marketing News*, 21st January, p. 16.
- PROTRANS, Third party logistics service provider and their involvement in logistics processes, *Project under the Fifth Framework Programme of the European Union*, presented to the European Logistics Research and Policy Conference, 4th Dec 2002, Brussels.

R

- Raven, P., Tansuhaj, P. and McCullough, J. (1993). Effects of Power in Export Channels, *Journal of Global Marketing*, **7**(2), pp. 97-116.
- Razzaque M. A. and Sheng C.C. (1998). Outsourcing of Logistics Function: A Literature Survey, *International Journal of Physical Distribution and Logistics Management*, **28**(2), pp. 89-107.
- Reichheld, F. and Sasser, E. (1990). Zero defection: Quality Comes to Services, *Harvard Business Review*, September – October.
- Reichheld, Frederick F. (1993). Loyalty Based Management, *Harvard Business Review*, **71**(2), pp. 64-73.
- Rempel, J.K., Holmes, J.G. and Zanna, M.P. (1985). Trust in Close Relationship, *Journal of Personality and Social Psychology*, **49**(1), pp. 95-112.
- Rhea, M.J. and Shrock, D.L. (1987). Measuring the Effectiveness of Physical Distribution Customer Service Programmes, *Journal of Business Logistics*, **8**(1), pp. 31-45.

- Rinehart, I.M., Cooper, M.B. and Wagenheim, G.D. (1989). Furthering the Integration of Marketing and Logistics through Customer Service, *Journal of the Academy of Marketing Science*, **17**(Winter), pp. 63-72.
- Roloff, M.E. and Miller, G.R. (1987). *Interpersonal Processes: New Directions in Communication Research*, **14**, Sage Publications Inc, London.
- Rosenblatt, P.C. (1977). Needed Research on Commitment in Marriage, in *Close Relationships: Perspectives on the Meaning of Intimacy*, Levinger, G. and Raush, H.L. (Eds), University of Massachusetts Press: Amherst, MA.
- Rosenthal, R. and Rosnow, R.L. (1984). *Essentials of Behavioural Research: Methods and Meta Analysis*, McGraw-Hill: New York, NY.
- Rowat, C. (1996). Satisfying the Customer, *Distribution*, October.
- Ruekert, R.W. and Churchill, G.A. (1984). Reliability and Validity of Alternate Measures of Channel Member Satisfaction, *Journal of Marketing Research*, **21**(May), pp. 226-233.
- Rusbult, C.E., Verette, J., Whitney, G.A., Slovik, L.F. and Lipkus, I. (1991). Accommodation Processes in Close Relationships: Theory and Preliminary Empirical Evidence, *Journal of Personality and Social Psychology*, **60**(1), pp. 53-78.
- Rusbult, C.E.; Farrell, D.; Rogers, G. and Mainous III, A.G. (1988). Impact of Exchange Variables on Exit, Voice, Loyalty, and Neglect: An Integrative Model of Responses to Declining Job Satisfaction, *Academy of Management Journal*, **31**(3), pp. 599-627.
- Rusbult, C.E., Zembrodt, I.M. and Gunn, L.K. (1982). Exit, Voice, Loyalty, and Neglect: Responses to Dissatisfaction in Romantic Involvements, *Journal of Personality and Social Psychology*, **43**(6), pp. 1230-1242.
- Rushton, A, Oxley, J. and Croucher, P. (2000). *The Handbook of Logistics and Distribution Management- 2nd Edition*, Kogan Page, London.
- Ruyter de, K., Moorman, L. and Lemmink, J. (2001). Antecedents of Commitment and Trust in Customer-Supplier relationships in High Technology Markets, *Industrial Marketing Management*, **30**(3), pp. 271-286.
- Rylander, D., Strutton D., and Lou E. Pelton. (1997). Toward a Synthesized Framework of Relational Commitment: Implications for Marketing Channel Theory and Practice, *Journal of Marketing Theory and Practice*, **5**(2), pp. 58-71.

S

- Scanzoni, J. (1979). Social Exchange and Behavioural Interdependence, in *Social Exchange in Developing Relationships*, R.L. Burgess and T.L. Huston (Eds.), Academic Press, Inc., New York.
- Schafer, Joseph L. and Graham, John W. (2002). Missing Data: Our View of the State of the Art, *Psychological Methods*, **7**(2), pp. 147-177.
- Scheer, L.K. and Stern, L.W. (1992). The Effect of Influence Type and Performance Outcomes on Attitude Toward the Influencer, *Journal of Marketing Research*, **29**(1), pp. 128-42.
- Shapiro, R.D. and Heskett, J.L. (1985). *Logistics Strategy: Cases and Concepts*, West Publishing: St. Paul, MN.

