

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

The Use of Third Party Logistics Services in China

A research report

**presented in partial fulfillment of the requirements of the
degree of Master of Logistics and Supply China Management
at Massey University, Auckland, New Zealand**

Jie Chen

2012

ABSTRACT

The aim of this study is to understand the current status of Chinese third party logistics (3PL) industry, and investigate the situation of 3PL services usage in China. An empirical research study is carried out to determine: the extent use of the third party logistics services in China, reasons for Chinese firms outsourcing logistics activities, reasons for Chinese firms not outsourcing logistics activities, the level of satisfaction of the company that outsource 3PL for their 3PL providers, selection criteria for choosing 3PL providers, organization impact of logistics outsourcing and future trend of Chinese logistics services.

The results of this study are gathered through an online survey questionnaire. The respondents are working in the Chinese firms with the management level position or above. The data is analyzed by SPSS, ANOVA and Chi-square test.

The present study has found that outsourcing 3PL services become very popular in China, more than half of Chinese firms outsource 3PL services. The use of 3PL services will be increasing in the future. Most user firms are satisfied with their providers' performance. However, there is still high expectation for providers to improve. In general, Chinese outsourcing firms believe that outsourcing 3PL services would gain a number of benefits and impose positive impacts on their firms.

ACKNOWLEDGMENTS

I would like to thank many people who helped to accomplish this research report. Achievement of this study cannot be realized without your help and support.

Firstly, I would like to thank my supervisor, Professor Norman Marr for his academic supervision through the entire study. Thanks for his invaluable advices and professional guidance through the entire process. I am very appreciated that the efforts and time he had put in this study.

I would like to thank Alan Win, the lecturer of postgraduate of logistics and SCM study. Thank him for being patience to me and his encouragement.

I also would like to thank Bill Wang, the lecturer of logistics & SCM. Thanks for his professional guidance and advice on my survey questionnaire translation.

I am grateful to all participants in this study. Their contributions ensured the overall achievement of this research

Finally, my sincere thanks go to my parents and my friends. Thanks for their patience and enormous support.

TABLE OF CONTENT

ABSTRACT	ii
ACKNOWLEDGMENTS	iii
TABLE OF CONTENT	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
CHAPTER ONE: INTRODUCTION	1
1.1 Introduction	1
1.2 Background	1
1.3 Logistics in China	3
1.4 Research Problems	8
1.5 Main Aim and Objectives	9
1.6 Thesis Outline	10
CHAPTER TWO: LITERATURE REVIEW	12
2.1 Introduction	12
2.2 Definition of Supply Chain Management	12
2.3 History and Definitions of Logistics	17
2.4 Third Party Logistics	20
2.4.1 Definitions of Third Party Logistics	20
2.4.2 Third Party Logistics Partnership	23
2.5 Extent of Use of the Third Party Logistics Services	25
2.5.1 Level of Commitment to the Usage of Third Party Logistics	26
2.5.2 Total Logistics Budget -3PL	28
2.5.3 Geographical Coverage Provided by Third Party Firms	30
2.5.4 Third Party Services Utilized	30
2.5.5 The Length of Third Party Services	33
2.6 Reasons for Outsourcing Logistics Activities	34
2.7 Reasons for Not Outsourcing Logistics	39
2.8 Selection Criteria of Choosing 3PL Providers	41
2.8.1 Logistics Performance Measurement	45
2.9 Organizational Impacts of Using Logistics Outsourcing Services	47
2.10 Future trend of logistics services	49
2.11 Summary	50
CHAPTER THREE: METHODOLOGY	53
3.1 Introduction	53
3.2 Research Objectives	53
3.3 Research Philosophies: Positivism & Phenomenology	54
3.4 Quantitative & Qualitative Research Method	55
3.5 Survey Type	57
3.5.1 Questionnaire	57
3.5.2 Survey Questionnaire Design	58
3.6 Data Collection	62

3.6.1 The Sampling Methods.....	62
3.6.2 Respond Rate.....	63
3.7 Data Analysis	64
3.8 Summary	65
CHAPTER FOUR: RESULTS & DISCUSSIONS.....	67
4.1 Introduction.....	67
4.2 Research Objectives.....	67
4.3 General Information of the Company	68
4.3.1 Total Number Employees.....	68
4.3.2 Business Category	69
4.3.3 Company Location	69
4.3.4 Sales Revenue.....	71
4.4 Outsourcing / Not Outsourcing.....	72
4.4.1 Use of 3PL.....	72
4.4.2 Reasons for Outsourcing	73
4.4.3 Reasons for Not Outsourcing Logistics Activities.....	76
4.5 Extent of Use of the Third Party Logistics Services.....	78
4.5.1 Logistics budget allocation.....	78
4.5.2 Geographical Coverage	79
4.5.3 Logistics Services Used & Satisfaction Level.....	80
4.5.4 Total 3PL Services Providers	83
4.5.5 Length of using 3PL services	85
4.5.6 Length of Third Party Contracts	88
4.6 Decision Making Process.....	89
4.6.1 Selection Criteria of Choosing 3PL Service Providers.....	89
4.6.2 Criteria for Evaluating the Performance of Company's Providers.....	90
4.7 Organization Impacts	92
4.7.1 Impact of Outsourcing 3PL Services	92
4.7.2 Elimination Logistics Positions	93
4.7.3 Necessity of Retraining Logistics Employees	94
4.8 Future Trend of Logistics Services in China.....	95
4.8.1 Satisfaction Rate of Current 3PL Services Providers.....	95
4.8.2 The Use of 3PL Services in the Future.....	96
4.9 Summary	97
CHAPTER FIVE: CONCLUSION.....	98
5.1 Introduction.....	98
5.2 Research Objectives.....	98
5.3 Conclusions.....	98
5.3.1 Objective 1: The Extent of Use of the Third Party Logistics Services in China.....	99
5.3.2 Objective 2: Reasons for Chinese Firms Outsourcing Logistics Activities.....	100
5.3.3 Objective 3: Reasons for Chinese Firms Not Outsourcing Logistics Activities.....	100

5.3.4 Objective 4: Selection Criteria of Choosing 3PL Providers	101
5.3.5 Objective 5: Organization Impact of Logistics Outsourcing	101
5.3.6 Objective 6: Future Trend of Chinese Logistics Services	102
5.4 Limitations	102
5.5 Future Research	102
REFERENCES:	106
APPENDICES	116
APPENDIX A: Determinants of Successful Third Party Relationships	116
APPENDIX B: Invitation Letter	119
APPENDIX C: Questionnaire-Survey on the Use of 3PL in China	120
APPENDIX D: ANOVA: 3PL Services & Length of Service Used 1	129
APPENDIX E: ANOVA: 3PL Services & Length of Service Used 2	130

LIST OF TABLES

Table 1.1 Regulatory Frameworks for Foreign Participation in Logistics Sectors	5
Table 1.2 Pre- and Post- WTO Rules and Regulations	7
Table 2.1 Definitions of Supply Chain Management	13
Table 2.2. Definitions of the Discipline of Logistics	19
Table 2.3 Data of Previous Studies in Different Countries	27
Table 2.4 Geographical Coverage & Total Logistics Budget	28
Table 2.5 Shippers Outsource a Wide Variety of Logistics Services in 2009	32
Table 2.6 Length of Contracts & Length of Using 3PL Services	33
Table 2.7 Top Five Reasons for Outsourcing Logistics Activities	35
Table 2.8 Reasons for Outsourcing	38
Table 2.9 Reasons for Not Outsourcing	39
Table 2.10 Criteria for Evaluating Performance	46
Table 2.11 Future Trend of Logistics Services	50
Table 3.1 Features of Two Main Philosophies	54
Table 4.1 Total Current Employees	68
Table 4.2 Main Business Category	69
Table 4.3 Annual Sales Revenues (¥ millions) in 2009	71
Table 4.4 Total Companies Outsourcing/ Not Outsourcing	72
Table 4.5 Chi-square Test: Reasons for Outsourcing & Total Number of Employees	75
Table 4.6 More Logistics Expertise/Equipment & Total Employee Numbers	76
Table 4.7 Reducing Inventory & Total Employee Numbers	76
Table 4.8 Chi-square Test: Reasons for Not Outsourcing & Total Employees	78
Table 4.9 Loss Logistics Control & Total Number of Employees	78
Table 4.10 Percentage of Total Logistics Budget Allocated to 3PL Providers	79
Table 4.11 Geographical Coverage	80
Table 4.12 Percentages of Third Party Logistics Services Used	81
Table 4.13 The Satisfaction Level of Outsourced Third Party Logistics Services	82
Table 4.14 Percentage of Total Number of 3PL Providers	83
Table 4.15 Number of 3PL Providers Used & Total Employees Number	84
Table 4.16 Number of 3PL Provider Used & Length of Using 3PL Services	85
Table 4.17 ANOVA: 3PL Services & Length of Service Used	87
Table 4.18 Total Number of Employees & Length of Using 3PL Services	88
Table 4.19 Degree of Importance of Selection Criteria	90
Table 4.20 Degree of Organization Impacts	93
Table 4.21 Percentage of Satisfaction Rate with Current Providers	96
Table 4.22 Percentage of Future Usage of 3PL Services	97

LIST OF FIGURES

Figure 2.1 A Model of Supply Chain Management	16
Figure 2.2 Relationships between Shipper and 3PL Provider	24
Figure 2.3 The Relationship between Three Parts	25
Figure 2.4 Total Logistics Expenditures -3PL	29
Figure 3.1 Research Process	66
Figure 4.1 Company Location	71
Figure 4.2 Main Reasons for Using 3PL Services	74
Figure 4.3 Main Reasons for Not Using 3PL Services	77
Figure 4.4 Length of Using 3PL Services.....	86
Figure 4.5 Duration of Contract.....	88
Figure 4.6 Degree of Importance Criteria when Evaluating Provider's Performance	91
Figure 4.7 Main Reasons for Retraining.....	95

CHAPTER ONE: INTRODUCTION

1.1 Introduction

The aim of this study is to understand the current status of Chinese third party logistics (3PL) industry, and investigate the usage of 3PL services in China. This chapter provides the background of logistics and supply management. The background includes the growth of 3PL and the increased importance of logistics and supply chain management. The second part of this chapter provides the overview of logistics industry in China and explanation of the development of the Chinese logistic industry. The third part of this chapter introduces the progress of generate research problems. The research problems are generated from the previous literatures. The rest of this Chapter provides the main aims and objectives of this study, and also presents the outline of this thesis.

1.2 Background

In recent years, logistics and supply chain management have been attracting wide attention and have become increasingly important over the last two decades. Over the period, the condition of the environment has changed significantly, and the concept of logistics and supply chain management has been evolving. Nowadays, logistics and supply chain management has been reviewed as an increasingly popular business strategy as it can reduce costs and improve customer values. Traditionally, logistics and supply management were delegated to operational level in purchasing and distribution departments, but now logistics and supply management are evolving due to strategic alliances, technological changes, cycle time compression, and the increasing competitive environment. There are also some internal changing factors such as the implementation of decision support systems, information systems

integration, increasing performance expectations and spanning of logistics to impact traditional functional areas (Meade & Sarkis, 1998). Globalisation, new technologies, customer orientation and outsourcing, which are the major factors that contribute to the interest in logistics force organization to gain competitive advantages (Lambert D.M., Stock J.R. & Ellram L.M., 1998).

The third party logistics industry began in the 1980s, it was a \$40 billion industry in 1998. The experts predicted this industry would grow 20% per year (Simchi-Levi D., Kaminsky P. & Simchi-Levi E., 2003). In 2006, total spending on outsourced contract logistics globally was US\$148 billion, and with a further US \$117 billion spending on forwarders (Transport Intelligence). As the third party logistics industry rapidly growing and keep playing a more significant role in global supply chains, it is becoming increasingly complex. Fuller, O'Connor and Rawlinson (1993) claimed that one important reason for the growth of 3PL services was the variety of customer needs. This variety of customer needs forcing companies to compete in various business fields that were logistically distinct. These distinct services are provided more efficiently by integrated services providers. The role of third party logistics providers and the range of services that they are providing have been evolved. 3PLs have evolved from narrowly focused only on shippers and freight forwarders to providing a number of varied outsourcing services. The traditional 3PL services was included transportation, warehousing and customs clearance, but today full range of services that 3PLs offer include many non-traditional services, such as inventory planning and management, sourcing, production planning, merge-in-transit network design and operation, reverse logistics, flow-through production support/metering and network simulation (Simchi-Levi et al., 2003).

The literature on international logistics provider shows that there are three waves in the history of 3PL evolving journey. The first wave happened in 1980's or even earlier with the emergence of traditional logistics providers. These providers' activities usually emerged from a traditionally strong position in either warehousing

or transportation. The second wave should back to the early 1990. The number of network players started their logistics activities such as DHL, TNT and FedEx by then. The third step was in late 1990s. At that time, a number of players from areas of information technology, management consultancy and even financial services worked together with players from first and second waves (Berglund, Laarhoven, Sharman & Wandel, 1999).

1.3 Logistics in China

Nowadays, China is becoming the strong economic power and with great future potential. The growth rate of Chinese annual GDP surpassed 10 percent in the past decades. The Economists (2001) forecasted that China would become the second largest economy in the world within 20 years. Since 1994, China has attracted a lot of attention consistently from Multinational Corporations (MNCs). One important reason is the low manufacturing costs and great domestic market potential. After China accessing to the WTO, more people have a wider access to purchase both domestic and foreign goods. The total trade and investments value in China has been increasing rapidly. Moreover, China has overtaken USA and became the number one country in term of attracting foreign investment after 2002(Goh & Ling, 2002). In 2003, more than 80 percent of fortune 500 companies made their investment in China (National Bureau of statistics of the People's Republic of China, 2003).

The growth of the logistics industry in China has been increased dramatically. In 1952, freight turnover in China was 76 billion ton-kilometres, but it was increased to 4381 billion ton-kilometres in 2000. From 1980 to 2000, the total volume increased by 3.8 times (Luo & Findlay, 2001). From 1992 to 2004, the average annual growth rate of the logistics industry in China was 22.2 percent (Logistic Information Center of China and China Federation of Logistics and Purchasing, 2005). The China Federation of Logistics and Purchasing and Mercer Management Consulting reports

that the number of the companies that outsource logistics and transportation services in China will continue to increase 25 percent. The main reason for the sharp expansion is due to many multinational and transnational companies moving their logistics businesses to China. Second reason is that a number of Chinese companies increase outsourcing logistics services in order to reduce costs and focus on improving their core competency. Last reason is that Chinese government begins to encourage companies to invest in the logistics industry (Mercer Management Consulting, 2002).

Prior to the mid-1980s, China adopted central-planned economy policy and used three-tier system to dominate the distribution sector. Both production and distribution were conducted solely. All the productions and related logistics activities were controlled and planned by the central government. Distributors only provided basic logistics services such as transportation and warehousing but no marketing support. Distributors did not have right to import products by themselves since that right was reserved for foreign trade corporations (FTCs). Warehouses built during the pre-1960s were mostly single-storey (Jiang & Prater, 2002). The transportation system was still a weak link in the China at that time. There were insufficient rail or road lines between the regions. The coordination between different modes of planning and development was required. The general service quality was low.

After 1980s, the Chinese government started to reform. The control from central government shifted to the provinces and municipalities level, which means they have right to establish their own trading companies. Therefore, the economic system was changed from planned economy towards marketing economy. It resulted in the shifting of sole state-owned production to private-owned, joint ventures and even foreign companies could gain entry into the Chinese market. In the late 1980s, the domestic enterprises that met specified trade volumes were permitted to import and export directly. This reform led to the development of the logistics industry in China

(Jiang & Prater, 2002).

Prior of China entering the WTO, there were few foreign logistics companies. The Chinese logistics industry was comprised of these single logistics service providers that could only provide warehousing and transportation services (Liu Y., 2008). The regulated sectors of Chinese logistics industry included freight forwarding, trucking, shipping, aviation and customer brokering. If the foreign logistics service providers intended to enter the Chinese logistical services market, they had to have the special licenses approved by the concerned Chinese authorities, such as the Ministries of Communications (MOC) and Foreign Trade and Economic Cooperation (MOFTEC) (see table 1.1 for more details).

Table 1.1 Regulatory Frameworks for Foreign Participation in Logistics Sectors

Sector	Foreign participation encouraged/regulated	Licence approval from relevant authorities
Freight forwarding	Regulated	MOFTEC, CAAC ^a (only for air freight forwarders)
Trucking	Regulated	MOFTEC, MOC
Shipping	Regulated	MOFTEC, MOC
Aviation	Heavily regulated	MOFTEC, CAAC
Customs brokering	Heavily regulated	MOFTEC, GAC ^b
Warehousing	Encouraged	MOFTEC, MOC
Logistics centre	Encouraged	MOFTEC, MOC

Notes: ^aCivil Aviation Administration of China, and ^bGeneral Administration of customs

Source: Loo D. (2002)

China joined the WTO on December 11, 2001. Since then, logistics service industry in China has achieved significant improvement. The rules and regulations governing the permission for logistics services were becoming easier. The government tried to provide better environment for the economy development. For example, carriers could be free to offer single-source logistics management after the accession into the WTO, and foreign 3PL providers were allowed to have minority ownerships in joint ventures upon accession and hold majority equity shares within one year (see table 1.2

for more details). Therefore, the foreign logistics service providers were allowed having more flexibility and better control over the number and type of services they wish to provide. In the meanwhile, the government reinforced construction of infrastructure and logistics networks after accession into the WTO, such as railways, highways and regional logistics parks. The total length of highways in China was increased 50,000 kilometres just from 1999 to 2000, which led the total highway length in China up to 1.4 million kilometres, of which 1.32 million kilometres is paved (National Bureau of Statistics of the People's Republic of China, 2001).

In 2005, the combined length of expressways in China was 1.93 million kilometres. It was the second longest expressway in the world. In the meanwhile, China had 133 airports, 1246 aircraft and 1257 aviation routes (National Bureau of Statistics of the People's Republic of China, 2006). The foreign logistics services providers brought great impact on the development of Chinese domestic 3PL companies. For example, they brought advances logistics concepts, high level of technologies and new management systems into Chinese logistics industry.

The accession of WTO brought not only tremendous opportunities but also the intensive competition from global players. This increased competition in Chinese logistics industry forced many 3PL providers to improve. After China entered into the WTO, Chinese government has removed many restrictions in the logistics industry. However, the restrictions affected the sales, service, and distribution sectors to foreign firms were still not removed until 2005. Comparing with western developed countries, China still has some gaps need to fill. For instance, China still need more qualified logistics personnel and adequate supply to meet variety of demands. These kinds of problems will lead to high logistics costs. For instance, the total logistics costs comes to 20% of gross domestic product (GDP) in China, but in developed countries such as the United States, the total logistics costs only comes to 10% of GDP (Dekker, 2002). However, today's challenge will be tomorrow's opportunity. The existing constraints could be turned to opportunities by creating innovative

solutions with Chinese characteristics (Jiang & Prater, 2002). Therefore, Logistics in China still has a lot of potential.