- Sharma, A., Grewal, D. and Levy, M. (1995). The Customer Satisfaction/Logistics Interface, *Journal of Business Logistics*, **16**(2), pp.1-21.
- Sharp, Byron and Anne Sharp. (1997). Loyalty Programs and Their Impact on Repeat-Purchase Loyalty Patterns, *International Journal of Research in Marketing*, **14**(5), pp. 473-86.
- Sheffi, Y. (1990). Third party Logistics: Present and Future Prospects, *Journal of Business Logistics*, **11**(2), pp. 27-40.
- Sheth, J.N. and Parvatiyar, A. (1995). The Evolution of Relationship Marketing, *International Business Review*, **4**(4), pp. 397-418.
- Siguaw, J.A., Simpson, P.M. and Baker, T.L. (1998). Effects of Supplier market Orientation on Distributor Market Orientation and the Channel Relationship: The Distributor Perspective, *Journal of Marketing*, **62**(3), pp. 99-111.
- Sink, H.L., Langley, Jr, C.J. and Gibson, B.J. (1996). Buyer Observations of the US Third Party Logistics Market, *International Journal of Physical Distribution and Logistics Management*, **26**(3), pp. 38-46.
- Sinkovics, R.R. and Roath, A.S. (2004). Strategic Orientation Capabilities, and Performance in Manufacturer – 3PL Relationships, *Journal of Business Logistics*, **25**(2), pp. 43-64.
- Skinner, S.J., Gassenheimer, J.B. and Kelley, S.W. (1992). Co-operation in Supplier-Dealer Relations, *Journal of Retailing*, **68**(2), pp. 174-93.
- Slater, A. (2001). Outsourcing Logistics Operations, in *Logistics and Transport Management*, The Institute of Logistics and Transport, Corby.
- Smith, J.B. and Barclay, D.W. (1997). The Effects of Organisational Differences and Trust on the Effectiveness of Selling Partner Relationships, *Journal of Marketing*, **61**(January), pp. 3-21.
- Smith, I. (2004). Seizing the Opportunities of an Expanding European Union, *Logistics Europe*, March, pp. 16-17.
- Smith, K.W. (1974). On Estimating the Reliability of Composite Indexes through Factor Analysis, *Sociological Methods Research*, **2**(May), pp. 485-510
- Smith, J. Brock. (1998). Buyer-Seller Relationships: Similarity, Relationship Management, and Quality, *Psychology and Marketing*, **15**(1), pp. 3-21
- Spreng, R.A. and Mackoy, R.D. (1996). An Empirical Examination of a Model of Perceived Service Quality and Satisfaction, *Journal of Retailing*, **72**(2), pp. 201-214.
- Stank, T. P., Goldsby, T.J., Vickery, S.K. and Savitskie, K. (2003). Logistics Service Performance: Estimating Its Influence on Market Share, *Journal of Business Logistics*, **24**(1), pp. 27-55.
- Steenkamp, J.E.B.M. and van Trijp, H.C.M. (1991). The Use of LISREL in Validating Marketing Constructs, *International Journal of Research in Marketing*, **8**(4), pp. 283-99.
- Sterling, J.U. and Lambert, D.M. (1989). Customer Service Research: Past, Present and Future, *International Journal of Physical Distribution and Logistics Management*, **19**(2), pp. 3-23.
- Sterling, J.U. and Lambert, J.M. (1987). Establishing Customer Service Strategies within the Marketing Mix, *Journal of Business Logistics*, **8**(1), pp. 1-30.

- Stewart, Thomas A. (1997). A Satisfied Customer Isn't Enough, *Fortune*, **136**(July 21), pp. 112-13.
- Stock, J.R. and Lambert, D.M. (2001). *Strategic Logistics Management*, 4th Edition, McGraw Hill Irwin, Boston (Mass.), London.
- Stock, J.R. (1997). Applying Theories from Other Disciplines to Logistics, *International Journal of Physical Distribution and Logistics Management*, **27**(9/10), pp. 515-539.
- Stock, J.R. and Lambert, D.M. (1992). Becoming a 'World Class' Company with Logistics Service Quality, *International Journal of Logistics Management*, **3**(1), pp. 73-81.
- Stone, M.A. (1995). Strategic Development Related to the Europeanization of UK Logistics and Distribution Services Suppliers, *European Business Review*, **95**(5), pp. 9-14.
- Stone, M.A. (2001). European Expansion of UK Third-party Logistics Service Providers, *International Journal of Logistics Research and Applications*, **4**(1), pp. 97-115.
- Storbacka, K., Strandvik, T and Gronroos, C. (1994). Managing Customer Relationships for Profit, *International Journal of Service Industries Management*, **5**(5), pp. 21-8.
- Suprenant, C.F. and Solomon, M.R. (1987). Predictability and Personalisation in the Service Encounter, *Journal of Marketing*, **51**(April), pp. 86-96.

T

- Tabachnick, B.G. and Fidell, L.S. (2001). *Using Multivariate Statistics*, 4th Edition, Allyn & Bacon, Needham Heights, MA.
- Tang, M.L. and Bentler, P.M. (1998). Theory and Method for Constrained Estimation in Structural Equation Models with Incomplete Data, in *Computational Statistics and Data Analysis*, **27**, pp. 257-270.
- Tate, K. (1996). The Elements of a Successful Partnership, *International Journal of Physical Distribution and Logistics Management*, **26**(3), pp. 7-13.
- Tax, S.S., Brown, S.W. and Chandrashekar, M. (1998). Customer Evaluations of Service Complaint Experiences: Implications for Relationship Marketing, *Journal of Marketing* **62**(2), pp. 60-76.
- Thacker, James W., Fields, Mitchell W., and Tetrick, Lois, E. (1989). The Factor Structure of Union Commitment: An Application of Confirmatory Factor Analysis, *Journal of Applied Psychology*, **74**(2), pp. 228-232
- Theorelli, H.B. (1986). Networks: Between Markets and Hierarchies, *Strategic Management Journal*, **7**(1), pp. 37-51
- Jones, T. O. and W. Earl Sasser Jr. (1995). Why Satisfied Customers Defect, *Harvard Business Review*, **73**(November/December), pp. 88-99.
- Too, L.H.Y., Souchon, A.L. and Thirkell, P.C. (2001). Relationship Marketing and Customer Loyalty Setting: A Dyadic Exploration, *Journal of Marketing Management*, **17**(3/4), pp. 287-319.
- Transport Statistics. (2004). Transport of Goods by Road in Great Britain: 2003, *Transport Statistics Bulletin*, Department for Transport, London.
- Tucker, F.G. (1980). Customer Service in a Channel of Distribution - The Case of the Manufacturer-Wholesaler-Chain Drug Retailer Channel in the Prescription Drug Industry, *Ph.D dissertation*, The Ohio State University.

Tucker, L.R. and Lewis, C. (1973). The Reliability Coefficient for Maximum Likelihood Factor Analysis, *Psychometrika*, **38**(1), pp. 1-10.

V

van Hoek, R.I. (2001). The Contribution of Performance Measurement to the Expansion of Third Party Logistics Alliances in the Supply Chain, *International Journal of Operations & Production Management*, **21**(1/2), pp. 15-29.

Virum H. (1993). Third Party Logistics Development in Europe, *Logistics and Transportation Review*, **29**(4), pp. 355 - 361.

W

Waller, N.G. (1993). Software Review - Seven CFA programs: EQS, EzPATH, LICS, LISCOMP, LISREL7, SIMPLIS, and CALIS", *Applied Psychological Measurement*, **17**(1), pp. 73-100.

Waters, D. (2003). *Logistics – An Introduction to Supply Chain Management*, Palgrave MacMillan, Hampshire, Great Britain.

Wathne, H. K. and Heide, J. B. (2000). Opportunism in Inter-firm Relationships: Forms, Outcomes, and Solutions, *Journal of Marketing*, **64**(October), pp. 36-51.

Webster, Jr.F.E. (1992). The Changing Role of Marketing in the Corporation, *Journal of Marketing*, **56**(October): 1-17.

Weiner, Y. (1982). Commitment in Organisations: A Normative View, *Academy of Management Review*, **7**(3), pp. 418-428.

Weitz, B. A. and Bradford, K. D. (1999). Personal Selling and Sales Management: A Relationship Marketing Perspective, *Journal of the Academy of Marketing Science*, **27**(2), pp. 241-254.

Wetzels, M., Ruyter, K. and Birgelen van, M. (1998). Marketing Service Relationships: The Role of Commitment, *Journal of Business and Industrial Marketing*, **13**(4/5), pp. 406-423.

Whitley, E.W. (1985). The Case for Postal Research, *Journal of Market Research Society*, **27**(1).

Wilding, R. and Juriado, R. (2004). Customer Perceptions on Logistics Outsourcing in the European Consumer Goods Industry, *International Journal of Physical Distribution & Logistics Management*, **34**(8), pp. 628-644.

William, L.J. and Hazer, J.T. (1986). Antecedents and Consequences of Satisfaction and Commitment in Turnover Models: A Reanalysis Using Latent Variable Structural Equation Methods, *Journal of Applied Psychology*, **71**(2), pp. 219-231.

Williamson, O.E. (1975). *Markets and Hierarchies: Analysis and Antitrust Implications*, The Free Press: New York.

Williamson, O.E. (1985). *The Economic Institutions of Capitalism*, The Free Press: New York.

- Wilson P. and Fathers S. (1989). Distribution - the contract approach, *International Journal of Physical Distribution and Logistics Management*, **19**(6), pp. 26-30.
- Witt, C.E. (1991). Adding Value Accuracy Equals Quality, *Materials Handling Engineering*, **46**(April), p. 43.
- Wong, A.W. and Sohal, A. (2002). An Examination of the Relationship between Trust, Commitment and Relationship Quality, *International Journal of Retail and Distribution Management*, **30**(1), pp. 34-50.

Y

- Yilmaz, C. and Hunt, S.D. (2001). Salesperson Cooperation: The Influence of Relational, Task, Organizational, and Personal Factors, *Journal of the Academy of Marketing Science*, **29**(Fall), pp. 335-357.
- Young, L. and Denize, S. (1995). A Concept of Commitment: Alternative Views of Relational Continuity in Business Service Relationships, *Journal of Business and Industrial Marketing*, **10**(5), pp. 22-37.

Z

- Zeithaml, V.A. (1981). How Consumer Evaluation Processes Differ Between Goods and Services, in *Marketing of Services*, Donnelly, J.H. and George, W.R., (Eds.), American Marketing Association, Chicago, pp. 186-90.
- Zeithaml, V. A., Berry L.L. and Parasuraman A. (1996). The Behavioural Consequences of Service Quality, *Journal of Marketing*, **60**(April), pp. 31-46.

<p>Appendix 1 List of Publications</p>
--

LIST OF PUBLICATIONS

Chapter in a Book

1. Jaafar, H.S. and Rafiq, M. (2005), Customers' Perceptions of Service Quality by Third Party Logistics providers in the UK – A Confirmatory Factor Analysis, in Kotzab, H., Seuring, S., Muller, M., Reiner, G., (eds.), *Research Methodology in Supply Chain Management*, Physica, Heidelberg, pp. 187-202.

Journal Paper

1. Jaafar, H.S. and Rafiq, M., (2005), “Logistics Outsourcing Practices in the UK – A Survey”, *International Journal of Logistics – Research and Applications*, Vol.8 No.4, pp. 299-312.

Conference Proceedings

1. Jaafar, H.S. and Rafiq, M. (2005), “Measuring Logistics Service Quality Process: Further Empirical Investigation” *Proceedings of the 34th European Marketing Academy Annual Conference (EMAC)*, Universita Bocconi, Milan, Italy, 24-27 May 2005, p. 245, ISBN
2. Jaafar, H.S. and Rafiq, M., (2004), “Logistics Outsourcing in the UK: A Survey”. *Proceedings of the 9th Logistics Research Network (LRN) Conference*, Dublin, Ireland, 9-10 September 2004, ISBN 1 904564 10 0. **Best Conference Paper Award.**
3. Jaafar, H.S. and Rafiq, M. (2004), “Service Quality, Relationship Quality and Loyalty in Third Party Logistics: A Conceptual Model and Propositions”, *Proceedings of the 33rd European Marketing Academy Annual Conference (EMAC)*, Murcia, Spain. ISBN 84-8371-464-7
4. Jaafar, H.S., (2003), Logistics Service Quality and Relationship Quality in Third Party Logistics providers: Customers' Perceptions, *Proceedings of the 2nd Malaysian Research Group (MRG) 2003*, 27th September, Manchester, United Kingdom.

5. Jaafar, H.S. and Rafiq, M. (2003), “Logistics Service Quality and Relationship Quality in Third Party Relationships”, *Proceedings of the 8th Logistics Research Network (LRN) Annual Conference 2003*, London, 10-12 September 2003, pp. 209-216. ISBN 1-904564-02-x
6. Jaafar, H.S., (2003), “Logistics Service Quality, Relationship Quality and Loyalty in Third Party Relationships”, *Proceedings of the European Logistics Association (ELA) Doctorate Workshop 2003*, Monchy St Eloi, Paris, 25-27 June, pp. 950105. ISBN 3-924606-40-4
7. Jaafar, H.S. and Rafiq, M., (2003), “Logistics Service Quality and Commitment in Third Party Logistics”, *Proceedings of the Asia Pacific Business Environment: Innovative Responses to Regional Events: An International Conference*, Shah Alam, Malaysia, 21-22 January.