Table 1.2 Pre- and Post- WTO Rules and Regulations

Pre-WTO	Post-WTO
<p><i>Freight forwarders (F/Fs)</i> F/Fs need "Class A" licence to issue bills of lading (B/Ls), invoices and to collect payments Foreign F/Fs have to be in business for at least 3 years to qualify for a first joint venture (JV) of maximum 50 per cent share and are required to invest at least US\$1 million Foreign F/Fs have to wait five years before forming a second JV, and a year before establishing branches. An investment of US\$120,000 is required for each new branch</p> <p><i>Ocean carriers</i> Ocean carriers require permission from the MOC to offer new services Issue of B/Ls, invoices and collection of payments is only allowed at a limited number of licensed branch offices Ocean carriers can only operate container terminals, warehouses, trucking and inter-modal services through JVs</p> <p><i>Ground transportation providers</i> Only Chinese nationals and Chinese-owned companies are permitted to conduct ground transportation JV partnership is required for foreign participation in cross-boundary operations with Hong Kong</p> <p><i>Express operators</i> Foreign express operators are prohibited from taking a majority share in a JV, and need to invest at least US\$1 million in an entity whose term may not exceed 20 years There is a one-year waiting period for establishing branches and five years for forming a second JV</p> <p><i>Storage and warehousing providers</i> Foreign firms are permitted to own warehouses in foreign trade zones, only if such warehouses are required to store materials necessary to their production and service activities in China</p>	<p>Licensing requirements will be phased out Majority ownership in JVs is allowed a year after accession Wholly owned subsidiaries are allowed 4 years after accession Within two years of accession, a second JV is allowed</p> <p>Carriers will be free to offer single-source logistics management</p> <p>For road transport, foreign transportation providers can establish JVs upon accession, hold majority shares within two years, and be free of restrictions within four years For rail transport, foreign transportation providers can establish JVs upon accession, hold majority shares within a year, and be free of all restrictions within three years</p> <p>Commitments include land-based international courier services and all services related to an international shipment handled by express operators Majority ownership in JVs will be allowed a year after accession Wholly owned subsidiaries will be allowed four years after accession</p> <p>Foreign providers are allowed to have minority ownerships in JVs upon accession and hold majority equity shares within one year Restrictions to be phased out within three years</p>

Sources: Goh & Ling (2002)

1.4 Research Problems

There are a lot of literatures in studying the area of third party logistics industry. Some researchers studied the advantages and extent of usage of 3PL. However none of them studied the usage of 3PL services in China in 2010. Lieb, Millen and Wassenhove (1993) compared the experiences of the European manufacturers with US by using 3PL services. The authors tested the level of commitment to the usage of 3PL, the logistics budget allocated to third party providers and utilization of 3PL services. They found a higher level of commitment to using 3PL services in Europe. Dapiran, Lieb, Millen and Sohal (1996) presented an overview of the 3PL usage by large Australian firms, and then compared the Australian firms to US firms in their usage of 3PL services. Bhatnagar, Millen and Sohal (1999) also studied third party logistics services with a Singapore perspective. The study found that most users were satisfied with their providers and believed that 3PLs would lead to positive developments within the organizations. Sohail and Sohal (2003) examined the usage of third party logistics services in Malaysia. The study determined the extent of use of the third party logistics services, decision making process for choosing contract logistics and its impact on the organization. Lieb and Bentz (2005) conducted a survey in year 2003 and year 2004, focused on the use of 3PL services by large American manufacturers. Austin, Sohail and Rushdi (2004) studied the usage of 3PL service in Sub-Saharan Africa. The empirical research was focused on Ghana. They found over 80% of users of 3PL have a positive impact on their own companies. Zhang (2009) researched the usage of third party logistics in New Zealand. This research investigated the use of third party logistics by the companies in New Zealand from the user's perspective and identified the opportunities in the New Zealand environment.

A number of researchers investigated the Chinese logistics industry but from different perspectives. These studies introduced the past and current situation of 3PL services in China. However, none of these studies focus on investigating the current usage and

future trend of 3PL services in China in recent years. Jiang and Prater (2002) studied Chinese distribution and logistics development. The research reviewed the traditional Chinese distribution system and compared it with the systems used in foreign countries. Dai, Deng, Ou, Tsui, Wang & Zhang (2002) conducted a survey among Chinese and foreign 3PL providers from the provider's perspective. Goh and Ling (2002) did a similar study on logistics development in China. They found that booming economy, entering the WTO and e-commerce were the main forces for the changing China's distribution and logistics system in China. In 2003, Dai et al conducted a survey which focused on Chinese logistics. In 2005, Dai et al did another survey report on China road transportation enterprise. Wang, Zantow and Lai (2006) carried out a study about the strategic aspects of 3PL provider in China. This was the first study to examine 3PLs providers in mainland China. Liu (2008) studied the current situation for Chinese 3PL companies to face. Liu unveiled the current situation of Chinese domestic 3PL providers and also discovered the competitive strategies pursued by the Chinese 3PL providers.

Anything happened in China Logistics industry is a hot topic in recent years. Many researchers studied the third party logistics industry in different ways compare with different countries. However, there is a lack of study focusing on the usage of third party logistics services in China in recent years. Therefore, this study investigates the usage of third party logistics in China from the user's perspective, and provides the in-depth research by descriptive and statistical analysis.

1.5 Main Aim and Objectives

The aim of this study is to investigate the current usage of third party logistics in China from the user's perspective. An empirical research is carried out to determine:

- The extent of use of the third party logistics services in China
- Reasons for Chinese firms outsourcing logistics activities

- Reasons for Chinese firms not outsourcing logistics activities
- The level of satisfaction of their 3PL providers
- Selection criteria of choosing 3PL providers
- Organization impact of logistics outsourcing
- Future trend of Chinese logistics services.

1.6 Thesis Outline

The thesis is consisting of five chapters:

Chapter one is the introduction. This chapter presents a background of the logistics and supply chain management and reviews the background of logistics in China, and then discusses the motivation of the research problem, states the research objectives and related questions.

Chapter two is the literature review. It presents the concept of logistics and supply chain management, third party logistics, and provides insight into research strategies and methodologies that are considered appropriated to the research problem and objectives. The literature review shows a rational guideline for the whole research.

Chapter three describes the methodologies and techniques that are used in the research process. The quantitative method is used for conducting this research. The data collection method is the non-probability sampling. This chapter also describes the number of participants of this study, operational procedures, methods of questionnaire and selection of data for analysis.

Chapter four includes the survey results and discussions. The statistical program

SPSS (Statistical package for the Social Sciences) uses for analyzing the data. The statistical techniques include descriptive statistics, ANOVA (analysis of variance) and Chi-square test. These techniques provide in-depth investigation of the relationships between different variables.

Chapter five is the conclusion. The final chapter reviews the study objectives and summarizes the overall conclusions from the survey results and discussions. Limitations of this study and suggestions for the future research are presented as well.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In recent years, logistics has attracted a lot of attention from business operators and scholars. There are a large number of studies and discussions which have contributed to the overall development of logistics. This chapter starts with the definition of Supply Chain Management, Logistics Management and Third Party Logistics. It helps readers to review these fundamental concepts. From the previous researches several key factors have been identified that impact the overall usage of 3PL logistics services. These factors are the extent of use of the third party logistics services; decision making process for choosing contract logistics services provider and impact of the usage of contract logistics services on the organization (Lieb, 1992). These factors determine the future usage of contract logistics services. This chapter reviews the literature with reference to these factors. Furthermore, reasons for outsourcing and not outsourcing logistics activities, the level of satisfaction of their 3PL providers and the future trend of logistics services in different countries.

2.2 Definition of Supply Chain Management

The definitions of supply chain management (SCM) may differ across authors. Table 2.1 shows the variety of definitions of supply chain management. Lee (1995) defined supply chain management as:

“The integration of material, information and financial flows in a network of companies or organizations that make and deliver of products and services from the source to the consumer” (p.272).

Table 2.1 Definitions of Supply Chain Management

Monczka, Trent, and Handfield (1998)	SCM requires traditionally separate materials functions to report to an executive responsible for coordinating the entire materials process, and also requires joint relationships with suppliers across multiple tiers. SCM is a concept, “whose primary objective is to integrate and manage the sourcing, flow, and control of materials using a total systems perspective across multiple functions and multiple tiers of suppliers.”
La Londe and Masters (1994)	Supply chain strategy includes: “... two or more firms in a supply chain entering into a long-term agreement; ... the development of trust and commitment to the relationship; ... the integration of logistics activities involving the sharing of demand and sales data; ... the potential for a shift in the locus of control of the logistics process.”
Stevens (1989)	“The objective of managing the supply chain is to synchronize the requirements of the customer with the flow of materials from suppliers in order to effect a balance between what are often seen as conflicting goals of high customer service, low inventory management, and low unit cost.”
Houlihan (1988)	Differences between supply chain management and classical materials and manufacturing control: “1) The supply chain is viewed as a single process. Responsibility for the various segments in the chain is not fragmented and relegated to functional areas such as manufacturing, purchasing, distribution, and sales. 2) Supply chain management calls for, and in the end depends on, strategic decision making. “Supply” is a shared objective of practically every function in the chain and is of particular strategic significance because of its impact on overall costs and market share. 3) Supply chain management calls for a different perspective on inventories which are used as a balancing mechanism of last, not first, resort. 4) A new approach to systems is required—integration rather than interfacing.”
Jones and Riley (1985)	“Supply chain management deals with the total flow of materials from suppliers through end users...”
Cooper et al. (1997)	Supply chain management is “... an integrative philosophy to manage the total flow of a distribution channel from supplier to the ultimate user.”

Source: Mentzer et al., (2001)

Monczka, Trent, and Handfield (1998) stated:

“The primary objective of SCM is to integrate and manage the sourcing, flow, and control of materials using a total systems perspective across multiple functions and multiple tiers of suppliers” (p.133).

Other definitions of supply chain management are listed in table 2.1.

Basically, these different points of view from different authors can be classified into three categories: a management philosophy, implementation of a management philosophy, and a set of management processes:

- *SCM as a Management Philosophy*

In this philosophy, SCM viewed the supply chain as a single entity rather than as a set of fragmented parts (Ellram and Cooper, 1990). Cooper et al (1997) defined SCM as a set of beliefs that each firm in the supply chain affects the performance of all the other supply chain members directly and indirectly. Ross (1998) said: “SCM as a management philosophy seeks synchronization and convergence of intra-firm and inter-firm operational and strategic capabilities into a unified, compelling marketplace force” (p.116).

As SCM is regarded as a management philosophy, it should have the following characteristics: a system approach can manage the total flow of goods inventory from the supplier to the end users and view the supply chain as a whole. A strategic orientation towards cooperative efforts to synchronize, converge intra-firm and inter-firm operational, strategic capabilities into a unified whole. It is also a focus to create unique and individualized customer value to meet customer needs and make them satisfied (Mentzer et al. 2001).

- *SCM as a Set of Activities to Implement a Management Philosophy*

When SCM is regarded as a set of activities to implement a management philosophy, Mentzer (2001) suggested that various activities were necessary for implementing a SCM philosophy successfully. These activities include:

- 1 Expend integrated behavior to incorporate customers and suppliers.

- 2 Mutually sharing information, risks and rewards between supply chain members. Information sharing can make strategic data available to other supply chain members. Risk and reward sharing should be the long term focus.
- 3 Cooperation is required among the supply chain members in order to have an effective SCM
- 4 Supply chain members should have the same goal and the same focus on serving customers.
- 5 Integration of processes from sourcing to manufacturing and to distribution across the supply chain
- 6 SCM requires partners to build and maintain long- term relationships.
Forming strategic alliances with supply chain members which include suppliers, customers or intermediaries can help creating unique customer value in order to provide a competitive advantage (Mentzer et al. 2001).

● *SCM as a Set of Activities to Implement a Management Philosophy*

When authors defined supply chain management, some authors (Londe 2001, Lambert, Stock & Ellram, 1998) have focused on the management processes. They regarded SCM as a set of management processes. For example, La Londe (2001) defined SCM as a process of managing relationship, information, and materials flowing across enterprise borders. SCM delivers enhanced customer service and economic value from sourcing to consumption through synchronized management of the flow of physical goods and associated information. Earlier, Lambert, Stock, and Ellram (1998) proposed that all supply chain members must adopt a process approach and overcome their own functional silos in order to implement SCM successfully. All of the functions in a supply chain are considered to be key processes. Lambert, Stock, and Ellram (1988) suggested the key processes typically include customer relationship management, customer service management, demand management, order fulfillment, manufacturing flow management, procurement, and product development and

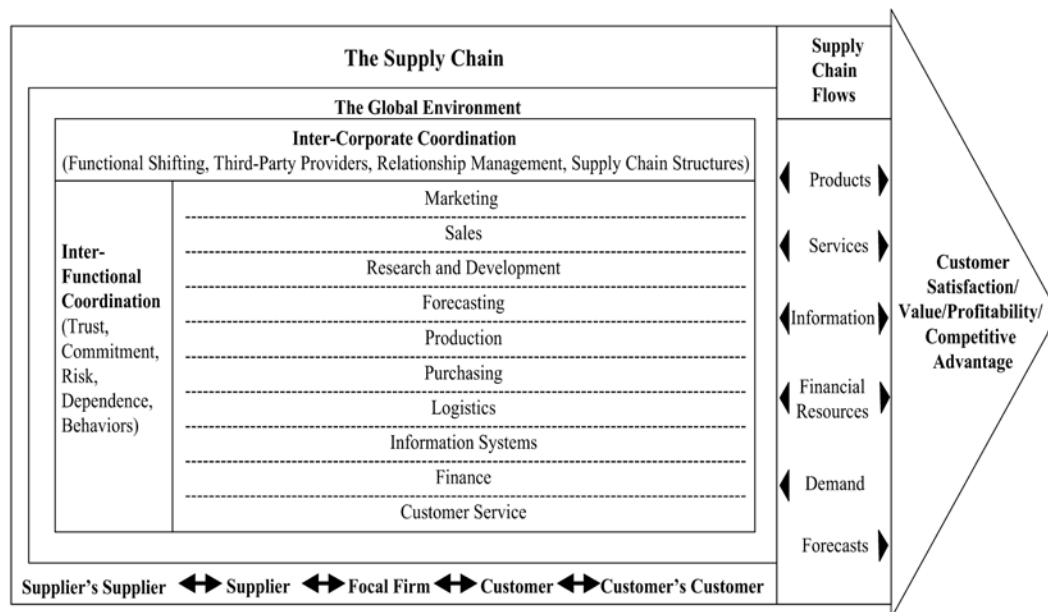
commercialization (Al-Mudimigh, Zairi & Ahmed, 2004).

From above mentioned three different points of view, Mentzer et al (2001) defined supply chain management as:

“the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole” (p.18).

This definition led to the development of the conceptual model. As shown in figure 2.1, the supply chain is pictured as a pipeline which shows the direction of the supply chain flows that include the products and services, financial resources, the information associated with these flows and the informational flows of demand and forecasts. Figure 2.1 also shows the critical role of customer value, the satisfaction of achieving competitive advantage and the profitability for the individual companies in the supply chain.

Figure 2.1 A Model of Supply Chain Management



Source: Mentzer et al. (2001)

2.3 History and Definitions of Logistics

Logistics is more widely recognized by the general public in the last 20 years. However, there is still confusion about its definition. The reasons are there are a number of terms used to describe the logistics, such as, logistics management, physical distribution management, integrated logistics management, operational management, distribution, materials management and marketing logistics. Logistics management is the mostly accepted terms. Logistics management is used by different institute which includes public/government sectors, nonprofit sectors and service organizations such as banks, restaurants, hospital and hotels (Coyle, Langley & Bardi, 2009).

The term Logistics was derived from military term in the eighteenth century in Europe. The military definition of logistics includes supply items such as food, fuel, transporting material, spare parts and personnel (Webster's New Encyclopedic dictionary, 1993). As early as 1989 (Simpson and Weiner), Logistics was discussed as:

“Strategy is the art of handling troops in the theatre of war; tactics that of handling them on the field of battle ... The French have a third process, which they call logistics, the art of moving and quartering troops.” (p. 536)

The term logistics was first defined in 1905, Barker (1905) defined logistics as a branch of the art of war pertaining to the movement and supply armies. In 1960s, the logistics concept began to appear in the business-related literature under the label of physical distribution. Business logistics evolved into a dichotomy of (Langley, 1986)

- **Inbound logistics** (materials management or physical supply) to support production, where the plant is the customer
- **Outbound logistics** (physical distribution of product) to support external

customers.

During 1990s, logistics was regarded as a supply or demand chain that linked all of the organizations from the suppliers to the customer. In the twenty-first century, logistics is reviewed as a part of management and has four sub-divisions which include (Russell, 2000):

- **Military or engineering logistics.** The design and integration of all aspects of support for the operational capability of military forces and their equipment. The equipment is used for ensure readiness, efficiency and reliability.
- **Business logistics.** It is the part of the supply chain process which plans, implements and controls the effective flow and storage goods and services, and support information to meet customer requirements.
- **Event logistics.** The network of activities, personnel and facilities that is required to organize, schedule and use the resources for an event to take place and withdraw after the event efficiently
- **Service logistics.** The acquisition, scheduling and management of the assets or facilities, personnel and materials to support and sustain a service operation or business.

The general definition of logistics that covers above four sub-divisions is:

“Logistics is the process of anticipating customer needs and wants; acquiring the capital, material, people, technologies, and information necessary to meet those needs and wants; optimizing the goods –or service-producing network to fulfill customer requests; and utilizing the network to fulfill customer requests in a timely way.” (The Council of Logistics Management, 1991, p.3)

Table 2.2. Definitions of the Discipline of Logistics.

Source	Definition
Short	Management of materials in motion and at rest.
Classical	Getting the right product, to the right customer, in the right quantity, in the right condition, at the right place, at the right time, and at the right cost. (Called the Seven Rs of Logistics.)
Dictionary	The branch of military science having to do with procuring, maintaining, and transporting materiel, personnel, and facilities.
International Society of Logistics	"The art and science of management, engineering, and technical activities concerned with requirements, design, and supplying and maintaining resources to support objectives, plans, and operations."*
Famous Nebulous	World War II Chief of US Naval Operations Admiral Ernest H. King: "I don't know what the hell this logistics is that (Army Chief of Staff General George C.) Marshall is always taking about, but I want some of it."**
Biblical	"I have heard of you . . . that light and understanding and excellent wisdom are found in you . . . I have heard that you give interpretations and solve problems . . . you shall be clothed with purple and have a chain of gold about your neck" (Daniel 5:14;16)***
Utility	Providing time and place utility of materials and products in support of organization objectives.
Council of Logistics Management	"That part of the supply chain process that plans, implements, and controls the efficient, effective flow and storage of goods, services, and related information from point of origin to point of consumption in order to meet customers' requirements."****
Component	Supply management for the plant (inbound logistics) and distribution management for the firm's customers (outbound logistics) or material support of manufacturing and product support of marketing operations.
Functional	Materials requirements determination, purchasing, transportation, inventory management, ware-housing, materials handling, industrial packaging, facility location analysis, distribution, return goods handling, information management, customer service, and all other activities concerned with supporting the internal customer (manufacturing) with materials and the external customer (retail stores) with product.
Common Culture	Handling the details of an activity.

Source: Russell, (2002)

The definitions of Logistics described by different perspectives in a variety of sources are shown in table 2.2. Lambert et. al., (1998) pointed out this definition offered by the council of supply chain management was mostly utilized. This definition includes the flow of goods and services and information in both the manufacturing

and service sectors. Manufacturing includes all types of companies that producing goods such as producing computers, automobiles, cosmetics aircraft and food items. The service sector includes government organizations, hospitals, banks, retailers and wholesalers (Lambert et. al., 1998). Logistics management is regarded as an extension of physical distribution management. It usually connects to the management of the materials and information of the business, through the distribution channel to the end users. Logistics pretty much depends on the nature of the business and the industry. Logistics management includes everything from a decision on a product to the management of incoming raw materials, the production process, storage the finished goods, delivery the products to the customer, and after-sales service (Chapman, Soosay & Kandampully, 2002).

All of these above mentioned definitions in common are the concept of integrating many activities to support the organizational objective. In general contexts, logistics is expressing or implying a sense of meeting the material system or processing needs of a customer.

2.4 Third Party Logistics

There are some other names to describe the phenomenon of third party logistics (3PL) such as contract logistics or integrated service provider. The term third party logistics has been used more and more commonly. The growth of intensive competition and complex business conditions force organizations to have competitive advantages consistently. Therefore, organizations regard 3PL providers as an effective strategy to lower the operation costs and achieve a high service performance (Liu, 2008).

2.4.1 Definitions of Third Party Logistics

Third party logistics and related concepts are developed by researchers or consultants in collaboration with businesses demanding or offering third party services. There

are different types of definitions of 3PL. For example, after the comparison between the spreading of 3PLs in US and European production industries Lieb et al. (1993) used the definition was:

“Third-party logistics involves the use of external companies to perform logistics functions that have traditionally been performed within an organization. The functions performed by the third party can encompass the entire logistics process or selected activities within that process” (p1).

This definition indicates that 3PL includes any form of externalization of logistics activities that previously performed in-house. It also illustrates the scope of definitions. The above definition applied the outsourcing concept of logistics function and the following definition has fulfilled the missing part of the above definition.

“A firm which provides multiple logistics services for use by customers. Preferably, these services are integrated, or "bundled" together by the provider.” (Bagchi P.K. & Virum H., 1996. p.94).

The council of Logistics Management defined 3PL as:

“Outsourcing all or much of a company’s logistics operations to a specialized company.” (Lindskog, 2003. p.140).

Third party logistics can be seen as one unit of the supportive supply chain. It means 3PL providers provide support to alternative supply chain strategies. Lambert et al (1998) defined supportive members as: “companies that simply provide resources, knowledge, utilities or assets for the primary members of the supply chain” (p.2). The benefits that 3PL services can bring to the organization base on the literatures are not only lower the operating costs and improve service performance, but also find

global solutions, enable entry to new markets, control costs, investments, and services, improve customer satisfaction and improve flexibility, and find more cost efficient service solutions (Anu & Bask 2001).

A European definition stated:

“Third-party logistics (3PL) are activities carried out by an external company on behalf of a shipper and consisting of at least the provision of management of multiple logistics services. These activities are offered in an integrated way, not on a stand-alone basis. The cooperation between the shipper and the external company is an intended continuous relationship” (ProTrans, 2001, p. 2).

This definition emphasized that 3PL agreement not only to provide the services, but also be responsible for integrating and managing the producing party such as lower tier providers. Tiered execution of services is very common among 3PL providers (Berglund, et. al., 1999).

In recent years, focus of third party logistics providers has moved to strategic development. Third party logistics providers start to support logistics operations through value-added services and supply chain solution services (Rushton A., Oxley J. & Croucher P., 2000). Value-added service in logistics is defined as “add a lot of additional value to the products being distributed” (Rushton et al., 2000. p.62). The major value-added services have been summarized as follows:

- Specialist or niche service, where the operations is specifically designed for a particular product
- Time reliable services, which are set up to support the just-in-time operations of major manufacturers
- Assembly that is fulfilled by third-party distributor
- Refurbishment: in the light of current environmental legislation

many ,manufacturers have endeavored to re-engineer their products so that parts from some used products can be reused in new products

- Repacking, which is another area of value added development, like a torch together with battery
- Packaging return: collect packaging for reused or disposal

2.4.2 Third Party Logistics Partnership

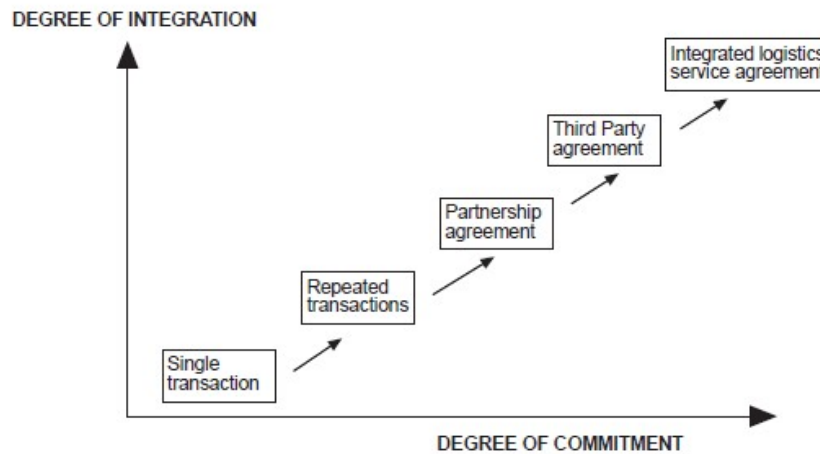
In 1993, the first survey was conducted in Europe. It found that partnerships were modest in scope and level of ambition. Partnerships were limited to the basic warehouse activities and transportation in the logistics industry. Top management was only involved to a limited extent and contracts were extremely detailed. The provider only had little opportunities for own initiative. The cooperation was limited between the 3PL providers and shippers. However, the situation changed with time passing on, the value added activities and service range became a much larger extent than it in 1993 (Van Laarhoven, Berglund & Peters, 2000).

The figure 2.3 shows that the 3PL provider is in the middle to connect between two participants which are shippers and suppliers in the relationship. As a result it is become involved as a third party (Larsen, 1999). The relationship between shippers and 3PL providers' function is on a continuous scale. It is going from single transaction to integrated service agreements as shown in figure 2.2. The left part of scale focuses only on single transactions and corresponds to the traditional relationship between buyer and seller on the transport market. The three forms of cooperation on the right side of the scale are regarded as form of strategic alliance.

Bagchi and Virum (1996) defined the logistics alliance as:

“A logistics alliance indicates a close and long-term relationship between a customer and a provider encompassing the delivery of a wide array of logistics needs” (p.97).

Figure 2.2 Relationships between Shipper and 3PL Provider



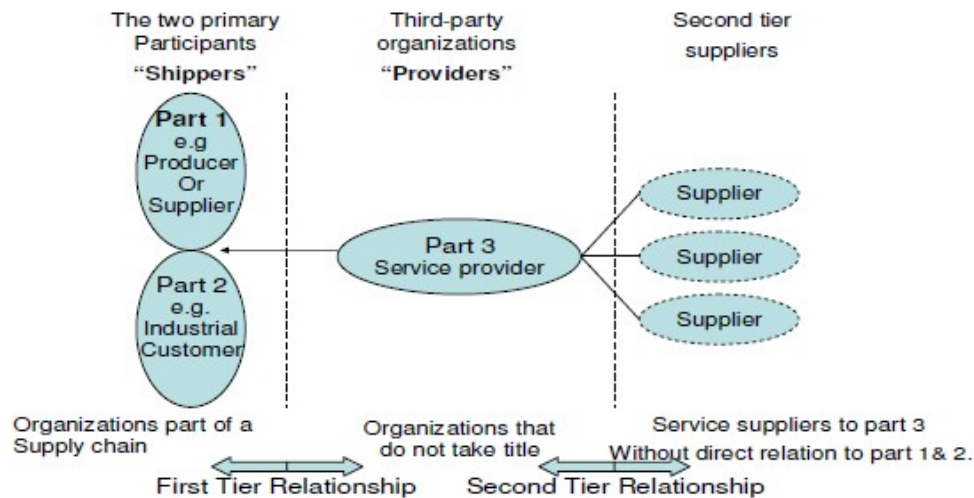
Source: Larsen (1999).

In a logistics alliance, the parties ideally consider each other as partners. They collaborate in understanding and defining the customer's logistics needs. Both partners participate in designing and developing logistics solutions and measuring performance. This definition emphasizes the strategic dimension of the concept and presumes that 3PL could fulfil several characteristics before the relationship between buyer and seller of logistics functions. These characteristics includes the certain duration, joint efforts to develop further cooperation, a customization of the solution, together with a fair sharing of benefits and risks (Larsen, 1999). Bagchi & Virum, (1996) also pointed out the primary goal in a logistical alliance was to achieve a win-win arrangement.

The figure 2.3 demonstrates the relationship between the three parts and the tiered service production structure. The third party logistics providers are also called first tier supplier. The relationship between first tier suppliers (shippers) and provider are

called first tier relationship. The second tier suppliers, who have the indirect relationship to the primary participants, are the suppliers of 3PL provider.

Figure 2.3: The Relationship between Three Parts



Source: Berglund (2000)

The two parties regard each other as partners. Both partners are responsible for designing and developing logistics solutions and measuring performance. Therefore, how to achieve a successful relationship between providers and users has become a hot topic among the researchers. Virum (1993) have stated that the information sharing was the most important factor to the successful relationships between providers and users. Leahy S.E., Murphy P.R. & Poist R.F. (1995) stated that the growth of logistics outsourcing was impressive. The major factor of successful logistics outsourcing was the ability to manage these third party relationships. Leahy et al (1995) also generated a list of twenty five factors which are affecting the successful relationship between providers and users (see appendix A).

2.5 Extent of Use of the Third Party Logistics Services

Lieb et al. (1993) defined the extent of usage as the following factors:

- Level of commitment to the usage of third party logistics

- Percentage of total logistics budget allocated to third party providers
- Geographical coverage provided by third party firms
- Third party services utilized
- The length of third party contracts.

Sohail et al (1999) suggested that the longer the relationship between organization and the 3PL provider, which means the more extensive of the use of 3PL services and the higher the level of commitment to the relationship, and also the more chance for organizations to be willing to invest in contract logistics.

2.5.1 Level of Commitment to the Usage of Third Party Logistics

Lieb (1992), Lieb and Randall (1996), Lieb et al. (1993) compared the experiences of the European manufacturers with US manufacturers of using 3PL services. The study indicated that European firms were more significantly committed to their 3PL companies rather than US manufacturers did. Dapiran et al. (1996) presented an overview of the 3PL usage by large Australian firms, and then compared the Australian firms to US firms in their usage of 3PL services. The study indicated that more than one-fifth Australian firms characterized their commitment to 3PL as extensive. Millen R., Sohal A., Daparin P., Lieb R., & Wassenhove L.N.V., (1997) did a study that compared American firms with Western European firms. It revealed that around one-half of the users in Western Europe firms characterized their commitment as extensive, and in US firms more than one-half of the US firms characterized their commitment as limited or very limited. Bhatnagar et al (1999) studied third party logistics services under a Singapore perspective. The result showed that over three-quarters of the users in Singapore characterized their commitment to 3PL services as moderate to extensive. In Ghana (Sohail M.S., & Al-Abdali O.S., 2005), most of the users described that their commitment to 3PL services as moderate to extensive. In India (Sahay & Mohan, 2006), 68 percent of the users described their commitment to 3PL services as moderate and 32 percent of

the users used the services very limited.

Table 2.3 Data of Previous Studies in Different Countries

	Authors	Published year	Sample size	Number of respondents	Respond rate	TPL user	More than one provider	None users
AUS	Dapiran et al.	1996	308	84	27	67	33	33
AUS	Millen et al.	1997	308	84	27	64	67	36
USA	Lieb & Randell	1996				38	79	
USA	Lieb & Randell	1996		92	22	60	70	
USA	Millen et al.	1997	500	131	26	37	1	
USA	Lieb & Bentz	2005	450	60	13	80	60	
WE	Millen et al.	1997	500	73	26	52	0	
SG	Bhatnagar et al.	1999	1000	126	17	60	74	
MY	Sohail & Sohal	2003	800	124	16	68	63	
SA	Sohail & Al-Abdali	2005	2000	496	25	64		36
India	Sahay & Mohan	2006	500	130	26	55	82	45
Sweden	Sjöholm & Wang	2007	350	90	25.7	55.6	61.4	44.4
NZ	Zhang	2009	250	84	35	48	85	36

Source: Sjöholm & Wang (2007)

Table 2.3 provides an overview of previous studies that have been made in different countries. It demonstrates that over 60 percent of respondent companies use 3PL services in Australia, USA, Singapore, Malaysia, Mexico and Saudi Arabia. In Australia, the figure is 75 percent (Sohail A.S., Millen R. & Moss S., 2002), Malaysia 63 percent (Sohail & Sohal, 2003), USA 79 percent (Lieb & Bentz, 2005), Saudi

Arab 63.5 percent (Sohail & Al-Abdali, 2005), Singapore 60.3 percent (Bhatnagar, et al., 1999) and Mexico 78.7 percent (Arroyo P., Gaytan J., & de Boer L., 2006). The other Countries which have more than half of the companies using 3PL services are as following: Western Europe (52%) (Millen et al, 1997), India (55%) (Sahay & Mohan, 2006) and New Zealand (57%) (Zhang, 2009).

2.5.2 Total Logistics Budget -3PL

Table 2.4 Geographical Coverage &Total Logistics Budget

	Authors	Published year	Geographical coverage			logistics budget			
			Both	Demestic only	International only	0-20%	21-40%	41-60%	>60%
AUS	Dapiran et al.	1996	35	65	0	50	22	4	34
AUS	Millen et al.	1997	35	65	0	50	22	4	23
USA	Lieb & Randell	1996	60			85	11	2	2
USA	Lieb & Randell	1996	61			73	19	2	5
USA	Lieb & Randell	1996	46	49	6	87	10	4	0
USA	Millen et al.	1997	60	36		73	19	0	7
WE	Millen et al.	1997	70	26		36	20	6	36
SG	Bhatnagar et al.	1999	59.2	24	17.1	43	16	16	27
MY	Sohail &Sohal	2003	66.6	31	2.4	29	22	20	39
GH	Sohail et al.	2004	51	41	8	43	41		6
SA	Sohail & Al-Abdali	2005	46	46	8		45		16
India	Sahay & Mohan	2006	46.7	44.4	8.9	63.4	7.6	14	15
Sweden	Sjoholm & Wang	2007	72	10	18	24.5	14.3	28.6	32.6
NZ	Zhang	2009	46	31	23	29	32	23	16

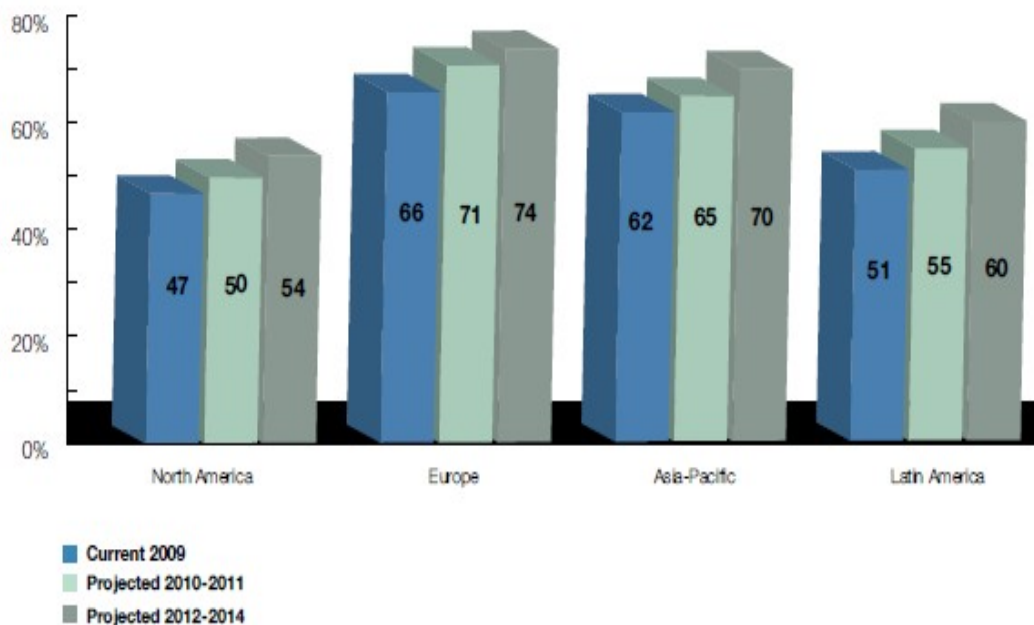
Source: Sjöholm & Wang (2008)

Table 2.4 provides the percentages of the total logistics budget allocation and the percentages of the geographic coverage in different countries. The study carried out by Dapiran et. al., (1996) presented that one-quarter of the Australia firms allocated more than 50 percent of their total logistics budget to 3PL providers. Millen et al (1997) indicated that European firms were significantly more committed and allocated a larger share of the overall logistics budget to their 3PL providers when compared

with US counterparts. Bhatnagar et al (1999) found that 20 percent of the Singapore firms allocated over 30 percent of their total logistics budget to 3PL providers. In Ghaba (Sohail M.S., Austin, N.K. & Rushdi M., 2004), there was only 6 percent of the users spent over 50 percent of logistics budget to outsourcing logistic. Sohail et al (2004) stated that there was nearly 45 percent of the users allocated 20 percent or less of their logistics budget to 3PL providers in Saudi Arab, and 13 percent of the users allocated over 60 percent of their logistics budget to 3PL providers.

However, 63 percent of the firms allocated 11-20 percent of their budget to 3PL providers in India (Sahay & Mohan 2006), and only 29 percent allocated over 50 percent of logistics budget to 3PL providers. In New Zealand (2009), 39 percent of the firms allocated more than 40 percent of their total budget to 3PL providers.

Figure 2.4 Total Logistics Expenditures -3PL



Source: Capgeminni & Langley, (2009)

Capgemini consulting and Langley (2009) conducted a survey that showed the percentage range of total logistics expenditures to be allocated to 3PL use in different regions. In figure 2.4, it shows the current percentage and also the expected

percentage of total logistics expenditures in different regions. The percentage of logistics shippers' budgets that was devoted to outsourcing in 2009 in different regions are as following: Europe (66%), Asia Pacific (62%) and Latin America (51%). These figures are slightly higher than those reported in the 2008 study. Therefore, there is a small increased in the expenditures on the 3PL services in these regions.

2.5.3 Geographical Coverage Provided by Third Party Firms

In Australia, firms that used 3PL services for domestic purpose are more than for international purpose. However, in countries such as US, Western Europe, Singapore and Malaysia, most of firms in these countries used 3PL services for both domestic and international purposes (Lieb & Bentz, 2005; Millen, et al., 1997; Sohail M.S., Bhatnagar R. & Sohal A.S., 2006; Sohail & Sohal, 2003). Lieb and Bentz (2005) pointed out that many companies from the following countries indentified that 3PL users used outsourcing logistics services in multiple geographies, such as Canada(42% of companies indicated that they used 3PL services for international purpose), Mexico (47%), Latin America (53%), Western Europe (65%), Eastern Europe(58%), Asia (excluding China), China (63%) and India(21%). Lieb and Bentz also indicated that the significant growth of 3PL in China reflected the rapid economic growth of the country.

2.5.4 Third Party Services Utilized

Different firms may outsource the different third party services, which depends on the organization needs and strategies. The services that firms usually outsource includes: warehouse management, shipment consolidation, fleet management, order fulfilment, product returns, carrier selection, logistics information systems, rate negotiation, product assembly, order processing and inventory replenishment (Bhatnagar et al, 1999).

In 1991, Bardi and Tracey conducted a survey of the transportation practices of US manufacturers. They found that freight bill, auditing, payment and transportation reports were the most frequently used transportation functions. In 1993, Lieb et al compared European firms with US firms. They found that the firms from both regions agreed that outsourcing need not be an all or nothing proposition, and the mix of internal and external logistics services may provide better control and balance the consistency and flexibility, also the expertise and the good practices can be shared. The study also indicated that the most frequently used 3PL services were warehousing, shipment consolidation and fleet management in both regions.

In 1996, Dapiran et al indicated that fleet management, warehouse management and shipment consolidation were the most frequently used 3PL services. McMullan A., (1996) found that the most outsourced services among the clients of the consulting group, KPMG, in the Asia-Pacific region were transportation, maintenance and warehousing. Bhatnagar et al (1999) indicated that more than one-half of the firms in Singapore outsourced the shipment consolidation service, and 40 percent of the firms outsourced order fulfilment, carrier selection and freight payment services. The least outsourced services included product assembly or installation, order processing and inventory replenishment. In Malaysian, (Sohail & Sohal, 2003) the frequently used contract logistics services were shipment consolidation (58.3%), fleet management (48.8%), and Freight payment (41.7%). In Saudi Arabia (Sohail et al, 2005), almost one-third of the firms outsourced shipment consolidation. The other frequently used services include freight payment, order fulfilment, and product assembly and installation. In India (Sahay & Mohan, 2006), more than half of the respondents indicated that the outsourced logistics services they were using at that time included transportation, and custom clearing and forwarding. The other outsources services included import and export management, warehousing, labelling and packing, fleet management and consolidation. In New Zealand (Zhang, 2009), more than half of the firms indicated that the most frequently used 3PL services included domestic transportation(82%), freight forwarding (64%), warehousing (62%)

and international transportation (62%), and 47 percent of the firms outsourced customs clearance and brokerage.