Mail Survey Questionnaire

*Business School, Loughborough University, Loughborough,
Leicestershire LE11 3TU, ENGLAND
e-mail: H.S.Jaafar@lboro.ac.uk*

SURVEY OF CUSTOMERS' PERCEPTIONS OF THIRD PARTY LOGISTICS (TPL) PROVIDERS

General Instructions and Information

1. **All individual responses to this questionnaire will be kept STRICTLY CONFIDENTIAL.**
2. Based on your experience, please give your honest impressions of the third party logistics (TPL) providers in the UK. There is nothing you need to go and "look up". Thus, there is no right or wrong answer. Please do not worry about questions that seemingly look alike. If you do not have the exact answer to a question, please provide your best estimate by ticking the appropriate boxes in the questions and scale given. Your answers are very important to the accuracy of the study.
3. If your company is currently **NOT USING** TPL provider, **please answer Section 1 and Section 5** only and return the rest blank.
4. In section 2, 3 and 4, please select your **MAIN** TPL provider, which you consider as important to your company.
Please refer to the same TPL provider when answering all the questions in these sections.
5. If you wish to make any comment, please feel free to use the space at the back cover of the questionnaire.
6. If you think you are not the right person to answer the questionnaire, please pass it to the person who you think might be knowledgeable to answer it.

If you would like a summary of results, please write your e-mail address below.

E-mail: _____

Please return the completed questionnaire in the enclosed self-addressed, stamped envelope at your earliest possible convenience.

Thank you for your co-operation!



SECTION 1: COMPANY PROFILE

We would like some information about your company so that we can understand your decisions related to using/not using the Third Party Logistics (TPL) providers.
(Please tick an appropriate box).

1. Please indicate your industry:

<input type="checkbox"/>	General Retailers
<input type="checkbox"/>	Food and Drug Retailers
<input type="checkbox"/>	Beverages
<input type="checkbox"/>	Food Producers and Processes
<input type="checkbox"/>	Personal Care and Household Products
<input type="checkbox"/>	Electronic and Electrical Equipment
<input type="checkbox"/>	Computer and IT Hardware and Software
<input type="checkbox"/>	Chemical, Oil and Pharmaceutical Products
<input type="checkbox"/>	Automotive Industry (Goods, Passenger, Components)
<input type="checkbox"/>	Aerospace
<input type="checkbox"/>	Postal
<input type="checkbox"/>	Utilities
<input type="checkbox"/>	Health Services
<input type="checkbox"/>	Facility Management
<input type="checkbox"/>	National/Local Government
<input type="checkbox"/>	Armed Forces
<input type="checkbox"/>	Other – (Please describe below)
<input type="checkbox"/>	

2. Is your company primarily a

<input type="checkbox"/>	Manufacturer
<input type="checkbox"/>	Wholesaler/Distributor
<input type="checkbox"/>	Retailer
<input type="checkbox"/>	Government Agency
<input type="checkbox"/>	Other – (Please specify)

3. Does your company/organisational unit currently outsource any of your logistics activities to third party logistics providers?

<input type="checkbox"/>	Yes, fully (If yes, please go to Question 6 and complete the questionnaire)
<input type="checkbox"/>	Yes, partially (If yes, please go to Question 6 and complete the questionnaire)
<input type="checkbox"/>	No (If no, please answer Question 4 and 5)

4. The followings are some of the reasons why some companies do not outsource their logistics activities. Using the following 7-point scale, please indicate to what extent you agree, or disagree with the following statements.

	Strongly Disagree						Strongly Agree	
	1	2	3	4	5	6	7	
• The cost of outsourcing is too high	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Our company will lose control over the logistics processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Our logistics functions are still manageable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• The services offered are not suited to our product/industry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• The services offered are not suited to the structure and size of our company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

5. Has your company recently considered using any TPL provider?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

After completing this section, please answer Section 6 ONLY and return the questionnaire at your earliest possible convenience. Thank you.

SECTION 2: WORKING ARRANGEMENTS

We would like some information about your working arrangements with your TPL provider so that we understand the implementation of the agreements with the TPL provider. Thus, for the following questions, please refer to your MAIN (one only) third party logistics (TPL) provider.
(Please tick an appropriate box)

6. What are the main drivers that lead your company to outsource the logistics functions?
(You may tick MORE than ONE box)

<input type="checkbox"/>	To improve the logistics service.
<input type="checkbox"/>	To reduce the logistics costs.
<input type="checkbox"/>	To get a more flexible logistics service.
<input type="checkbox"/>	To avoid investment in non-core activity.
<input type="checkbox"/>	To obtain service from a logistics expert.
<input type="checkbox"/>	To improve services to our customer.
<input type="checkbox"/>	Other - (Please specify) _____

7. How many third party logistics providers does your company currently have?

<input type="checkbox"/>	One only
<input type="checkbox"/>	Two
<input type="checkbox"/>	Between 3 and 5
<input type="checkbox"/>	More than 5

8. Do you have formal written contractual arrangements with your MAIN TPL provider?

<input type="checkbox"/>	Yes (If yes, please go to the next question and complete the questionnaire)
<input type="checkbox"/>	No (If no, please go to Question 11 and complete the questionnaire)

9. What type of contract do you have with your MAIN TPL provider?

<input type="checkbox"/>	Open book contract.
<input type="checkbox"/>	Closed book contract.
<input type="checkbox"/>	Not applicable.
<input type="checkbox"/>	Other – (Please specify) _____

10. How long is the term of the contract?

<input type="checkbox"/>	Up to one year
<input type="checkbox"/>	Up to three years
<input type="checkbox"/>	Between three and five years
<input type="checkbox"/>	Between five and ten years
<input type="checkbox"/>	More than ten years
<input type="checkbox"/>	No specified time

11. How long have your company been in the relationship with your MAIN TPL provider?

<input type="checkbox"/>	Less than three years
<input type="checkbox"/>	Between three and five years
<input type="checkbox"/>	Between five and ten years
<input type="checkbox"/>	More than ten years

12. What is the percentage from the total logistics expenditure that you spend on your MAIN TPL provider?

<input type="checkbox"/>	Less than 20 percent
<input type="checkbox"/>	Between 21 and 50 percent
<input type="checkbox"/>	Between 51 and 80 percent
<input type="checkbox"/>	Between 81 and 100 percent

13. What types of services do you receive from your MAIN TPL provider?
(You can tick MORE than ONE box)

Transportation	
<input type="checkbox"/>	Basic Transport
<input type="checkbox"/>	Fleet Management
<input type="checkbox"/>	Shipment consolidation/Break bulk
<input type="checkbox"/>	Others – (Please specify) _____
<input type="checkbox"/>	Do not use any of these services.