Table 2.5: Shippers Outsource a Wide Variety of Logistics Services in 2009

Outsourced Logistics Service	Percentages				
	All Regions	North America	Europe	Asia Pacific	Latin America
Domestic Transportation	86%	75%	92%	95%	80%
International Transportation	84	70	91	91	88
Customs Brokerage	71	73	61	78	74
Warehousing	68	71	72	65	52
Forwarding	65	61	57	82	66
Cross-Docking	39	40	42	42	20
Product Labeling, Packaging, Assembly, Kitting	38	33	42	40	34
Reverse Logistics (defective, repair, return)	38	31	43	47	26
Freight Bill Auditing and Payment	33	53	24	26	28
Transportation Planning and Management	32	32	33	34	20
Information Technology (IT) Services	30	28	34	30	26
Fleet Management	22	14	26	28	15
Supply Chain Consultancy Services Provided by 3PLs	21	21	19	25	20
Customer Service	13	10	13	15	14
Order Entry, Processing and Fulfillment	13	12	8	20	15
LLP/4PL Services	12	10	12	17	6

Source: Capgeminni & Langley (2009)

In the CapGemini's 14th Annual Report (2009) (as shown in table 2.5), it demonstrates that the percentages of third party logistics utilized in different regions. The results presents the most frequently outsourced activities are transactional, operational and repetitive compare with the results in previous years. These activities are domestic (86% across all regions) and international transportation (84%), customs brokerage (71%), warehousing (68%), and forwarding (65%). The report indicates that the less used activities tend to be more strategic, customer-facing and IT intensive, such as transportation planning, information technology, supply chain consultancy, and customer service. Moreover, the percentage of respondents outsourcing logistics activities was higher than it in Europe, Asia Pacific, and lower in North America or Latin America compared with previous years. Also there was an increase in the percentage of utilization of customs brokerage, forwarding, and fleet management services. However, the overall business volumes declined in 2009.

2.5.5 The Length of Third Party Services.

Table 2.6 Length of Contracts & Length of Using 3PL Services

Country	Authors	Published year	< 1 yr	Length of contracts			Length of using 3PL services			
				1-3 yrs	3-5 yrs	>5 yrs	<1 yr	1-3 yrs	3-5 yrs	>5 yrs
AUS	Dapiran et al.	1996	0	83	17	0	6	24	18	52
AUS	Millen et al.	1997	0	83	17	0	6	24	70	0
USA	Lieb & Randell	1996					6	15	79	0
USA	Lieb & Randell	1996					9	21	70	0
USA	Millen et al.	1997	4	86	4	6	9	36	55	0
USA	Lieb & Bentz	2005	4	86	4	6	9	21	70	0
WE	Millen et al.	1997	9	75	9	7	4	17	79	0
SG	Bhatnagar et al.	1999	4	12	12	72	4	12	12	72
MY	Sohail & Sohal	2003	1.2	13	7.2	45	10	26	18	46
GH	Sohail et al.	2004					5	27	68	0
SA	Sohail & Al-Abdali	2005	10	37.5	10	42.5	15	35	16	34
India	Sahay & Mohan	2006						18.8	28.6	
Sweden	Sjoholm & Wang	2007	10.2	75.5	12.2	2	6	14	10	70
NZ	Zhang	2009	9	82	6	3	4	25	15	56

In 1993, Lieb et al. found that almost all of respondents in both Australia and US firms negotiated specific 3PL contracts of periods ranging from one to three years. The figures were observed in the Europe study were significantly higher than it in Australia and US. Bhatnagar et al (1999) pointed out 84 percent of Singapore firms had been using contract logistics services for more than three years. It showed there

was a significant amount of Singaporean firms using 3PL. In Ghana (Sohail et al, 2004), 68 percent of firms have been using the 3PL services between three and five years. In Saudi Arabia (Sohail & Al-Abdali, 2005), over 60 percent of the respondent companies had their contracts with 3PL providers. In Malaysia (Sohail, et al, 2006), study showed that 40 percent of the respondents have contracts with their 3PL providers, and almost one-half (45%) of the firms signed a contract for usage of services for more than 5 years. In New Zealand (Zhang, 2009), study showed that 69 percent of respondents had their contracts with 3PL providers, and 82 percent of them had the contracts in the length between one to three years (see table 2.6 for detailed information).

2.6 Reasons for Outsourcing Logistics Activities

The decision for whether a firm should outsource or not can be complex as the activities of the modern organizations tend to be integrated with each other. The reason for outsourcing is that outsourcing can bring the competitive advantages to the organization. The advantages can be categorized as strategic or tactical, long-term or short term, tangible or intangible. Wilding R. & Juriado R., (2004) provided a literature review of empirical papers on outsourcing and they investigated the most important reasons for outsourcing logistics activities. These reasons are listed in table 2.7.

Table 2.7 Top Five Reasons for Outsourcing Logistics Activities

Rank	Reason
1	Cost or revenue related
2	Service related
3	Operational flexibility related
4	Business focus related
5	Asset utilization or efficiency related

Sources: Wilding & Juriado (2004)

- Cost reduction

The most important strategic reason for outsourcing logistics activity is the cost reduction or cutting down the amount of capital invested (Wilding & Juriado, 2004). The costs can be reduced includes operational costs and IT costs. Lacity M.C. & Hirschheim R., (1993) stated that through outsourcing organizations could cut costs by 10 to 50 percent. 3PL providers could provide expertise and up to date software and hardware. Therefore, with the help of 3PL providers, the organization is able to build and maintain/run an application cheaper than it can be done in-house for organization (Collins J.S. & Millen R.A., 1995; Lacity M.C. Willcocks L.P. & Feeny D.F, 1996; Lacity M.C. & Willcocks L.P., 1998). Economies of scale can lower the costs. 3PL providers can economies of scale to the organization due to consolidation of shipments originating from different sources. The providers can use their facilities to operate at lower costs and achieve savings that could not be generated internally. The labour costs can be reduced by international outsourcing. The costs can also be reduced by purchasing a service at a fixed cost per transaction. Therefore, organization may avoid the price uncertainty (Strassmann P.A., 1997). However, cost reduction is hard to realize due to unrealistic fee structures projected by service providers or due to company is lacking of awareness of internal logistics costs (Ackerman K.B., 1996). Therefore, the outsourcing option may be chosen for providing an indication of in-house costs and serve as an external benchmark

for logistics efficiency (van Larrhaoven, et al, 2000).

- Focus on core competences

One of the most frequently cited benefit for using 3PL providers is that allows a company focus on its core competencies. Managers should apply their experience and knowledge to core competencies. They should outsource logistics activities in which they are less competent and benefit from providers' expertise. It is usually very difficult for a person to become an expert in every part of business. However, outsourcers are able to provide logistics expertise to the companies (Simchi-Levi et. al., 2008).

- Provides flexibility

The flexibility that outsourcers can provide includes technological flexibility, flexibility in geographic locations, flexibility in service offerings and flexibility in resource and workforce size (Simchi-Levi et al, 2008). Most of 3PL providers constantly update their information technology and equipments, but individual companies may not have enough time, resources or expertise to update their technology constantly. Therefore, third party logistics providers might be able to meet the requirement of a company in a quicker and more cost-effective way. Third party logistics provider can provide company flexibility in geographic locations. For example, 3PL providers can provide a regional warehouse for an organization, so that the organization can meet the customer requirements without constructing a new facility (Sjöholm & Wang, 2007). Also the flexibility in resource and workforce size could let the managers change the fixed costs into variable costs so as to change the business conditions more quickly (Simchi-Levi et al, 2008).

- Improve customer service

Organizations can improve their customer service by using the competencies of the 3PL providers. A number of studies find that the prime motivation of the implement of 3PL is the desire for the organizations to improve their customer

service. Lack of specific knowledge of tax regulations, customs and infrastructure of the foreign countries force organizations to look for expertise from 3PL service providers (Foster T.A. & Muller E.J., 1990). 3PL providers not only contribute to improved customer satisfaction, but also provide access to international distribution networks (Bask A.H., 2001). As a result, outsourcing the non-strategic activities and using external logistics expertise allow organizations to concentrate on increasing their own core competence (Sink H. & Langley C.J., 1997).

- Utilization and efficiency related

Regarding to operational advantage of using 3PL providers, the previous studies showed that benefits included reduction of the cycle times, inventory levels and lead times (Bhatnagar R. & Viswanathan S., 2000; Daugherty P.J. & Droge C., 1997). By focusing on lead times and improved quality, it led to improve the efficiency of the supply chain performance. Bhatanagar et al (1999) emphasized on speeding up the flow of information to the upstream supply chain partners and accelerating logistics activities such as delivery of materials or products through the entire supply chain. Moreover, after using outsourcing process, the size of the user's logistic department will be decreased, the utilization of warehouse will be increased and also the planning and control process will also be simplified (Van Laarhoven et al., 2000).

Table 2.8 Reasons for Outsourcing

Drivers of outsourcing	Identified by
Improved productivity measurements	
Increase in cost-efficient foreign competition	
Management demand for a financial contribution from all sectors of the company	
Mergers and acquisitions that require keeping assets off the books	
Need to move inventory faster	
Need for flexible production	
Retrenchment to core business	Muller (1992)
A company's need to assess present and future market prospects for its product	
Company restructuring	
Development of supply chain partnerships	
Increasing customer demands and	
Increasing environmental awareness	
To determine the products' competitive advantage in the marketplace	Byrne (1993)
Change in management	
Existing facilities and/or systems	
Expanding into unfamiliar markets and	
Taking on new product lines	Maltz (1995)
The success of firms using contract logistics	Bradley (1994a)
The focus on temporal aspects of logistics management	Cooke (1994b)
Trend towards centralized distribution systems	Bence (1995)

Source: Razzaque M.A. & Sheng C.C., (1998)

Previous studies indicated that firms outsourced logistics functions for different kinds of reasons. In America, Bardi E.J. & Tracey M., (1991) stated that the reasons for the growth of logistics outsourcing were for customized services, reducing inventory, cost reduction, enter to new markets, becoming more active in international shipping, gaining the use of sophisticated technology, more professional and better-equipped logistics services. The European study (Van Laarhoven et al, 2000) showed that the main strategic reasons for outsourcing their logistics activities were for the need of reducing cost or cutting down the amount of capital investment and focused on core competencies. Sahay & Mohan (2003) did a research on supply chain management in India and they identified that outsourcing of logistic activities became very popular in India organizations. The number of 3PL providers was increased over the last couple of years. The main reasons for using of 3PL service in India were for cost reduction (27 per cent), strategic reasons (26 per cent), process effectiveness (24 per cent), and lack of internal capability (11 per cent). In New Zealand (Zhang, 2009), more than half of the respondents indicated that the most important reason for

outsourcing logistics activities was logistics cost reduction. The other important reasons were for focusing on core competencies (48%), reduction in capital investments (44%), improving the logistics process and customer services (33%) and expansion to unfamiliar markets and accessing to emerging technologies (15%). The other reasons for outsourcing logistics activities were suggested by other logisticians are listed in table 2.8.

2.7 Reasons for Not Outsourcing Logistics

There are a number of reasons to encourage organizations to outsourcing, in the contrast, there are also many reasons to discourage organizations to outsourcing logistics activities.

As shown in table 2.9 the main obstacles and problems of outsourcing indentified by different authors are summarized. The impacts of these obstacles and problems are also summarized.

Table 2.9 Reasons for Not Outsourcing

Obstacles and problems	Impacts	Authors
Loss of control	- Loss of core competence - Risks of alienating customers	Blumberg (1998), Lonsdale and Cox (2000)
Loss of critical skills	- Loss of competitive advantage - Increased number of competitors	Quinn and Hilmer (1994), Jennings (2002), Beaumont and Sohal (2004)
Inadequate capabilities of service provider	- Loss of competitive advantage - Loss of market share	Jennings (2002)
Loss of flexibility	- Reduced responsiveness - Risks of alienating customers	Embleton and Wright (1998), Beaumont and Sohal (2004)
Failure to realize hidden costs of contract	- Increased operating cost	Palvia (1995), Kakabadse and Kakabadse (2000), Gonzalez <i>et al.</i> (2005)
Difficulty in obtaining organizational support	- Increased chances of failure	Razzaque and Sheng (1998)
Indecisiveness on which activities to outsource	- Increased chances of failure	Lankford and Parsa (1999)
Inadequate cost and benefit analysis systems	- Lower return on investment - Loss of competitive advantage	McIvor and Humphreys (2000)
Fear of job loss	- Increased resistance to change - Lower staff morale	Razzaque and Sheng (1998), Embleton and Wright (1998)

Source: Lau K.H. & Zhang J., (2006)

- Loss of control

Loss of control is the most commonly mentioned problem to discourage organizations from outsourcing logistics activities (Bardi & Tracey, 1991; Bownman R.J., 1995; Byrne, P.M. 1993; Cooke J.A., 1994). As the number of outsourcing business activities being increased, the ability to retain the control over their 3PL providers is decreasing. The problem is difficult to indentify the key performance metrics and their value, especially the service types of tasks when their final product is intangible and hard to quantify (Sanders N.R., Locke A., Moore C.B. & Autry C.W., 2007). This case is especially true for outbound logistics where the employees of 3PL provider might interact with the organization's customers. Many 3PL providers work very hard to solve this problem. For example, providers paint company logo on the sides of trucks, to advertise the customers that they are the hiring company. They may also provide extensive reporting on each customer interaction (Simchi-Levi et al, 2008).

- Ascertaining the true cost

Organizations may underestimate or overlook the costs easily, because the variations of outsourcing engagements (Lieb & Randall, 1996), and it is hard to allocate the internal costs of outsourcing logistics activities, especially when outsource information technology (Quinn J.B. & Hilmer F.G., 1994).

- Logistics is the only core competency in the firm

If logistics is one of the core competencies of the company, then outsourcing these activities will make no sense to the company. Providers may not as capable as the firm's in-house expertise (Simchi-Levi et al, 2008).

- Difficulty in obtaining organizational support

Obtaining organizational support has been regarded as one of the difficulties for outsourcing logistics services (Bowman, 1995). The study made by Elmuti D.

& Kathawala Y., (2000) found that the inadequate support from both top management and supporting infrastructure in US, Europe, and the Middle East.

- A negative impact on employee moral

The study carried out by Lieb & Bentz (2005) showed that 40 percent of the respondents reported a negative or very negative impact on employee morale. This figure was larger than it in any previous studies. This negative impact was related to fear of job loss that accompanied a decision to outsourcing. If a company outsourcing, the long term users cut more deeply into the full-time logistics workforce, and the remaining workers would be worried about their future. Sahay & Mohan (2006) stated that people issues were the critical factor that needed to be considered in outsourcing of logistics activities.

Capgemini consulting and Langley (2009) researched a substantial number of organizations who did not currently use 3PLs. The results showed that the most frequently occurring reasons for these organizations not outsourcing included: cost reduction (32%), logistics is a core competency in the firm (27%), control over the outsourced functions would diminish (25%); logistics is too important to consider outsourcing (25%); service level commitments will not be realized (23%); and we have more expertise than 3PL providers (17%).

2.8 Selection Criteria of Choosing 3PL Providers

In order to develop goals and find the selection criteria for choosing 3PL providers, organizations should be able to determine which 3PL providers provide the best fit the organizational needs and existing operations. It helps organization streamline the screening process and increasing the probability of success of the relationship between organization and selected provider (Bhatnagar, et al., 1999). When selecting a 3PL provider, the clear objectives is to establish the selection criteria.

Managers should be asked to specify the important factors that define the decision making process and evaluate 3PL providers (Zhang, 2009).

In terms of the selection criteria towards using a 3PL firms, Roberts K., (1994) found that the three most frequently used evaluation criteria for choosing a qualified logistics provider were the level of service provided, quality of the people and cost. Roberts also indicated that the major issues were cost and service, the most noticeable change was the emphasis on the quality of people, especially in the operational area. Therefore, in order to provide high level of services, providers must employ the best people with the relevant expertise. Kim J., Cheong K. & Cho G., (2002) stated that as the increasing competition in the logistic market, quality of service became one of the important differentiator among 3PL providers. The concept of service quality for providers is not only the technical aspects of providing service, but also need to understand how customers perceive and evaluate service quality, because service quality is related to customer satisfaction, both of them influence the organization performance.

Fernie J. (1998), Kremic T., Tukul O.L., & Rom W.O., (2006), Wilding and Juriado (2004) also stated that cost was always a key and the top priority of selection criteria. Dapiran et al., (1996) and Lieb et al., (1993) also found that cost and service were the most important criteria and the other important selection criteria were experience of the third party provider, reputation, total package offered, information handling capability and compatibility of information systems. The experience 3PL provider should have depth-skilled, qualified management and characterize the organization workforce and highly thought between other clients (Bottani E. & Rizzi A., 2006).

Lieb et al (1993) pointed that there was a trade off between service and cost. The providers with high quality of service and good reputation but the costs may be higher. Byrne (1993) argued that the reputation should be on the top of selection criteria of

choosing 3PL provider list. The study made by Closs D.J., Goldsby T.J. & Clinton St. R., (1997) indentified that information technology capabilities influence overall logistics competence significantly, because information technology links supply chain members such as manufacturers, distributors, transportation firms and retailers and it automates some elements of the logistics workload such as order processing, order status inquiries, inventory management and shipping tracking (Vaidyannathan G., 2005).

However, there were also other contrasting views in the logistics literatures about the selection criteria for choosing the 3PL providers. Sink & Langley, (1997) indentified the most important criteria for the selection of third party providers was core competencies. Providers with the core strengths and operational expertise seemed to be able to get a level of comfort in the firm which has undefined competence and superficial experience could not provide. Therefore, the 3PL provider with experience, focus and more expertise will be regarded as more competent. The authors also indentified that the issues of expertise, reputation, experience and reliability often related to the provider's core competencies. Price was only used as a tie-breaker or the secondary issue to service in the selection of potential 3PL providers.

However, Wilding & Juriado (2004) argued that the core competence of 3PL firms was less important role within the consumer goods sector. They agreed that the outsourcing decision was based on service-related considerations which included core competencies of 3PL firms and operational flexibility. It means the selection of these criteria may depend on the market environment and the organization's needs. Razzaque & Sheng (1998) mentioned that it is important to match the strength of 3PL provider to the weakness of the firm. It means companies need to focus on their core competences and employ 3PL providers for the functions which they do not have

expertise. Fernie (1999) stated that the selection criteria of choosing 3PL providers varies between countries and depends on the regulatory environment in that country and the competitiveness of the third party logistics sector and other distribution-related issues.

Kremic et al. (2006) indicated the social cost element was one of selection criteria may influence the outsource decision. The social cost element includes low moral, high absenteeism within employees from 3PL logistics firm. The authors pointed out there are no guarantees of any cost savings. In many cases, the costs are actually higher after using outsourcing. Razzaque and Sheng (1998) suggested that the selection criteria of choosing 3PL provider for small firms should consider outsourcing as not a cost reduction exercise but more strategically and especially as an opportunity to get a competitive advantage.

The survey conducted in Malaysia (Sohail & Sohal, 2003) focused on determining the most important factor in selection of 3PL providers. The results showed that one-third of the respondents stated that cost consideration was the most important selection factor, while 16.7% of respondents stated that service consideration was the most important factor. The survey made in Hong Kong showed that it was important to improve the customer service by offering flexibility in their operation in order to meet unanticipated customer needs such as fluctuate customer demands (Yeung J.H.Y., Selen W., Sum C. & Huo B., 2006). In China, Lai F., Zhao X. & Wang Q., (2006) stated that IT was one of the important selection criteria of choosing 3PL providers. It showed that IT influences 3PL firms' competitive advantages significantly. The America study showed financial stability was more frequently selected than both price and customer service.

2.8.1 Logistics Performance Measurement

Logistics performance is a subset of the large notion of organization or organization performance (Chow G., Heaver T.D. & Henriksson L.E., 1994). The presence of meaningful quantity measures was used for assessing the performance of third party logistics providers. The major criteria for evaluating of company's contract provider vary between the countries or authors (Bhatnagar et al., 1999).

In Singapore (Bhatnagar et al., 1999), 90 percent of respondents suggested the major performance measures in their companies were on-time shipments, inventory accuracy, shipping errors and customer complaints. However, some of the factors were not be considered by many firms such as fill rate, number of stock outs, warehouse cycle time and total order cycle times. The results showed that the focus of many firms in Singapore is to provide the high level of service to the customer at the expense of internal inefficiencies.

In USA, Minahan T. (1997) identified that the common performance measures were on-time shipment, inventory accuracy, shipping errors, customer complaints, number of dollars shipped, number of dollars/unit shipped, backorders, total order cycle time, fill rated, number of stock outs and warehouse cycle time.

Earlier research carried out by McMullan A. (1996) in the Asia Pacific showed that the most frequently used 3PL service provider's performance measures were on-time delivery, customer complaints, backorders and stock outs. The most frequently used warehouse performance measurements by respondents were inventory accuracy, on-time shipments and shipping errors.

Chen Y.C. (2002) listed the criteria for evaluating 3PL providers' performance and the definition of these criteria are shown in table 2.10)

Table 2.10 Criteria for Evaluating Performance

criteria	Definition
fill rate	The number of shipment received at the promised delivery date divided by total units ordered.
cycle time	The number of hours on order cycle time.
order accuracy	The number of accurate orders divided by total units ordered.
order procedure convenience	The convenience of order procedures.
lead-time	The number of days from purchase order issuance until the promised delivery date.
advance notice on shipping delays	Advance notice on shipping delays or not.
shipping errors	The number of shipping errors divided by total units shipped.
returns	The ability to deal with returns.
on-time delivery	On time delivery or not.
stockouts	The number of stockouts divided by total units shipped.
delivery defect	The number of delivery defect divided by total units shipped.
emergency shipping	The number of hours on emergency shipping.
complete information	The ability to provide complete information or not.
product clarity	The degree of product clarity.
product quality	The degree of product quality.
customer complaint handling	The attitude to handle customer complaint.
personnel attitude	The attitude of personnel.
customer inquiry response	The attitude to response customer inquiry.
sales force feedback	The satisfaction of sales force feedback.
total satisfaction	The satisfaction of overall service.

Source: Chen (2002)

Chen also described six extracted criteria. They are:

- Customer: this criterion includes quality of product, customer complaints, and customer inquiry response and feed backs
- Efficiency: it includes fill rate, cycle time, on-time delivery, emergency shipping and level of satisfaction
- Stock-outs: it includes lead time, shipping errors, returns and number of stock-outs
- Delivery: it includes shipping delays, delivery defect
- Order: it includes order accuracy
- Personnel: this criterion includes employees attitude and sales feedback

2.9 Organizational Impacts of Using Logistics Outsourcing Services

After outsourcing logistics services, there must be some organizational impacts. Therefore organizations should consider the impact on the organization carefully before making the decision to outsource. The previous studies showed that there was a positive or negative impact of outsourcing logistics services on logistics costs, customer satisfaction, logistics system performance (Bhatnagar et al., 1999) and employee morale (Sjöholm & Wang, 2007)

The study conducted in Singapore (Bhatnagar et al., 1999) showed that there was some positive impact on logistics costs, customer satisfaction and internal logistics system performance. In the meanwhile, over 11.8 percent of the respondent indicated that there was some negative impact on employee morale and 7.9 percent of respondents indicated a negative impact on customer satisfaction. The results showed that people issue was the critical factor in logistics outsourcing decisions that need to be considered in Singapore.

In Sweden (Sjöholm & Wang, 2007), more than half of the respondents indicated there was a positive impact on logistics costs (73.6%), customer satisfaction (69.4%) and logistics system performance (53.1%). However, 10.2 percent of respondents indicated that a negative impact on employee morale. Employee morale was the lowest impact in the rank.

In New Zealand (Zhang, 2009), the study showed that there was 81% of respondents stated that there was a impact on on-time delivery performance, which is lower than in Australia (94%), Europe (98%) and USA (90%) (Millen et al., 1997). There was 77 percent of respondents indicated an impact on reducing logistics costs, 62 percent of respondents indicated a high or very high impact on customer service satisfaction. The other impact of using logistic outsourcing services included return on assets, logistics system performance, expanding geographic reach, reducing inventory levels,

return on investments, year on year growth in profits and acquiring new customers.

The previous studies showed that there was a trend of elimination of full time internal logistics related positions after implementing 3PL services. The general methods used for this displacement were termination of employees and early retirement (Lieb 1992; Dapiran et al., 1996; Sohail et al., 2006; Sohail & Al-Abdali, 2005). The study carried out by Sjöholm & Wang (2007) reported that 67.3 percent of respondents in Sweden indicated that their firms have eliminated logistics positions. Over 50 percent of respondents identified the impact on elimination of position in Australia (Dapiran, et al, 1996), USA (Lieb & Randell, 1996; Millen et al., 1997), Malaysia (Sohail & Sohal, 2003), Saudi Arabia (Sohail & Al-Abdali, 2005) and Singapore (Bhatnagar et al., 1999).

Another impact of using 3PL providers on the user firm is the need of retraining employees. The study carried out by Sohail & Al-Abdali (2005) showed that 38 percent of the respondents reported that retraining employees was necessary, in Malaysia (Sohail & Sohal, 2003) only 15 percent of respondents indicated there was a need for retraining employees, in Sweden (Sjöholm & Wang, 2007) the rate was 26.5 percent. The reasons for retraining the employees generated from previous studies included upgrading skills related to information systems in Australia (Millen et al, 1997), Saudi Arabia (Sohail & Al-Abdali, 2005) and Sweden (Sjöholm & Wang, 2007). The other areas need to be retained included familiar with new technologies and different management (Millen et al. 1997), improving communication skills and improving the ability to adjust to new environment (Sohail & Al Abdali, 2005). The studies reported that it was not necessary to retraining the logistics personnel includes Sohail & Al-Abdali, 2005; Bhatnagar et al., 1999; Millen et al., 1997; Lieb & Randell, 1991, 1994, 2000; Sahay & Mohan, 2006 and Sohail & Sohal, 2003.

2.10 Future trend of logistics services

The focus of future trend of logistics services is on the utilization of third party logistics services, the level of satisfaction with their current 3PL providers' performance and considering changes in the level and nature of their involvement with 3PL providers. Most of previous studies showed that the user firms were satisfied or very satisfied with the performance of their current 3PL providers. The detailed information is shown in table 2.11

In Australia and Malaysia, the satisfaction level was very high. Over 96 percent of the respondents indicated that they were satisfied or very satisfied with the performance of 3PL providers (Millen et al, 1997; Sohail & Sohal, 2003). In USA, India, Saudi Arabia and New Zealand, over 85 percent of users were satisfied or very satisfied with their 3PL providers (Millen, et al., 1997; Bhatnagar et al., 1999; Sohail et al., 2005; Sahay & Mohan, 2006).

The previous study also showed that whether the respondent would modify their companies' use of 3PL services or not. Most of the user firms indicated that they would moderately increase or substantially increase use of 3PL services. In USA (Millen et al., 1997), West Europe (Millen et al., 1997) and sub-Sahara African (Sohail et al., 2004), over 90 percent of respondents identified that they would moderately increase use/or substantially increase use of 3PL services. In Australia (Daprian et al., 1996) and Malaysia (Sohail et al., 2003), over 80 percent of user firms indicated that they would moderately increase use and substantially increase use of 3PL. However, in Sweden the percentage of respondents would modify their companies' use of 3PL services was low (only 42 percent) and even 8 percent of users would eliminate use of 3PL services.

Table 2.11 Future Trend of Logistics Services

			Level of satisfaction			Future use of TPL					
			very satisfie	Satisfied	Dissatisfied/ very dissatisfied	eliminate	Increase	increase	same	decrease	sub decrease
	Authors	Published year									
AUS	Dapiran et al.	1996	33	63	4		64	20		7	9
AUS	Millen et al.	1997	33	63	4		64	20		7	9
USA	Lieb & Randell	1996			13		78	18		4	
USA	Lieb & Randell	1996	37	61	2		85	5		5	5
USA	Lieb & Randell	1996	26	65	6		56	15	26		4
USA	Millen et al.	1997	30	57	13		85	5		5	5
USA	Lieb & Bentz	2005				10	10	30		45	5
WE	Millen et al.	1997	15	82	3		76	17		7	0
SG	Bhatnagar et al.	1999	7.9	85.5	5.3						
MY	Sohail & Sohal	2003	11	87	2		54	23		6	1
GH	Sohail et al.	2004					90			10	
SA	Sohail & Al-Abdali	2005	66	20	14						
Sweden	Sjöholm & Wang	2007	16	78	6	8.1	38.7	3.2	43.5	6.5	8.1
NZ	Zhang	2009	17	70	4		21		57	15	7

Source: Sjöholm & Wang, (2007)

2.11 Summary

This chapter reviews the previous literatures of basic definitions of supply chain management, logistics and third party logistics, and also identify the relationship between third party logistics providers and user firms.

From many different points of view, overall the supply chain management is defined as “the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole” (Mentzer J.T., Dewitt W., Keebler J.S., Min S., Smith C.D. & Zacharia Z.G., 2001, p.18).

Logistics is defined by The Council of Logistics Management (1991) as “the process of anticipating customer needs and wants; acquiring the capital, material, people, technologies, and information necessary to meet those needs and wants; optimizing the goods –or service-producing network to fulfill customer requests; and utilizing the network to fulfill customer requests in a timely way” (p. 3).

The definition of third party logistics is “Outsourcing all or much of a company’s logistics operations to a specialized company.” (Lindskog, 2003. p.140) and plus the definition “A firm which provides multiple logistics services for use by customers. Preferably, these services are integrated, or "bundled" together by the provider.” (Bagchi & Virum, 1996, p94). Third party organization is in the middle between shippers and suppliers. 3PL can fulfil several logistics functions between buyer and seller. These functions includes the certain duration, joint efforts to develop further cooperation, a customization of the solution and together with a fair sharing of benefits and risks (Larsen, 1999). The successful third party relationship is one key to the success of the logistics and supply chain management.

The extent of use of the third party logistics services includes:

- Level of commitment to the usage of third party logistics
- Percentage of total logistics budget allocated to third party providers
- Geographical coverage provided by third party firms
- Third party services utilized
- The length of third party contracts.

The main reasons for organizations outsourcing 3PL services include:

- Cost reduction
- Focus on core competence
- Provides flexibility
- Improve customer service
- Improve efficiency

- Utilization related
- Reducing inventory
- Enter to new market
- More logistic expertise/equipments

The main reasons for not outsourcing 3PL services include:

- Loss of control
- Ascertaining the true cost
- Logistics is the only core competency
- Difficulty in obtaining organizational support
- A negative impact on employee moral
- Have more expertise than 3PL providers
- Price of outsourcing activities

The third party logistics services have been frequently used by organizations include:

- Freight payment
- Transportation
- Rate negotiation
- Fleet management
- Warehouse management
- Shipment consolidation
- Order fulfillment
- Carrier selection
- Product assembly and installation
- Custom clearance and brokerage
- Import and export management
- Labeling and packing
- Inventory replenishment
- Logistics information system

The main selection criteria of choosing 3PL providers:

- Quality of service provided
- Price
- Employee morale
- Expertise or skilled logistics professionals
- Experience of the company
- Reputation
- Information technology capability
- The core competence of the company
- Operational flexibility
- Financial stability

The main criteria for evaluating of 3PL providers:

- Shipment error
- On-time shipment
- Fill rate
- Number of stock outs
- Customer complaints
- The number of hours on order cycle time
- Quality of service
- Employees attitude

The major organizational impacts of using logistics outsourcing services are:

- Logistics costs
- Customer satisfaction
- Logistics system performance
- Employee morale
- On-time delivery performance
- Expanding geographic reach
- Reducing inventory levels

- Year on year growth in profits
- Acquiring more customers
- Elimination of full time logistics related positions
- Need of retaining employees

The future trend of logistics services is focusing on the utilization of 3PL services, the level of satisfaction and considering changes of 3PL providers. These previous literatures show that positive results of today's logistics industry and also believe that third party logistics will be developed continually.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter introduces the research philosophies, research methods, type of survey and techniques used for collecting samples, and software used to analysis data. First part of this chapter reviews the research objectives of this study. Second part introduces two philosophies: positivism and phenomenology. Positivism is the one adopted in this study. Third part compares quantitative and qualitative research methods. After the comparison, quantitative method is more suitable and selected for this study. Fourth part describes the survey type of this study, which is online survey questionnaire, the design of the questionnaires and survey invitation are also included in this part. The fifth part introduces two sampling methods used for collecting responses, which are convenience and snowball sampling. The final response rate of this survey is also described in this part. The sixth part introduces the software and significant tests that are used to analysis data, which includes SPSS, ANOVA and Chi-square.

3.2 Research Objectives

As mentioned earlier, the aim of this study is to identify the current status of third party logistics industry in China, and to investigate the current usage of 3PL services in China. The questionnaires would focus on these six identified areas:

- The extent of use of the third party logistics services in China
- Reasons for Chinese firms outsourcing logistics activities
- Reasons for Chinese firms not outsourcing logistics activities
- The level of satisfaction of their 3PL providers
- Selection criteria of choosing 3PL providers

- Organization impacts of logistics outsourcing
- Future trend of Chinese logistics services.

3.3 Research Philosophies: Positivism & Phenomenology

Table 3.1 Features of Two Main Philosophies

Key areas	Positivism	Phenomenology
Basic beliefs	<ul style="list-style-type: none"> • The world is external and objective • The observer is independent • Science is value-free 	<ul style="list-style-type: none"> • The world is socially constructed and subjective • The researcher is part of what is observed • Science is driven by human interests and motives
Method of research	<ul style="list-style-type: none"> • Focus on facts • Look for causality and fundamental laws • Reduce phenomena to simplest elements • Formulate hypotheses and test them 	<ul style="list-style-type: none"> • Focus on meanings • Try to understand what is happening • Look at the totality of each situation • Develop ideas through induction from data
Research design	<ul style="list-style-type: none"> • Structured, formal and specific detailed plans 	<ul style="list-style-type: none"> • Evolving and flexible
Involvement of the researcher	<ul style="list-style-type: none"> • The researcher remains distanced from the material being researched • Short-term contact 	<ul style="list-style-type: none"> • The researcher gets involved with the phenomena being researched • Long-term contact; emphasis on trust and empathy
Preferred methods	<ul style="list-style-type: none"> • Operationalization of concepts so that they can be measured 	<ul style="list-style-type: none"> • Use of multiple methods to establish different views of phenomena
Sampling	<ul style="list-style-type: none"> • Large samples 	<ul style="list-style-type: none"> • Small samples investigated in depth or over time
Data collection methods	<ul style="list-style-type: none"> • Experiments, surveys, structured interviews and observation 	<ul style="list-style-type: none"> • Observation, documentation, open-ended and semi-structured interviews
Research instruments	<ul style="list-style-type: none"> • Questionnaires, scales, test scores and experimentation 	<ul style="list-style-type: none"> • Researcher
Strengths	<ul style="list-style-type: none"> • Provides wide coverage of the range of situations 	<ul style="list-style-type: none"> • Ability to look at change processes over time

Source: Easterby-Smith M, Thrope M & Lowe A., (1991)

There are two main research philosophies normally used in research studies: positivism and phenomenology. However, the choice of selecting an overall research philosophy needs to be made between these two. According to Araujo L.M.,

Easterby-Smith M.P.V. & Snell R., (1999), this whole mental exercise regarding the research philosophy that the research should follow is important, because the features of these two philosophies can help to choose the research methods and techniques that should be used for the study. It helps to decide the type of evidence gathered and its origin and the way to collect the evidence that will be analysed and interpreted. The knowledge of research philosophy is able to assist researchers to avoid inappropriate use and unnecessary work by identifying the limitations of particular approaches at the early stage of study (Araujo, et al, 1999). The Key features of positivism and phenomenology are shown in table 3.1

The choice of which is the best fit research philosophy for this study is made through understanding of both research philosophies. Positivism is one of the research philosophies chosen for using in this study. Positivism promotes a more objective interpretation of reality, and its reliability is higher than phenomenology. Positivism tends to produce quantitative data which fit with surveys and experiments well. Positivism is also concerned with hypothesis testing rather than generating theories, and is more commonly used in the scientific research (Collis J. & Hussey R., 2003).

3.4 Quantitative & Qualitative Research Method

There are two different research methods for gathering and analyzing research data and information: qualitative and quantitative method. In order to answer the purpose of this study, the choice of qualitative and quantitative research method needs to be taken. The purpose of both methods is to collect data and to get insights from the data.

The qualitative method is the descriptions of things that are made without assigning numbers directly (Hair J.F. Jr., Money A.H. Samouel P. & Page M., 2007). The sample size of this method is generally small. Taylor P., Richardson J., Yeo A.,

Marsh I., Trobe K., & Pilkington A., (1995, P632) defined “qualitative data covers a range of material from the descriptions of social life provided by participant observation and unstructured interviews to information from written sources, such as diaries, autobiographies and novels. Some researchers argue that qualitative data provides greater depth, a richer more detailed picture of social life.” According to Zikmund W.G. (2000), the primary target of qualitative method is to understand the investigated problem by collecting data. The primary instruments used in qualitative method are normally conversation, survey or interviews. The focus is on words, visual portrayals, narratives, meaningful characteristics, elucidations, interpretations and other expressive descriptions. The focus groups (Zikmund, 2000). It may also require relatively few cases, and then conducting examinations of cases arise in the natural flow of social life (Neuman W.L., 2006). The qualitative method depends on the skills of the researcher as an interviewer in gathering data, and not on the instruments employed to gather and analyze or measure the data. Therefore, gathering the information is to solve the certain problem (Zikmund, 2000).

Taylor et al (1995, P632) stated “quantitative data is numerical in form – in the form of numbers.....Questionnaires and structured interviews are the usual research methods.....Some researchers claim that unless human behaviors can be expressed in numerical terms, it cannot be accurately measured.” (P 632) Quantitative methods focus on the links among a number of defined and measurable attributes involving many cases. The aim of quantitative method is to classify features, to count them and to construct statistical models in order to explain what is observed (Brannick T., & Roch, 1997). The quantitative methods are emphasized on testing and verification. This method is considered easier to perform because it is based on controlled measurement and the results are presented in figures. In contrast, the qualitative approach may be more difficult to perform as the emphasis is on understanding and the result is presented by analyzing the stated meaningful words. The collection of data in quantitative methods is a collection of closed-ended information. However, the qualitative data includes open-ended information (Punch K.F., 2000).

There are a number of proofs showing that the quantitative method is more suitable than the qualitative method in this study. The survey questionnaire is the method used for collected data. The survey is designed as number based. The data that is collected from the survey is analyzed through the statistical tests. The sample size is quite large. All of above meet the criteria of quantitative method but not fit to the qualitative method. Furthermore, the aim of study is to have an exploratory study about general understanding of 3PL usage in Chinese firms. The quantitative study is able to provide a greater generalization within the frame of research study, and the research questions can be answered by using quantitative method alone. The previous studies related to this topic used quantitative approach only and their results were measured in numbers (Zhang, 2009; Sohail et al., 2003; Bhatnagar et al, 1999; Lieb & Bentz, 2005; Wilding & Jutiado, 2004). In order to easily compare the results of the use of 3PL in China with it in other different countries, the quantitative method is a more appropriate method should be used in this study.

3.5 Survey Type

3.5.1 Questionnaire

The questionnaire is “a list of carefully structured questions, chosen after considerable testing, with a view to eliciting reliable responses from a chosen sample” (Collis & Hussey, 2003, p.173). The aim of using a questionnaire is to provide better understanding of the Chinese third party logistics industry and find out whether these participants are satisfied with their providers and the current 3PL situation in China.

An online survey is selected for collecting responses. The online survey technique is new and keeps evolving. Today’s survey, software packages and online services make online survey research much easier and faster. The advantage of online surveys includes access to individuals in distant locations. Since all of selected

participants are in China, and the survey is conducted in New Zealand, therefore the distance makes the contact more difficult. This problem can be solved by using an online survey tool. Another advantage of online survey is its ability to reach the participants who are hard to contact and the convenience of automatically collecting data, which can save researcher's time and effort as an online survey allows a researcher to reach thousands of people in a short time. Due to the limited time and funds, online survey is selected. However, there are some problems of using online surveys, such as the response rate of online survey that may be low, uncertainty over the validity of the data, the design, implementation and evaluation issues of an online survey. More importantly, online surveys require all participants to have access to email or the web (Wright K.B., 2006).