Warehousing

☐ Storage

☐ Order picking/packing

☐ Cross-docking

☐ Other – (Please specify) _____

☐ Do not use any of these services.

Value added Services

☐ Repacking/Product labelling

☐ Assembly

☐ Product customisation

☐ Other – (Please specify) _____

☐ Do not use any of these services.

Information Services

☐ Tracking and tracing (e.g. RFID)

☐ Electronic Data Interchange (EDI)/Internet

☐ Order entry/processing

☐ Product replenishment

☐ Customs Clearance

☐ Other – (Please specify) _____

☐ Do not use any of these services.

14. Do you use your MAIN TPL provider for your inbound and/or outbound movement of products/materials?

☐ Inbound only

☐ Outbound only

☐ Both inbound and outbound

SECTION 3: LOGISTICS SERVICE

This survey seeks your impression of logistics services provided by your MAIN TPL provider that you have referred above. Please respond with regard to your experience in receiving logistics services from them. Using the following 7-point scale, please indicate to what extent you agree, or disagree, with the following statements.

		Strongly Disagree					Strongly Agree	
		1	2	3	4	5	6	7
15.	<i>Your impression of the availability of products when required.</i>							
	• Requisition quantities are not challenged.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Difficulties never occur due to maximum release quantities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Difficulties never occur due to minimum release quantities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.	<i>Your impression of the shipments of materials/ products from TPL depot/ warehouse or your suppliers to your activity.</i>							
	• Shipments rarely contain the wrong items.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Shipments rarely contain an incorrect quantity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Shipments rarely contain substituted items.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17.	<i>Your impression of the quality of products and services that are delivered by your TPL provider.</i>							
	• Substituted items sent by TPL provider work fine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Products ordered from/via the TPL provider meet technical requirements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Equipment and/or parts are rarely non-conforming.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

		Strongly Disagree						Strongly Agree
		1	2	3	4	5	6	7
18.	Your impression of the most frequent TPL provider's key contact personnel whom you are dealing with.							
	• The designated key contact personnel make an effort to understand the situation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Problems are resolved by the designated key contact personnel.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• The knowledge/experience of the key contact personnel is adequate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19.	Your impression of TPL provider's performance in providing you information of the shipments and/or the products/materials/ services that you order/request.							
	• The information communicated by this TPL provider is timely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• The information communicated by this TPL provider is accurate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• The information communicated by this TPL provider is adequate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• The information communicated by this TPL provider is complete.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• The information communicated by this TPL provider is credible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20.	Your experiences ordering products/ materials/ services from your TPL provider.							
	• Requisitioning procedures are effective.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Requisitioning procedures are easy to use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Requisitioning procedures are simple.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Requisitioning procedures do not take much effort.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Requisitioning procedures do not take much time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Requisitioning procedures are flexible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21.	Your impression of shipments from TPL depot/ warehouse or your suppliers to your activity/ customers' location							
	• Products/materials received from TPL depots/ warehouses are undamaged.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Products/materials received direct from the suppliers are undamaged.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Damage rarely occurs as a result of the transport mode or carrier.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22.	Your impression of the quality of services that are delivered by your TPL provider							
	• Correction of delivered quality discrepancies is satisfactory.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• The report of discrepancy process is adequate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Response to quality discrepancy reports is satisfactory.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

		Strongly Disagree					Strongly Agree	
		1	2	3	4	5	6	7
23.	Your impression with the requisitions and deliveries of products							
	• Deliveries arrive on the date promised.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• Time between placing requisition and receiving delivery is short.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	• The amount of time a requisition is on back-order is short.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION 4: OVERALL VIEW OF LOGISTICS SERVICE

The questions below concern your *(overall) opinion of the service provided by your main TPL provider.*

24. What is your general impression of the service that your MAIN TPL provider provides?

☐ Terrible
☐ Poor
☐ Average
☐ Good
☐ Excellent
25. Which word(s) best describes your feelings toward your MAIN TPL provider?

☐ Very Dissatisfied
☐ Dissatisfied
☐ Somewhat Satisfied
☐ Satisfied
☐ Very Satisfied
26. How satisfied are you with the services provided by your MAIN TPL provider?

☐ Very Dissatisfied
☐ Dissatisfied
☐ Somewhat Satisfied
☐ Satisfied
☐ Very Satisfied

SECTION 5: THIRD PARTY LOGISTICS PROVIDER’S RELATIONSHIPS

27. The following statements are about your company’s attitude and experience with your MAIN third party logistics (TPL) provider that you have referred above. Using the following 7-point scale, *please indicate to what extent you agree, or disagree, with the following statements.*

		Strongly Disagree					Strongly Agree	
		1	2	3	4	5	6	7
•	All in all, this TPL provider is very fair with us.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
•	This TPL provider keeps promises it makes to our firm.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
•	This TPL provider exaggerates needs to get what they desire.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
•	Even if we could, we would not drop this TPL provider because we like being associated with them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
•	This TPL provider is not always sincere.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
•	We will not say anything to this TPL provider about mutual problems because they seem to go away by themselves.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
•	Occasionally, we will think about ending the business relationship with this TPL provider.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
•	This TPL provider cooperates with us to do the job well.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
•	This TPL provider is not always honest with us.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
•	This TPL provider slightly alters facts to get what they want.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
•	Overall, this TPL provider is a good company to do business with.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
•	We want to remain a customer of this TPL provider because we genuinely enjoy our relationship with them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Strongly Disagree				Strongly Agree			
	1	2	3	4	5	6	7	
• We disregard problems with this TPL provider because they just seem to work themselves out.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• We are not likely to continue the business relationship with this TPL provider.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Good faith bargaining is not a hallmark of this TPL provider's negotiation style.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Our positive feelings towards this TPL provider are the major reason we continue working with them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Problems with this TPL provider will often fix themselves.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• In general, we are pretty satisfied with our relationship with this TPL provider.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• We believe the information that this TPL provider provides us.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• This TPL provider is trustworthy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• This TPL provider provides a completely truthful picture when negotiating.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• We will probably consider a replacement TPL provider in the near future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• It would be too expensive to terminate our relationship with this TPL provider.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• We recommend this TPL provider if some companies seek advice with regard to a good third party logistics company.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• This TPL provider breaches formal or informal agreements to their benefit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Overall, this TPL provider treats us very fairly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• This TPL provider is genuinely concerned that our business succeeds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• We will use this TPL provider to run our logistical activities in the next few years.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• All in all, our relationship with this TPL provider is very satisfactory.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• Sometimes we ignore problems with this TPL provider.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• This TPL provider knows our need well.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• When making important decisions, this TPL provider considers our welfare as well as its own.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• We will probably stop doing business with this TPL provider in the near future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• We say positive things about this TPL provider to other companies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• We continue our relationship with this TPL provider because we have no other viable options.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• We encourage other companies to use services provided by this TPL provider.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
• We are looking at replacement TPL provider.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	Strongly Disagree					Strongly Agree	
	1	2	3	4	5	6	7
• This TPL provider makes recommendations for continuous improvement on an ongoing basis.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• We trust this TPL provider keeps our best interests in mind.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• We find it necessary to be cautious with this TPL provider.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Staying with this TPL provider is a matter of necessity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