Survey Monkey is an online survey software package that is used for conducting this survey. It provides a variety of templates to create and implement online surveys more easily, as well as to export data to statistical software packages. The researcher can view the summary of the responses or browse individual response of each question. After collecting the responses, Survey Monkey is able to create a chart for each question, which makes analysing more easily. Another reason for choosing survey monkey online survey software is that it has a reasonable price. Paper survey is relatively more expensive, even the sample size is small. The costs of a traditional large-scale survey using mailed questionnaires can be enormous (www.surveymonkey.com).

3.5.2 Survey Questionnaire Design

The purpose of this survey is to transform the main research problems into specific questions. In this study the main research problem is to find out the utilization of 3PL services in China. There are 21 specially designed questions in this survey. The survey is broken down into six parts and each part consists of small sets of more

specific research questions. The six parts of the survey are:

- General information of the company
- Reasons for outsourcing/not outsourcing logistics activities
- Extent of use of the third party logistics services
- Decision making process (selection criteria of choosing 3PL providers)
- Organization Impacts
- Future trend of logistics services in China

In order to make the survey questionnaires simple and short, the questionnaires are designed with mainly multiple choice questions and few matrix questions. To avoid the limit options problem, the choice of “others, please specify” and a comment box is provided to allow respondents to enter their answers or comments (Questionnaire is in appendix C).

There are four questions in the first part of survey, which includes the total number employees of the company, type of business, company location and the 2009 annual sales revenues. These questions provide the general information of the company. As known that China is a big country, so the question of companies' location was necessary. In this question, China is divided into seven parts: eastern part of China, southern part of China, northern part of China, central part of China, north-western part of China, north-eastern part of China and south-western part of China. The cities and provinces included in eastern part of China are Shanghai, Jiangsu, Anhui, Fujian, Jiangxi, Shandong, Ningbo and Xiamen. South part of China includes Guangdong, Guangxi, Hunan and Hainan. Northern part of China includes Beijing, Tianjin, Hebei, Shanxi and Neimengu. Central part of China includes Henan, Hubei and Hunan. North-western part of China includes Shaanxi, Gansu, Qinghai, Xinjiang and Ningxia. North-eastern part of China includes Liaoning, Jilin, Heilongjiang and Dalian. South-western part of China includes Chongqing, Sichuan, Guizhou, Yunnan and Tibet. Hong Kong, Macau and Taiwan was not included in

this survey.

The second part of the survey contains two questions. One is whether the company uses 3PL services currently. The question is designed in logic forwarding way, which means it skips to different questions depends on different answers. For example, if they choose “no” it automatically skip to second question which asks the main reason for not using 3PL services. After they answered this question, it automatically skips to the end page of the survey and then, the survey is done for the respondents who do not use 3PL services. If the answer is “yes” it means the respondent firm is using 3PL services, it skips to the question which asks the main reasons for using the services. After this question is answered, the respondents need to carry on and answer the part three of the survey.

The part three of survey is the extent of use of the third party logistics services. There are six questions in this part. The first question asks the percentage of total logistics budget allocated to the main 3PL provider. The second question is asking if the company uses 3PL services for domestic purposes, international purpose or both. The third questions is the matrix question, respondents need to evaluate the existing 3PL services that have been used in their companies. The other three questions are about the length of using 3PL services, the number of 3PL providers have been using currently and the length of the contract between the company and the 3PL provider.

There are only two questions in part four. One is a matrix question, which asks the main selection criteria for choosing 3PL providers in their company. The rating of these factors is also required. Another question is to choose the criteria used for evaluating the performance of the contracted providers.

The part five of the survey is related to the impact on organisation for using 3PL, which includes 3 questions. The first question is the matrix question and asks respondents to choose the impacts on the company after using 3PL services and rate

the level of the impact. The second question asks whether the company eliminated any internal logistics force after implementing of 3PL services. The last question is about whether retraining is required after implementing of 3PL services and the main reasons for retraining.

The last part of survey is the future trend of logistics services in China. Three questions are included in this part. One is the overall level of satisfaction with their main 3PL providers. Another one is asking if they want to have any 3PL services that are not available in the market yet. The last one is asking if these respondents would modify the use of 3PL services in the future.

At the end of page of survey, respondents could leave their names and email addresses in order to get a copy of survey results. The reason of adding this page is for the respondents who are interested to get the survey results. It may provide incentives to people who are interested in this survey result to answer the questionnaire.

The problems of the questionnaires are basically about the rewording, removal or addition of some questions, and questionnaire design problems. Since the respondents of this study are the people who are working in China, therefore respondents may be all Chinese. In order to let the respondents to fully understand these questions, both Chinese version and English version of the questionnaire are provided to respondents. The translation of these questionnaires was discussed through telephone and emails.

To make sure the questionnaires can be understood well and easily handled by the respondents, and to find out and problems contained in this survey, a pilot testing is carried out. Cooper P.R. & Schindler P.S., (2003) pointed out that a pilot testing is used for detecting weaknesses in design and instrumentation and to provide proxy data for selection of a probability sample. In order to do this pilot testing, the email

invitation was sent to 7 respondents. All of them did this survey and sent feedbacks to the researcher. The respondents found out the questionnaire took them about five minutes to complete. One respondent reported that after question five, it took long time to get to question six. It may be caused by skip logic system that is based on the different question skip to different pages. Therefore more time may be needed to get to the next question. Another respondent concerned about one choice of main reasons for not using 3PL services. The respondent said the choice “Logistics is the only core competencies” may only suit for logistics companies but not suit for most of companies. Therefore, the more appropriate way to say it could be “logistics is one of our core competencies”.

3.6 Data Collection

3.6.1 The Sampling Methods

There are two types of methods used for selected population, one is probability sampling methods, and another is non-probability sampling method. The probability methods can be used when those can be relied on to produce a sample that is close to representative, and all units has a known, but not necessarily equal chance of being included in the sample (Jeffrey, 2008). However, non-probability methods may produce a representative sample which you can not rely on, and the probability of a particular unit in the sample is unknown. The non-probability methods are very subjective depending on the researcher (Sekaran C., 2003). In this study, non-probability sampling methods are chosen as non-probability samples that are easier to draw.

Convenience sampling is the main type of non-probability sampling. It is also the most widely used methods in social sciences. It involves large groups of subjects such as a class of students. Convenience sampling is a technique to be chosen for

collecting samples. This sampling technique suits for the researchers who have the limited of funds and time (Jeffrey, 2008). By using convenience sampling, the sample is picked at random from the listed companies in the Chinese stock exchange. These listed companies are selected randomly from 3 different categories of the list: Shanghai A Stock, Shenzhen A Stock and small and medium-sized enterprises (SMEs) board.

In order to ensure that there would be enough participants, another non-probability method snowball sampling is selected for drawing the sample population. Snowball sampling is a technique used in research to develop samples. The existing participants introduce other potential participants among their acquaintances. The advantage of this technique is that it can build up sample size quickly and maybe recruit others that would otherwise be hard to recruit (Jeffrey, 2008). The problem of this technique is the sample may particularly focus on the particular term of business categories and certain location of company. To avoid this problem, the careful selection of respondents with broad spread of workplace and location is needed. By using snowball sampling, some survey invitations were sent to selected respondents (Invitation letter is in appendix B). They are all working in China, and the companies they are working for are in different categories and located at different parts of China. If their positions are not high enough to fill the questionnaires, they asked their managers or bosses to answer the survey. Then these selected respondents sent the survey invitation to other potential participants.

3.6.2 Respond Rate

A total of 400 companies in China were randomly selected. To make sure the response rate is high enough, every company was contacted by telephone before the email invitation was sent out, and each of them was asked if they were willing to participate in this survey. The email addresses of their managers or bosses were

confirmed through the telephone too. The recipients who rejected to participate in this study did not give any reasons. The recipients have their rights to refuse as they have no obligation to accept the invitation to participate in this study. After contacting these firms, 400 email invitations were sent out, and a total of 89 responses were received. However, by checking through every response, it was found out that two of respondents did not finish their questionnaire and only 5 questions were answered at the end. Thus, the effective responses were 87 and the effective response rate was 21.75% (87 out of 400). There was no follow up questionnaires sent to participants as this questionnaire included all the questions need to be asked.

The whole process of collecting these responses took one month to complete. Since the respond rate is favourable compare with previous studies. The respond rates of previous studies are shown as following. The study conducted in Singapore (Bhatnagar et al, 1999), the respond rate was 12.6%. The total responses were 126. The respond rate of study conducted in Malaysia (Sohail et al, 2003) was 16%, which were 124 responses out of 800 samples. The study made by Wilding and Jutiado (2004) which conducted in Europe, the response rate was 50 responses out of 300 samples (15%). The study of use of 3PL in US (Lieb & Bentz, 2005), the response rate was 60 responses out of 456 samples (13%). However, the response rate in New Zealand (Zhang, 2009) and Australia (Sohal et. Al., 2002) were much higher compare with other countries. The study of use of 3PL in New Zealand has a response rate of 35% (84 responses out of 240 samples) and the study conducted in Australia has a respond rate of 45%.

3.7 Data Analysis

The statistics program SPSS (Statistical Package for the Social Science) is a widely used software for analysing quantitative data (Veal A.J., 2005). There are four main analysis procedures in this program: frequencies, crosstabs, means and graphics (Veal,

2005). Frequencies are the number of counts and percentages of categories for individual variables. Crosstabs used to compare two or more variables by forming a two-way table. Means show the obtaining means or average of appropriate variables. Graphics is associated with the production of graphs and charts (Veal, 2005). The significant tests are also used in this research such as Chi-square and ANOVA. These significant tests can also be generated by SPSS program. Chi-square test is used to test relationships between two nominal variables (Jeffery, 2008). ANOVA is used to compare more than two means at a time (Veal, 2005).

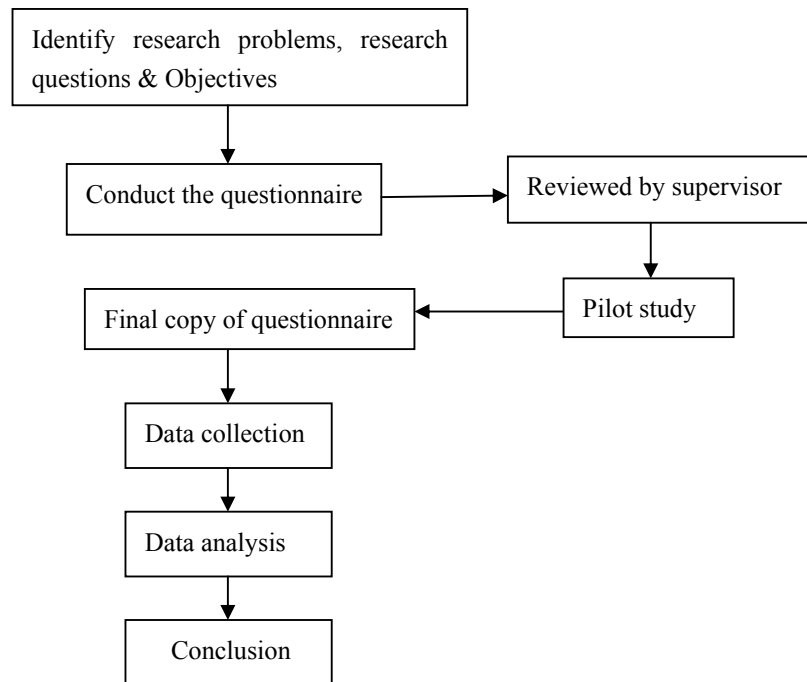
3.8 Summary

This research study is completed through several steps. The figure 3.1 presents the flowchart of the process used for carrying out this research study.

1. Identifying research problems, research questions and objective of this study after those previous literatures have been reviewed.
2. Conducting the questionnaire. After the questionnaire was translated and reviewed by the supervisor, sent it out to seven recipients to do the pilot study.
3. Collecting data: the process of data collection took approximately one month to complete. After contacting each respondent through phone then emailed survey invitations was sent to them.
4. Analyzing the feedback information from the 87 responses by using SPSS statistic program, and then using statistic tests to find out the relationships between the variables.
5. Summarizing the research findings and drawing the conclusion from these findings. The limitations of this study and the recommendations for future

research are also included in this part.

Figure 3.1 Research Process



CHAPTER FOUR: RESULTS & DISCUSSIONS

4.1 Introduction

In this chapter, the results obtained from survey are presented and analyzed. The results show the general information of the respondents' companies, the extent of use of the third party logistics services, the decision criteria of choosing 3PL providers, organization impacts and the future trend of logistics services in China. Then these empirical findings are used to compare with the results of similar previous studies. The significant tests such as Chi-square and ANOVA are used for the in-depth analysis of the relationships between different variables.

4.2 Research Objectives

Just as the researcher mentioned hereinbefore. These six following objectives are established to achieve the aim of this research.

- The extent of use of the third party logistics services in China
- Reasons for Chinese firms outsourcing logistics activities
- Reasons for Chinese firms not outsourcing logistics activities
- The level of satisfaction of their 3PL providers
- Selection criteria of choosing 3PL providers
- Organization impact of logistics outsourcing
- Future trend of Chinese logistics services.

4.3 General Information of the Company

The survey contains five parts. The first part of questionnaire reports on the background information of the respondents' companies. This background information includes total number of employees of respondent company, company category, company allocation and annual sales revenue in 2009. There are 87 useful responses have been collected and ready for analysis.

4.3.1 Total Number Employees

The first question of this survey asks the total number employees of respondents' companies. The responses of total employee number in correspondent companies are categorized into five groups which are shown in table 4.1. The percentage of each group is also presented in the table. From the table, it could be seen that the largest group of category is 1001-5000 and the percentage is 23 percent. The group of "less than 200 employees" has a similar percentage with group "1001-5000", which is 21.8 percent. The smallest group is more than 5000 and the percentage is 16.1 percent. In this study, the companies have less than 1000 employees are regarded as small companies, the companies have more than 1000 employees are regarded as large companies. Sixty percent of respondents are from small companies in this study.

Table 4.1 Total Current Employees

Current employees	Percentage
<200	21.8
200-500	19.5
501-1000	19.5
1001-5000	23.0
>5000	16.1
Total	100.0

4.3.2 Business Category

The second question of the questionnaire is related to business category. There is a broad spread in terms of main business category. As shown in table 4.2, nine business categories are provided for the respondents and the choice of “other (please specify)” is also available. There were 10.3 percent of respondents chose “other”, the responses includes real estate companies, consulting companies, airline and customer service companies. Of the respondents to this question, the business categories are mainly in manufacturing (18.4 percent), IT (14.9 percent), high tech (12.8), food industry (11.5 percent) and retail (10.2). The rest of business categories are all less than 10 percent. Healthcare and logistics have the lowest percentage of 4.6 percent. The outcomes show that companies which are in the traditional industries such as “manufacturing” “retail” and “food industry” are as favor of outsourcing as high technology companies are.

Table 4.2 Main Business Category

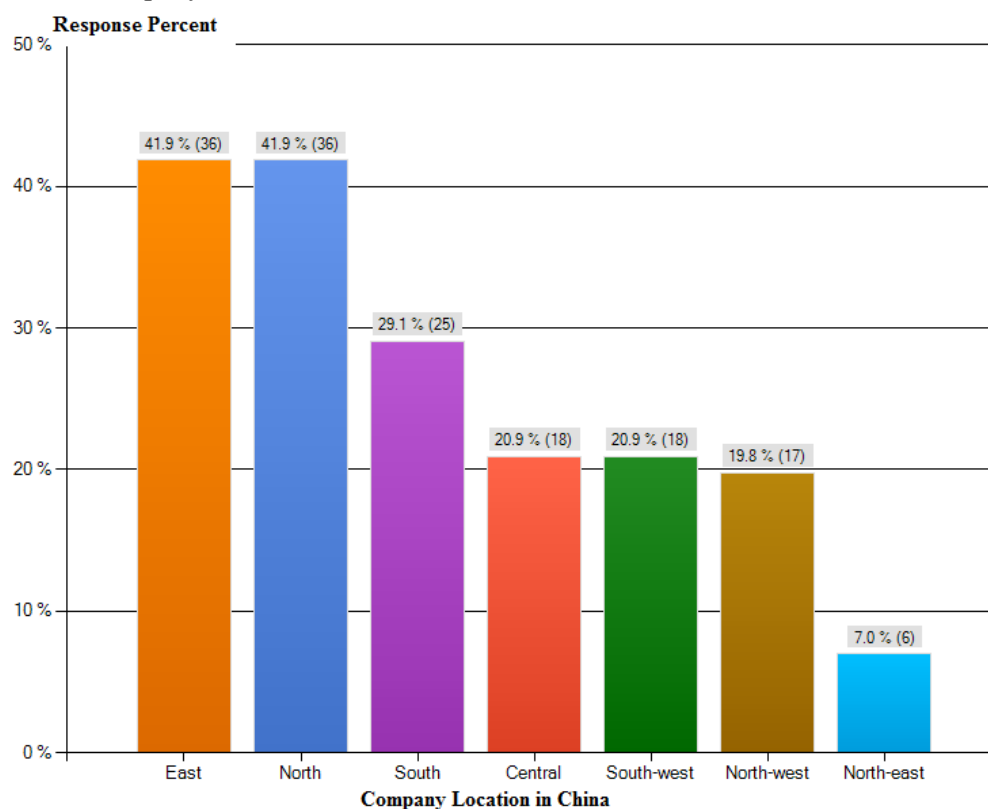
Business Category	Percentage
manufacturing	18.4
IT	14.9
high tech	12.8
food industry	11.5
other	10.3
retail	10.2
textiles	6.9
electronic	5.7
logistics	4.6
healthcare	4.6

4.3.3 Company Location

The company locations of these respondents are mainly on eastern part of China (41.9

percent) and Northern part of China (41.9 percent) (see figure 4.1 for more details), then are followed by southern part of China (29.1 percent), central part of China (20.9 percent), South-western part of China (20.9 percent) and north-western part of China (19.8 percent). The lowest percentage of companies is located in North-eastern part of China, only 7 percent. As mentioned earlier, the cities and provinces belong to eastern part of China include Shanghai, Jiangsu, Anhui, Fujian, Jiangxi, Shandong, Ningbo and Xiamen. Northern part of China includes Beijing, Tianjin, Hebei, Shanxi and Neimengu. The rate of using 3PL services in above cities are relatively higher than it in other places. According to DiBenedetto(2008), the most of the logistics activity in Asia is concentrated in China, and in the most promising logistics cities in China including Shanghai, Shenzhen, Hong Kong, Beijing and Tianjin (Fu, Bae & Kim, 2005). Previous Study also showed that the logistic industry has become a mainstay industry in Shanghai (Fu C.C., Bae J. & Kim G.O., 2005). All these cities mentioned are all belonged to eastern or northern part of China except Shenzhen.

Figure 4.1 Company Location



4.3.4 Sales Revenue

Table 4.3 summarizes the annual sales revenues of respondents' companies in 2009. The sales revenue range is from "less than one million Chinese Yuan" to more than "100 million Chinese Yuan".

Table 4.3 Annual Sales Revenues (¥ millions) in 2009

Sales revenue in 2009	Percentage
<1m	6.9
1.1-5m	12.6
5.1-10m	10.3
10.1-20m	9.2
20.1-50m	10.3
50.1-100m	6.9
>100m	40.2
Total	96.6
Missing	3.4
Total	100.0

Based on recent exchanged rate, one Chinese Yuan is approximately equal to five New Zealand dollars. Table 4.3 shows that the annual revenue of the most of respondents' companies (40.2 percent) surpassed one hundred million RMB in 2009. Almost 13 percent of companies earned 1.1-5 million RMB, and only 6.9 percent of companies earned "less than one million Chinese Yuan" in 2009.