28. In your opinion, what is the single MAIN REASON for a TPL provider to lose its contract?

.....

.....

SECTION 6: PERSONAL INFORMATION

29. Which level of responsibility in the company do you hold?

- ☐ Chief Executive/Owner/Partner
- ☐ Director/Board Member
- ☐ Manager
- ☐ Supervisor/Junior/First Line Manager
- ☐ Other (Please specify) _____

30. Which of the following most closely describes your area of responsibility in your organisation?
(Please select only ONE)

- ☐ Logistics/Distribution services
- ☐ Purchasing/Procurement
- ☐ Stock/Inventory Management
- ☐ Warehousing/Storage
- ☐ Sales and Marketing
- ☐ Logistics Strategy/Planning
- ☐ General
- ☐ Other (Please specify) _____

31. How many years have you been in your current position? _____ years

32. How long have you been with the company? _____ years

33. How long have you been working with this TPL provider? _____ years

Thank you for taking the time to complete this questionnaire. Your assistance in providing this information is very much appreciated. If there is anything else you would like to tell us about this survey or other comments you wish to make that you think may help us to understand your needs as a customer of third party logistics providers, please do so in the space provided below.

.....

.....

.....

.....

.....

.....

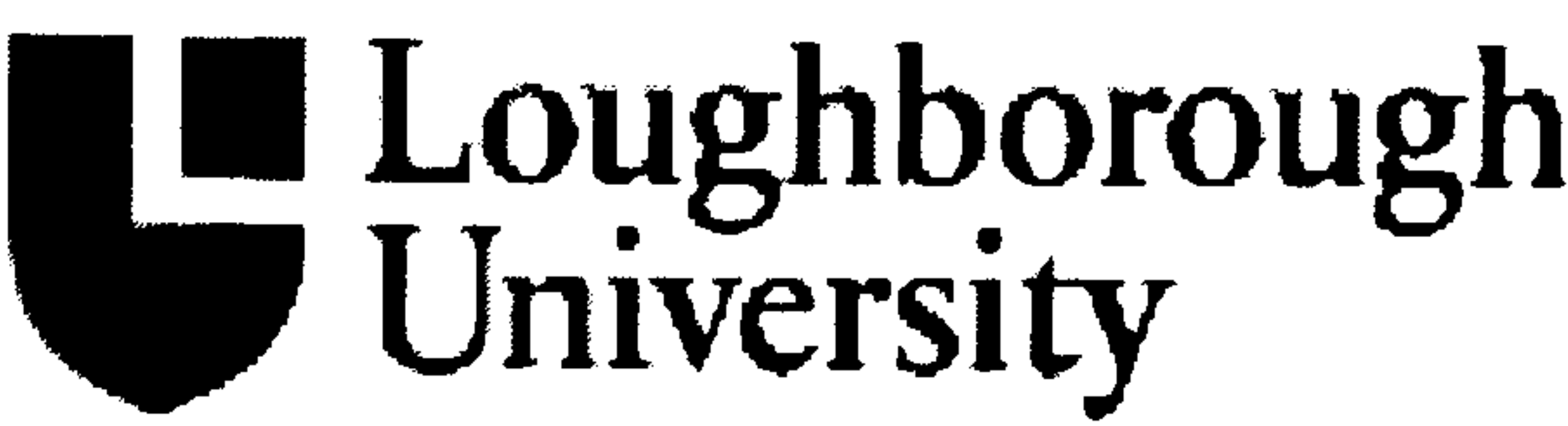
Please return your completed questionnaire in the envelope provided to:
Harlina Suzana Jaafar MILT
Researcher
Business School, Loughborough University
Loughborough, Leicestershire, LE11 3TU.
Tel: 01509 223239 Fax: 01509 222723 email: H.S.Jaafar@lboro.ac.uk

Thank you for your co-operation!



Pre-notification Letter

Business School
Loughborough University Leicestershire LE11 3TU UK
Switchboard: +44 (0) 1509 263171



< Insert name here >
< Insert address here >

3rd November 2003

Customers’ Perceptions of Third Party Logistics Providers’ Services

Dear < Insert name here >,

Very shortly you will receive an invitation to participate in an important research project being conducted by the Business School, Loughborough University, UK. *The Institute of Logistics and Transport, UK*, the leading professional body for transport, logistics and integrated supply chain management regards this research as important and they support its aims.