4.4 Outsourcing / Not Outsourcing

4.4.1 Use of 3PL

Table 4.4 summarizes that the percentage of companies that outsource and do not outsource 3PL in each category. It shows that 69 percent of the companies outsourcing 3PL services and 31% of companies not outsourcing 3PL services. This current outsourcing rate is increased compared with the rate in year 2005 for Chinese firms outsourcing (56 Percent). The most frequently companies to do outsourcing (17 percent of outsourcing) have 1001-5000 employees. The least frequently companies to do outsourcing (10 percent) have 200-500 employees, and the companies with 200-500 employees companies also the most frequently do not outsource 3PL. However, only 3 percent of companies with more than 5000 employees do not outsource 3PL.

Table 4.4 Total Companies Outsourcing/ Not Outsourcing

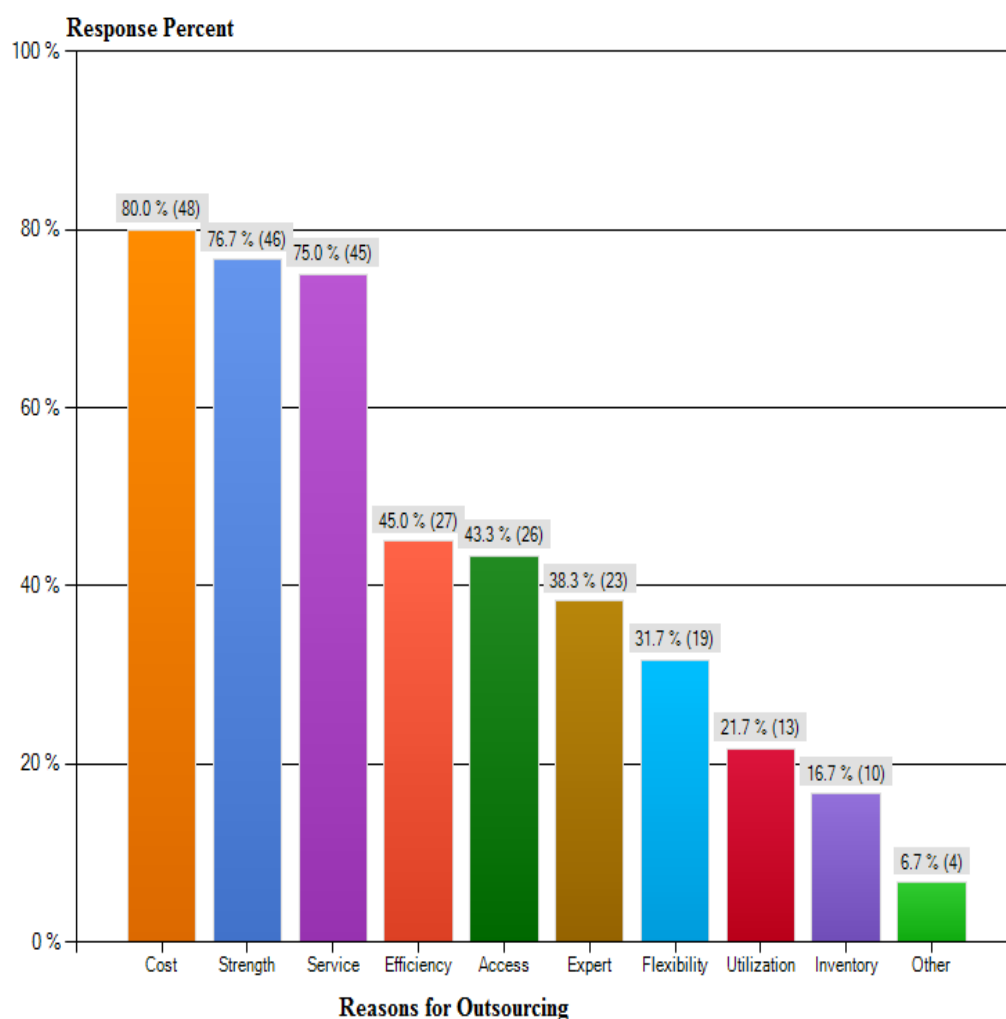
Total number of employees	Outsourcing	Not outsourcing
<200	14%	8%
200-500	10%	9%
501-1000	15%	5%
1001-5000	17%	6%
>5000	13%	3%
Total	69%	31%

4.4.2 Reasons for Outsourcing

Participants were asked to identify the reasons for their company outsourcing 3PL. Most respondents indicated that cost reduction (80 percent), focus on core strengths (76.7 percent) and improve customer service (75 percent) were the three most important reasons for outsourcing 3PL activities. Forty five percent of companies used 3PL because of “improves efficiency” and 43.3 percent of companies indicated “access to new market” was the reason for outsourcing (see Figure 4.2 for more details). Four respondents wrote down the other reasons for using 3PL, there were “fast”, “productivity improvement”, “disperse risks” and “transportation for special equipment”. This outcome reflects that the companies in China take the cost-related reasons as critically important as comparing with service-related reasons and other reasons.

The main reasons for using 3PL services are similar with previous studies conducted in Australia (Daprian, et al, 1996), USA (Lieb & Randell, 1996), Western Europe (Millen et al., 1997), Singapore (Bhatnagar et al., 1999), India (Sohail & Albdali, 2005) and New Zealand (Zhang, 2009).

Figure 4.2 Main Reasons for Using 3PL Services



In order to find out whether each category of company employee numbers has different reasons for outsourcing 3PL activities, the relationship between reasons for outsourcing and company employee numbers was investigated by cross-tab and chi-square test. Table 4.5 shows that the relationship between the reason for outsourcing “more logistics expert/equipment” and company employee numbers is significant at the 5 percent level (P value < 0.05 , $\chi^2 = 11.304$, $df = 4$). As mentioned earlier, the companies have less than 1000 employees are regarded as small companies, and the total employees of more than 1000 are classified as large companies. Table 4.6 shows that the reason for more than half of companies that with the employees of “501-1000” and “>5000” outsourced 3PL services was 3PL providers having have more expertise/ equipment. However, the percentage of big

companies and small companies of choosing the reason of 3PL provider “has more expertise/equipment” is similar. Therefore, the difference between the large companies and small companies is not significant.

Table 4.5 Chi-square Test: Reasons for Outsourcing & Total Number of Employees

Reasons for outsourcing	Total number of employees						
	< 200	201-500	501-1000	1001-5000	> 5000	Chi-Square	P value
cost reduction	21%	10%	27%	23%	19%	7.123	0.129
focus on core strengths	22%	13%	24%	26%	15%	2.398	0.663
improve customer service	16%	18%	24%	24%	18%	3.397	0.494
provides flexibility	21%	5%	11%	32%	32%	6.508	0.164
more logistics expert/equipment	9%	4%	35%	22%	30%	11.304	0.023
reducing inventory	0%	10%	0%	40%	50%	12.844	0.012
access to new markets	15%	15%	15%	27%	27%	3.243	0.518
improve efficiency	11%	26%	19%	33%	11%	8.831	0.065
improve utilization	23%	15%	15%	31%	15%	0.682	0.954
other	0%	0%	25%	50%	25%	2.697	0.61

The relationship between the reason of “reducing inventory” and company employee numbers is also significant at the 5 percent level (P value <0.05, $\chi^2=12.844$, df =4). Only 10 percent of small companies chose reason “reducing inventory”. Table 4.7 also shows that no companies with “less than 200 employees” and the companies with “1001-5000 employees” outsourced 3PL because of reducing inventory. However, 40 percent of the companies that with “more than 5000 employees” thought reducing inventory is one of the reasons. Compare small companies with big companies, large companies are more rely on the reason of “reducing inventory”. It reflects that

inventory reduction is more important to the large companies. Table 4.5 shows that there is no significant relationship between other reasons and company employee numbers.

Table 4.6 More Logistics Expertise/Equipment & Total Employee Numbers

More logistics expertise/equipment	Total employee numbers					Total
	<200	200-500	501-1000	1001-5000	>5000	
No	83	89	38	67	36	62
Yes	17	11	62	33	64	38

Notes: all numbers are in percentage (%)

Table 4.7 Reducing Inventory & Total Employee Numbers

Reducing inventory	Total employee numbers					Total
	<200	200-500	501-1000	1001-5000	>5000	
No	100	89	100	73	55	83
Yes	0	11	0	27	45	17

Notes: all numbers are in percentage (%)

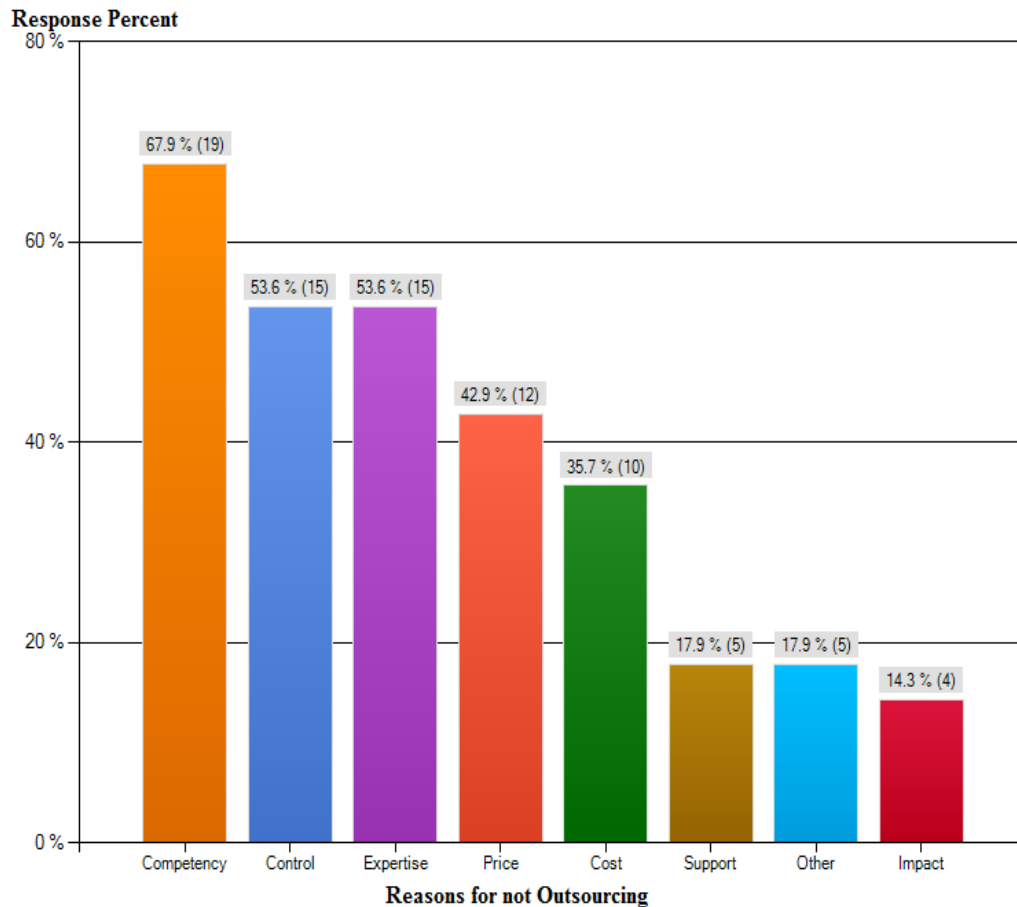
4.4.3 Reasons for Not Outsourcing Logistics Activities

Figure 4.3 shows that more than half of respondents regard “logistics is the core competency” as the most important reason for not outsourcing. The second important reason for not outsourcing is “loss of control of logistics” and “having more expertise than 3PL companies”. Then followed by price of outsourcing activities (41.4 percent), ascertaining the true cost (34.5 percent), other (20.7 percent), difficult in obtaining organizational support (17.2 percent) and “a negative impact on employee morale” (13.8 percent). Twenty-one percent of companies do not outsource because they do not need 3PL services, for example, some industries like finance, banking and real estate, they may not have needs for outsourcing.

The relationship between reasons of not outsourcing and company employee numbers is investigated to find out whether the each category of company employee numbers has different reasons for not outsourcing. Table 4.8 shows that “loss of control of

logistics activities” is significant at the 5 percent level (P value <0.05 , $\chi^2=12.897$, $df=4$). It means there is a relationship between “loss of control of logistics activities” and “total number of employees”.

Figure 4.3 Main Reasons for Not Using 3PL Services



From table 4.9, It can be seen that all big companies (employee number were “>1000”) do choose “loss of control of logistics activities” as the reason for not outsourcing 3PL. However, the selection rate of “loss of control of logistics activities” among small companies is much lower than it among large companies. Overall, large companies are more afraid of losing control of logistics activities, in other words, control of logistics activities is more important to the large companies.

Table 4.8 Chi-square Test: Reasons for Not Outsourcing & Total Employees

Reasons for not outsourcing	Total number of Employees					Chi-Square	P value
	< 200	201-500	501-1000	1001-5000	> 5000		
loss of control of logistics activities	7%	33%	7%	33%	20%	12.897	0.012
logistics is the core competency	21%	32%	11%	21%	16%	2.951	0.566
ascertaining the true cost	10%	30%	30%	30%	0%	6.922	0.14
a negative impact on employee moral	0%	75%	0%	0%	25%	6.86	0.143
price of outsourcing activities	25%	42%	8%	17%	8%	1.866	0.76
difficulty in obtaining organizational support	60%	20%	0%	20%	0%	4.538	0.338
have more expertise than 3PL companies	20%	27%	13%	27%	13%	1.967	0.742
other	40%	40%	20%	0%	0%	2.93	0.57

Table 4.9 Loss Logistics Control & Total Number of Employees

Loss of control of logistics	Total employees number					Total
	<200	200-500	501-1000	1001-5000	>5000	
No	86	38	75	0	0	44
Yes	14	62	25	100	100	56

Notes: all numbers are in percentage (%)

4.5 Extent of Use of the Third Party Logistics Services

4.5.1 Logistics budget allocation

The survey questionnaire probed the respondents to report on the percentage of total logistics budget allocated to the main 3PL providers. Table 4.10 shows the most frequent respondents' budget allocation is "60-79 percent" (30 percent), then follow

by “<20 percent” (25 percent), “40-59 percent” (20 percent) and “20-39 percent” (13 percent). The least respondents’ budget allocation is “>80 percent” (12 percent).

Table 4.10 Percentage of Total Logistics Budget Allocated to 3PL Providers

Budget Allocation	Percentage
<20%	25
20-39%	13
40-59%	20
60-79%	30
>80%	12
Total	100

More than 60 percent of companies allocated more than 40 percent logistics budget to 3PL providers. The result is similar to it found from the study among Sweden firms, (Sjöholm & Wang, 2007). In Sweden, 61.2 percent of firms allocated more than 40 percent of their current annual logistics budgets to 3PL. However, the percentage of total logistics budget allocated to 3PL providers in other countries was much lower. In New Zealand, about 39 percent of respondents allocated more than 40 percent of their current annual logistics budgets to 3PL providers, and the rest of firms in New Zealand allocated less than 40 percent of their logistics budget to 3PL. The result findings in New Zealand were similar to in Australian (Sohal, et al, 2002), European firms (Wilding & Juriado, 2004) and Singaporean firms (Sohal, et al., 2006).

4.5.2 Geographical Coverage

More than 60 percent of companies reported that they were using 3PL services for both domestic and international purposes, and only 13 percent companies were using 3PL services for international only (see table 4.11). The results are similar to the survey findings of Sweden (Sjöholm & Wang, 2007), India (Sahay & Mohan, 2006) and USA (Lieb & Randell, 1996, 1997). Sweden was on the top of the both

domestic and international operations. Approximate 72 percent of organizations in Sweden used 3PL providers for both domestic and international purpose.

Table 4.11 Geographical Coverage

Geographical Coverage	Percentage
Domestic only	20
International only	13
Both	67
Total	100

4.5.3 Logistics Services Used & Satisfaction Level

To find out the frequently outsourced logistics services in China, a list with 15 choices has been developed which covers the different logistics services that were generally provided by logistics service providers. Table 4.12 shows that the top ranked logistics services use among Chinese companies are transportation (98 percent), warehouse management (77 percent), custom clearance & brokerage (76 percent) and shipment consolidation (53 percent). More than 50 percent of respondents reported that their companies outsourced these mentioned four logistic services. Rate negotiation is the lowest frequently used logistics services in China. The study conducted by Capgemini & Langley (2009) also showed that the top ranked logistics services in North America, Europe, Asia pacific and Latin America were domestic transportation, international transportation, customer brokerage and warehouse. Compare with all regions, transportation is more prevalent logistics services used in China (98 percent versus 86 percent), as well as custom brokerage (76 percent versus 71 percent) and warehousing (77 percent versus 68 percent). The percentage of using custom brokerage in China is higher than it in other regions. This may be explained by two reasons. First, the Chinese economy is more based on large import and export quantities. Second, the customs rules in China are enormously complex (Capgemini, 2006).

Table 4.12 Percentages of Third Party Logistics Services Used

3PL services	Percentage
Transportation	98
Warehouse management	77
Custom clearance & brokerage	76
Shipment consolidation	53
Label & packing	48
Other	39
Logistics information system	33
Fleet management	32
Inventory replenishment	31
Order fulfillment	25
Freight bill auditing/payment	24
Carrier selection	22
Product assembly and installation	17
Rate negotiation	14

The respondents were also requested to evaluate their companies current outsourced logistics services by using a five-point scale (results are shown in table 4.13), where 1=very dissatisfied, 2=dissatisfied, 3=neither, 4=satisfied, 5= very satisfied, and N/A means company did not use this service. As a study carried out by Fu et al. (2005), if a respondent gave a value of above 3.0 on the outsourced service means respondent is satisfied with the performance of that outsource service provider, alternatively if a respondent gave a value of below 3.0 on the outsourced service, it means respondent is not satisfied with performance of 3PL providers, it also means that 3PL service provider may lack the capability to carry out that particular service. Table 4.13 shows that the respondent rates of all 3PL outsourced services are equal or above 3, this means that the respondents are overall satisfied with their 3PL service providers' performance. The highest satisfaction rate goes to "Warehouse management" (mean 4.03 with standard deviation 0.657), and then followed by "other" (mean 4.0 with standard deviation 0), "label and packing" (mean 3.9 with standard deviation 0.768) and "Transportation" (mean 3.9 with standard deviation 0.810). The low satisfaction rate goes to "product assembly and installation" (mean 3 with the largest standard deviation 1) and "installation and Freight bill auditing / payment" (mean 3 with

standard deviation 0.756). This may due to the low outsourcing rate of these services, only three respondents outsourced “product assembly and installation” and only eight respondents outsourced “freight bill auditing/payment”. Another plausible alternative explanation is possible lack of demand for services. The low satisfaction rate for these two outsourced services may also imply that services providers in China may lack of experience of these two services based on the low outsourcing rate. Therefore, the service providers in China need to improve the performance of the service of “product assembly and installation” and “freight bill auditing/payment”.

Table 4.13 The Satisfaction Level of Outsourced Third Party Logistics Services

3PL Logistic Services	Mean	Std. Deviation	Mean	Very Dissatisfied	Dissatisfied	Neither	Satisfied	Very Satisfied
Warehouse management	4.03	0.657	18.6	0.0	5.1	11.9	49.2	15.3
Other	4.00	0.000	93.2	0.0	0.0	0.0	5.1	1.7
Label and packing	3.90	0.768	52.4	0.0	1.7	6.8	30.5	8.5
Transportation	3.90	0.810	3.4	1.7	10.2	16.9	50.8	16.9
Shipment consolidation	3.89	0.567	47.5	0.0	1.7	10.2	35.6	5.1
Custom clearance and brokerage	3.71	0.763	25.4	0.0	10.2	8.5	49.2	6.8
Fleet management	3.60	0.548	67.8	0.0	6.8	16.9	6.8	1.7
Carrier selection	3.60	0.548	77.6	0.0	1.7	6.9	13.8	0.0
Order fulfilment	3.43	0.787	74.6	0.0	0.0	10.2	15.3	0.0
Rate negotiation	3.14	0.900	86.4	0.0	3.4	5.1	5.1	0.0
Logistics information system	3.13	0.835	66.1	0.0	8.5	11.9	13.6	0.0
Inventory replenishment	3.08	0.954	69.5	0.0	11.9	5.1	13.6	0.0
Product assembly and installation	3.00	1.000	81.4	0.0	3.4	10.2	5.1	0.0
Freight bill auditing / payment	3.00	0.756	78.0	0.0	6.8	10.2	5.1	0.0

Notes: all numbers are in percentage (%) except means

To summarize, the 3PL service providers in China well perform the traditional logistics services such as “transportation”, “warehouse management”, “label and packing”, “shipment consolidation”, “custom clearance and brokerage”, “fleet management”, “carrier selection” and “order fulfillment”. Chinese companies outsource these traditional services rather than other “value-added” services as the

3PL providers in China are normally small and medium sizes (Fu et al., 2005). Thus, the small and medium sizes providers might lack of financial resources, employees with those abilities and operation scale to expand the scope of their services. The other reason might be inefficient demand for the services like “product assembly and installation”, “rate negotiation” and “freight bill auditing /payment”.