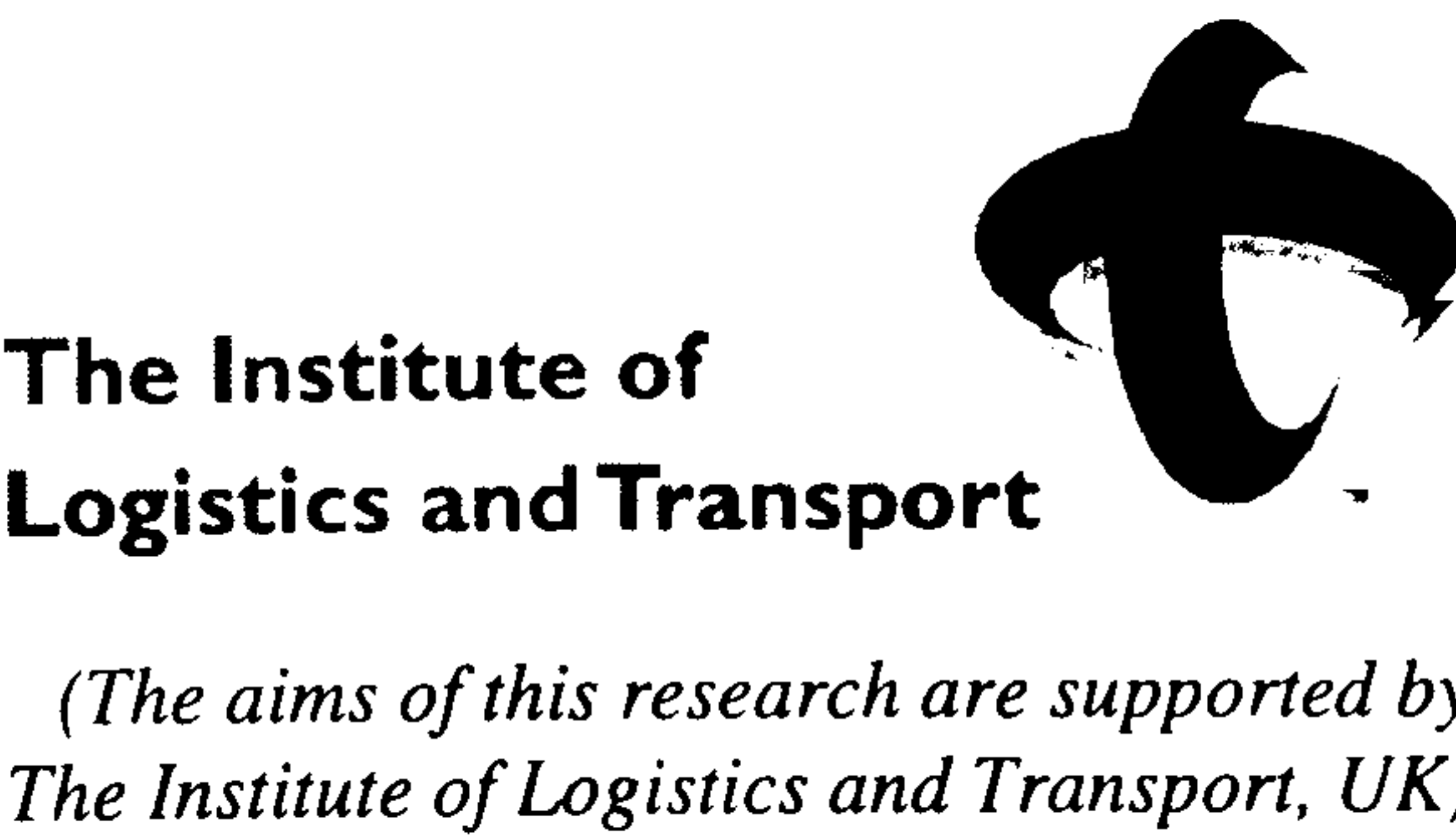
It concerns the experience of the customers who have received the logistics services of Third Party Logistics (TPL) providers in the UK and how they feel about the relationships they have with them.

I am writing in advance because we have found that many people like to know ahead of time that they will be contacted. This study is important in such a way that will help us to build a clearer picture on how well the TPL providers are performing. This would enable the TPL providers design the services according to your needs.

Thank you for your time and consideration. It is only with your help that our research can be successful.

Sincerely,

Harlina Suzana Jaafar MILT
Researcher



Cover Letter of the First Wave Questionnaire Mailing

Business School
Loughborough University Leicestershire LE11 3TU UK
Switchboard: +44 (0) 1509 263171



< Insert name here >
< Insert address here >

11th November 2003

Customers' Perceptions of Third Party Logistics Providers' Services

Dear < Insert name here >,

I am writing to you to invite your participation in a wholly independent study by the Business School, Loughborough University, UK. This is part of an effort to learn what customers think of the services provided by Third Party Logistics (TPL) providers in the UK and the relationships they have with their main provider. Your answers will enable the TPL providers to design the services according to your needs.

As you know, the UK contract logistics market is one of the most dynamic in the world. In 2002, the contract logistics market reached a value of approximately £12.5 billion, doubling its share since 2000. However, there is very little research reported on the perceptions of the customers' satisfaction with their services apart from studies conducted by management consultants. *The Institute of Logistics and Transport*, the leading professional body for transport, logistics and integrated supply chain management regards this research as important and they support its aims. The results from the survey will help us build a clearer picture of how well the TPL providers are performing. As a TPL customer who is actively involved in the logistics and distribution industry, you can help us by taking approximately 15 to 20 minutes to share your experiences and opinions about service levels and relationships you have with them. Your answers are very important to the accuracy of our research.

Your response will be treated in the strictest confidence and will be released only as summaries and in such a manner that no individual or company's answers can be identified. If you are interested in receiving a report on the findings of this research, please write your e-mail address on the front page of the questionnaire.

If you have any questions or comments about this study, we would be happy to talk with you. My telephone number is 01509 223239, or you can e-mail me at H.S.Jaafar@lboro.ac.uk. **If you think you are not the right person to answer the questionnaire, please pass it to the person best able to complete it.**

Thank you very much for helping with this important study.

Yours Sincerely,

Harlina Suzana Jaafar MILT
Researcher

**The Institute of
Logistics and Transport**



*(The aims of this research are supported by
The Institute of Logistics and Transport, UK)*

11 November 2003

Dear

Last week a questionnaire seeking your thoughts about the services provided by Third Party Logistics (TPL) providers in the UK was mailed to you.

If you have already completed and returned the questionnaire, please accept our sincere thanks. If not, we would appreciate it if you could complete and return it by the end the week. We are especially grateful because it is only by asking the customers like you who is actively involved in logistics and distribution industry that we can build a clearer picture of how well the TPL providers are performing.

If you think you are not the right person to answer the questionnaire, please pass it to the person best able to complete it. And if you did not receive a questionnaire, or if it was misplaced, please call me at 01509 223239 and we will get another one in the mail to you today.

Harlina Suzana Jaafar MILT
Researcher
Business School, Loughborough University,
Loughborough, Leicestershire LE11 3TU.
E-mail: H.S.Jaafar@lboro.ac.uk



Cover Letter of the Second Wave Questionnaire Mailing

Business School
Loughborough University Leicestershire LE11 3TU UK
Switchboard: +44 (0) 1509 263171



< Insert name here >
< Insert address here >

7th December 2003

Customers' Perceptions of Third Party Logistics Providers' Services

Dear < Insert name here >,

About three weeks ago I wrote to you inviting your participation in a survey of the perception of services provided by Third Party Logistics (TPL) providers in the UK and the relationship they have with their main provider. I am writing to you again because of the significance each questionnaire has to the usefulness of the study. In order for the results of this study to be truly representative of the opinions of TPL customers, it is essential that we have replies from as large sample of respondents as possible.

This research is being conducted because of the belief that customers' perceptions should be taken into account in building a picture of how well the TPL providers are performing. *The Institute of Logistics and Transport*, the leading professional body for transport, logistics and integrated supply chain management regards this research as important and they support its aims. As a TPL customer who is actively involved in the logistics and distribution industry, you are one of the best judges of TPL provider performance.

If you have already completed and returned the questionnaire, I would like to thank you for your help and apologise to you for getting this reminder letter. But if you have not completed and returned the questionnaire, I would appreciate if you could complete and return it as soon as possible.

In the event that your questionnaire has been misplaced, a replacement is enclosed. If you have any questions I would be happy to talk with you. My telephone number is 01509 223239, or you can e-mail me at H.S.Jaafar@lboro.ac.uk. **If you think you are not the right person to answer the questionnaire, please pass it to the person best able to complete it.**

Your contribution to the success of this study is appreciated greatly. It is only with your help that this research can be successful.

Yours sincerely,

Harlina Suzana Jaafar MILT
Researcher

**The Institute of
Logistics and Transport**



*(The aims of this research are supported by
The Institute of Logistics and Transport, UK)*

Cover Letter of the Third Wave Questionnaire Mailing

Business School
Loughborough University Leicestershire LE11 3TU UK
Switchboard: +44 (0) 1509 263171



< Insert name here >
< Insert address here >

5th January 2004

Customers' Perceptions of Third Party Logistics Providers' Services

Dear < Insert name here >,

As you are no doubt aware, we are conducting an important piece of research to understand customers' views on the services provided by the Third Party Logistics (TPL) providers in the UK. As an executive involved in this area, your views are very important for this survey.

We have already had an encouraging response to the survey. However to increase the responses of the survey, we need your participations so that as a wide variety of views are reflected as possible.

Thus, we would like to offer you this final opportunity to make your contribution in providing a true picture of TPL providers' performance.

If you have already completed and returned the questionnaire, I appreciate your help very much and apologise to you for getting this second reminder letter. If you think you are not the right person to answer the questionnaire, please pass it to the person best able to complete it. Please do not hesitate to contact me on any enquiries.

We value your time for responding to this important research. Thank you very much indeed.

Yours sincerely,

Harlina Suzana Jaafar MILT
Researcher
(E-mail: H.S.Jaafar@lboro.ac.uk Tel: 01509 223239)

**The Institute of
Logistics and Transport**



*(The aims of this research are supported by
The Institute of Logistics and Transport, UK)*

TESTING THE EFFECTS OF THE FULL HYPOTHESISED MODEL CONSISTING OF BOTH THE LOGISTICS SERVICE QUALITY AND RELATIONSHIP QUALITY

This study considered testing the relationship effects of the full-hypothesised model (logistics service quality and relationship quality) by combining all the measures of a given construct to form a single composite. This technique has been labelled the **total aggregation model** in the literature to indicate that an aggregation occurs across all items (Bagozzi, 1994), which seems to be common in the applications of structural equation modelling (Landis et al, 2000). This approach results in a model that is formally identical to one in which only a single indicator is available, but in general a composite single indicator should be more reliable than a true single-item measure. In fact, it is possible to compute a measure of reliability when a composite of items is available (e.g. coefficient α), and this estimated reliability can be incorporated into the analysis by fixing the error variance of the indicator to $[1 - \alpha \text{ (reliability)}]$ times the variance of the indicator (standard deviation²). This method has the advantage that the specification of the model is quite simple and that, compared to true single-indicator case, unreliability of measurement can be taken into account in a limited way. However, a major disadvantage is that the quality of construct measurement is not investigated explicitly (e.g. no assessment of unidimensionality is provided) (Bagozzi and Heatherton, 1994).

Thus, by using SPSS, composite measures as well as the cronbach alpha (α) and standard deviation of each composite measure were computed in order to obtain the error variance of each indicator (refer to table below). The model was run by using AMOS 5.0. However, the results show that the model was unidentified. The un-identification was due to the un-identification of four paths in the model namely, relationship satisfaction \rightarrow trust (H_{14}), perceived opportunism \rightarrow trust

(H₁₆), affective commitment → exit intention (H₂₁) and finally trust → exit intention (H₁₉). It is speculated that the un-identification of these four paths was not due to the lack of quality (e.g. lack of unidimensionality) of the constructs. However, it was because of the multi-level order factors that reduce the total variance explained as the factor order goes higher. The total variance explained for LSQ model presented in Table 7.7 and relationship quality model in Table 8.7 showed that the longer the path, the lesser the total variance explained. Thus, the total variance explained could be almost zero/infinity towards the end of the model, which have caused the four paths to be un-identified, and finally resulted in an un-identified model.

Table of Reliability (α), Standard Deviation and Error Variance

Composite Measures	Reliability (α)	Standard Deviation (SD)	Error variance (1-α) x SD ²
Order release quantities	.815	4.12	3.14
Order accuracy	.874	4.04	2.06
Order quality	.691	4.33	5.79
Personnel contact quality	.888	3.83	1.64
Information quality	.959	6.65	1.81
Ordering procedures	.957	7.18	2.22
Order condition	.870	3.83	1.91
Order discrepancy handling	.917	4.03	1.35
Timeliness	.849	3.86	2.25
Satisfaction	.931	2.36	.38
Relationship satisfaction	.931	4.21	1.22
Perceived opportunism	.801	3.87	2.98
Trust	.896	3.78	1.49
Calculative commitment	.702	4.38	5.72
Affective commitment	.741	3.84	3.82
Exit Intention	.877	4.96	3.03