4.5.4 Total 3PL Services Providers

The total number of 3PL services providers used by the respondents' companies was indicated by the respondents. Table 4.14 summarizes that the percentages of total number of 3PL providers used by Chinese companies. It shows that most of companies in China only used 2-5 providers (61 percent) and also shows that most of companies want to have a close and stable relationship with only few 3PL providers. Ten percent of companies used one 3PL provider, and 28.8 percent of companies used more than five 3PL providers, and only 3.3 percent of companies used more than fifteen 3PL providers. This survey results is similar to the other previous study results among Australia firms (Sohal, et al., 2002), US firms (Lieb & Bentz, 2005), Singapore firms (Sohail et al., 2006) and New Zealand firms (Zhang, 2009). The majority of the respondents' company from these countries also used two to five providers. However, the results of the study conducted in Malaysia are different from the others. Malaysian companies preferred to employ various logistics providers to enhance their services rather than one or two logistics providers.

Table 4.14 Percentage of Total Number of 3PL Providers

Total number of 3PL providers	Percentage
1--1	10.2
2--5	61.0
6--9	15.3
10--15	10.2
>15	3.3
Total	100

The relationship between the number of 3PL providers used and total employees number of the Chinese firms was investigated to find out whether the company with different employee numbers used different number of providers (as shown in table 4.15).

Table 4.15 Number of 3PL Providers Used & Total Employees Number

Number of 3PL Providers Used	Total Employees Number					Total
	<200	200-500	501-1000	1001-5000	>5000	
1-5	11	7	9	9	6	42
6-9	1	1	3	2	2	9
10-15	0	1	1	1	3	6
>15	0	0	0	2	0	2
Total	12	9	13	14	11	59

Table 4.15 shows the cross tabulation between number of 3PL providers used and total employees number. The Chi-square test is used to testify if there is any relationship between these two variables: length of using 3PL services and total employees number. The results show that the relationship between these two variables is not significant at the 5 percent level ($P \text{ value}=0.342>0.05$, $\chi^2=12.844$, $df=4$). Therefore, there is no relationship between number of 3PL providers and total employees number. However, In USA and UK, researchers have found that larger companies often seek to use a smaller number of providers in order to easily control and closely monitor their outsourcing services (Waters D., 2003)

Moreover, the relationship between number of 3PL providers used and length of using 3PL services was also investigated. Table 4.16 shows the cross tabulation between these two variables. It shows that twenty-six companies which are outsourcing 3PL services for more than five years only use one to five providers. It could be explained by the companies which have more experience of using 3PL services that they are more likely to use a small number of 3PL providers. They might want to create a long term and close relationship with small number of (less than five)

providers rather than create a short term relationship with a lot of 3PL providers.

Table 4.16 Number of 3PL Provider Used & Length of Using 3PL Services

Number of 3PL Providers Used	Length of Using 3PL Services				Total
	<1year	1-3years	4-5years	>5years	
1-5	3	5	8	26	42
6-9	0	1	1	7	9
10-15	0	0	0	6	6
>15	0	1	0	1	2
Total	3	7	9	40	59

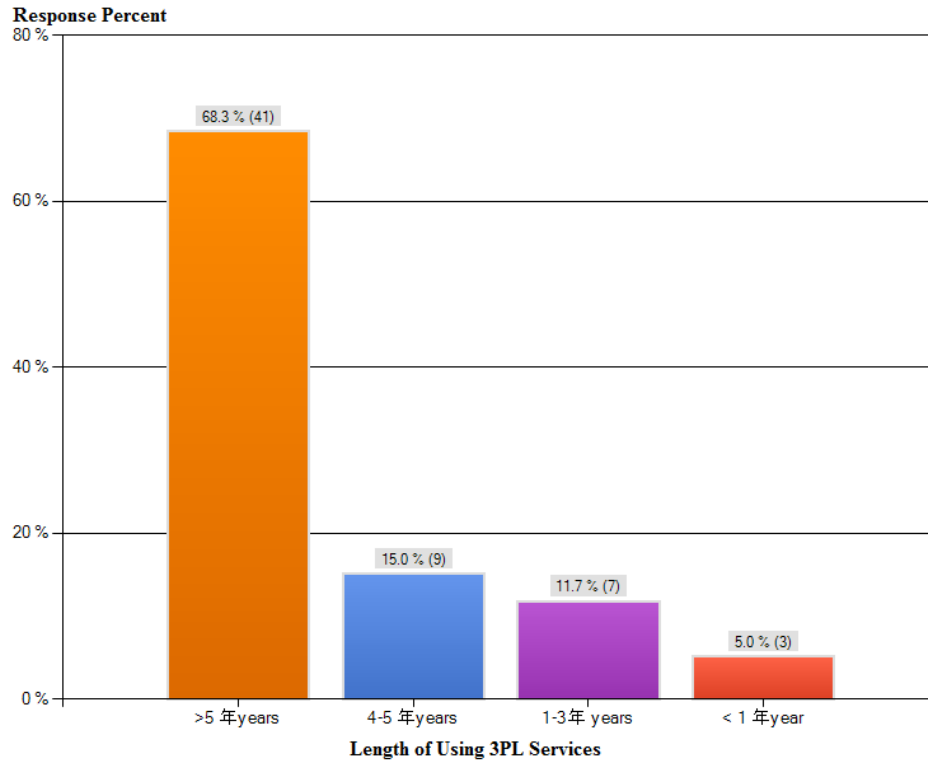
In order to explore further, Chi-square significance tests is generated to testify that whether there is a relationship between number of 3PL providers used and length of using 3PL services. The results show that the relationship between these two variables is not significant at the 5 percent level ($P \text{ value} = 0.59 > 0.05$, $\chi^2 = 7.458$, $df = 9$). It means there is no significant relationship between number of 3PL provider used and length of using 3PL services.

4.5.5 Length of using 3PL services

The results of this survey show that most of companies outsource 3PL services for more than five year (68.3 percent) and only 5 percent of companies are using 3PL services for less than one year. Figure 4.4 shows the rest of answers. This result shows that there is a long history in terms of using 3PL services in China, which is similar to the survey results for the companies using 3PL in USA (Lieb & Bentz, 2005) with 67 percent of companies outsourced logistics services for more than five years, 72 percent Singapore companies outsourced logistics services for more than five years (Bhatnagar et al, 1999), Australia with 66 percent (Sohal, et al, 2002) and New Zealand with 71 percent (Zhang, 2009). Sohail et al (1999) have indicated that the longer the relationship between organization and the 3PL providers was the more extensive of using 3PL services and the higher level of commitment to the

relationship would be. As a result, figure 4.4 shows that the use of 3PL providers is extensive and the level of commitment is high in China.

Figure 4.4 Length of Using 3PL Services



In order to find out if there is a relationship between the length of using 3PL services and the used 3PL services. One-way analysis of variance (ANOVA) is used to compare the means. Appendix D and appendix E compared length of services used across each of 3PL services used and show the sum of square, the degree of freedom (df), the mean square (variance), the F ratio and the F probability (Sig.) of both between groups and within groups.

Table 4.17 shows that the F ratio for the service “warehouse management” is 3.319 and the F probability is 0.017 which is less than 0.05, so the null hypothesis is rejected. Therefore, there is a significant difference among the “warehouse management” service and the length of using 3PL services. There is also a significant difference among the “product assembly and installation” and the length of using 3PL services (F ration =2.745, Sig=0.038>0.05). It means different groups of

duration of using 3PL services have different choices for using warehouse management service. The reason for the significant difference among the “product assembly and installation” and the length of using may due to the small samples. There are only 18.6 percent of respondents using “production assembly and installation”. It does not show there is a significant difference between the rest of 3PL services and the length of using.

Table 4.17 ANOVA: 3PL Services & Length of Service Used

3PL services		Sum of Squares	df	Mean Square	F	Sig.
warehouse management	Between Groups	32.550	4	8.138	3.319	.017
	Within Groups	132.399	54	2.452		
	Total	164.949	58			
product assembly and installation	Between Groups	15.275	4	3.819	2.745	.038
	Within Groups	75.132	54	1.391		
	Total	90.407	58			

Furthermore, the relationship between the length of using 3PL services and the number of employees is also investigated. The cross tabulation between the two variables shows in table 4.18 and chi-square test is used to testify if there is a relationship between the length of using 3PL services and the number of employees. The results show that the relationship between length of using 3PL services and the number of employees is significant at the 5 per cent level ($P=0.041 > 0.05$, $df=12$, $\chi^2=21.73$).

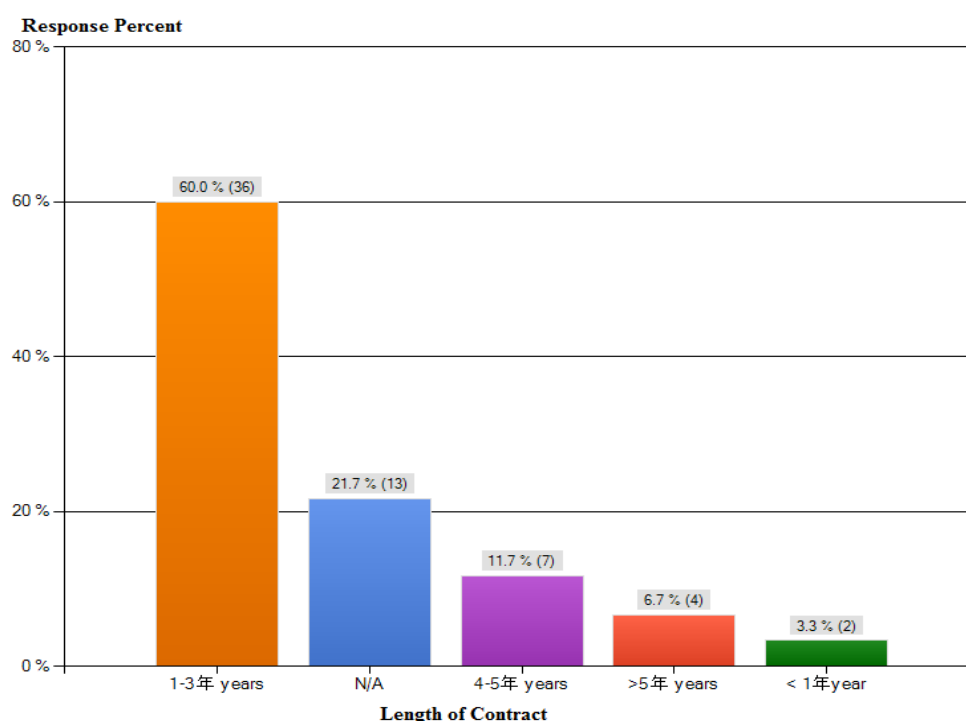
Table 4.18 shows that all 11 companies which have more than 5000 employees are using 3PL services for more than five years. More than half of the companies which have “501-1000” and “1001-5000” is using 3PL services for more than five years. Thus, the history of using 3PL services in large companies is longer than the small companies.

Table 4.18 Total Number of Employees & Length of Using 3PL Services

Total Employees Number	Length of Using 3PL Services				Total
	<1year	1-3years	4-5years	>5years	
<200	3	3	2	4	12
200-500	0	1	2	6	9
501-1000	0	1	3	9	13
1001-5000	0	2	2	11	15
>5000	0	0	0	11	11
Total	3	7	9	41	60

4.5.6 Length of Third Party Contracts

Figure 4.5 Duration of Contract



All outsourcing companies were questioned the length of their current primary third party contracts in the survey. As shown in figure 4.5, only 21.7 percent of companies do not sign the contract with their 3PL provider, which means approximately 80 percent of companies have signed the contract with 3PL providers in China. Among the respondents' companies which signed the contract, 60 percent of them have a contract with their main 3PL services provider for "1-3 years", 11.7

percent companies indicated that their contract duration is “4-5 years” and only 3.3 percent of contract duration was less than one year.

4.6 Decision Making Process

4.6.1 Selection Criteria of Choosing 3PL Service Providers

The respondents were asked to indicate which criteria were important for selecting 3PL services providers. The key factors used for selecting logistics providers are established by reviewing the previous studies and researching the important factors normally used. Respondents were asked to rate each criterion for choosing 3PL providers by using a five-point scale, where 1=very unimportant, 2=unimportant, 3=neither, 4=important, 5= very important.

Table 4.19 shows the average scores of the importance of criteria for selecting of 3PL services providers and the percentage of each scale. The results show that more than half of respondents believed that all of these criteria list in table 4.19 are “important” or “very important”.

The most important criterion for choosing 3PL services providers is “quality of services” (overall importance rating was 4.72) and 100 percent of respondents indicated that “quality of service” was “at least important” for selection of providers, and then the “price” was the second most important criterion. More than half of the respondents thought that “price” was very important (overall importance rating was 4.44). “Reputation” was the third most important criterion for choosing third party services providers. The overall importance rating for “reputation” was 4.39, 57.6 percent of respondents believed that reputation of the service provider was “important”. “Information technology capability” was regarded as the fourth most important criterion (overall importance rating was 4.17). The overall importance rating of these four criteria was all above 4.0 which means overall “quality of service”,

“price”, “reputation” and “experience” are “important” or “very important” for selection of providers on average.

Table 4.19 Degree of Importance of Selection Criteria

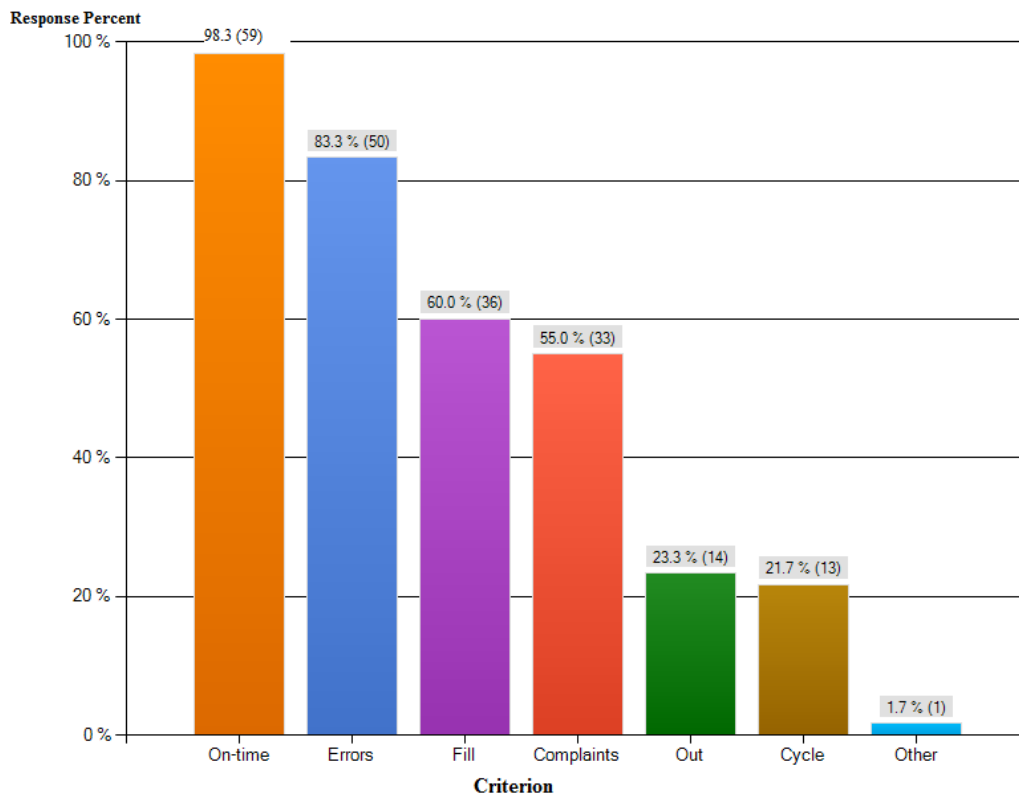
Criteria of Choosing 3PL Providers	Mean	Very unimportant	Unimportant	Neither	Important	Very important
quality of services	4.72	0	0	0	27.6	72.4
price	4.44	0	3.4	1.7	42.4	52.5
reputation	4.39	0	0	1.7	57.6	40.7
experience	4.17	0	6.9	6.9	48.3	37.9
employee morale	3.51	3.4	5.1	35.6	49.2	6.8
information technology capability	3.54	0	10.2	35.6	44.1	10.2
expert or skilled staff	3.64	0	11.9	27.1	45.8	15.3
core competencies	3.61	3.4	8.5	32.2	35.6	20.3
financial stability	3.90	1.7	3.4	22	47.5	25.4
other(please specify)	3.75	25	0	0	25	50

Notes: all values are in percentage (%) except means

4.6.2 Criteria for Evaluating the Performance of Company's Providers

Respondents were asked to indicate the selection criteria used for evaluating the performance of their 3PL services providers in the survey. Six evaluation criteria are provided in the questionnaire as illustrated in figure 4.6.

Figure 4.6 Degree of Importance Criteria when Evaluating Provider's Performance



The results show that almost all of respondents (98.3 percent) use “on-time shipment” criterion, which is the most frequently used criterion for evaluating the performance of company’s 3PL services providers. Eighty three percent of respondents indicated that they were using “shipment error” as the criteria for evaluating the performance of their 3PL services providers. “Shipment error” was the second frequently used criterion. More than 50 percent of respondents used “fill rated” and “customer complaints” as their evaluation criteria. The both were the third and fourth frequently used evaluation criteria. However, not many respondents used “stocks out” and “cycle time” as their evaluation criteria. One respondent pointed out that “cost” was one of criteria to evaluate their 3PL services providers. More details were shown in figure 4.6

4.7 Organization Impacts

4.7.1 *Impact of Outsourcing 3PL Services*

Outsourcing 3PL services imposes some impacts to the organization. The general impacts to the organization are provided in the survey. Respondents were asked to rate the level of impacts on their companies. The evaluation is done by using a five-point scale, where 1=very negative, 2=negative, 3=neither, 4=positive, 5= very positive.

Table 4.20 demonstrates the average score of each impact (mean) and the percentage of each scale under the each impact. The maximum score is 3.98 and the minimum score is 3.07. The results show the 3PL service that has the highest positive impact on organizations is “on-time delivery” (the average overall rating was 3.98 means it overall has a positive impact on the companies). On the other hand, employee morale is ranked as the lowest impact due to the implementation of 3PL. There is one respondent pointed out “improve efficiency” was also one of positive impact to the respondent’s company. This result is the same as the results from other studies, such as Saudi Arabia (Sohail & Al-Abdali, 2005), West Europe (Millen et al., 1995, 1997); India (Sahay & Mohan, 2006), Malaysian (Sohail & Sohal, 2003) and USA (Lieb& Bentz, 2004).

More than half of respondents indicated that the impact was “positive” or “very positive” in terms of “on-time delivery” (75 percent), “expanding geographic reach” (66.6 percent, the average rating was 3.9), “logistics system performance” (66.7 percent, the average rating was 3.8), customer satisfaction (71.7 percent, the average rating was 3.72), “reducing inventory levels” (50 percent, the average rating was 3.63) and “sales revenue” (51.7 percent, the average rating was 3.6). However, 13.4 percent of users indicated that “employee morale” had a “very negative” or “negative” impact to their companies. Twelve percent of users indicated that

“customer satisfaction” and “on time delivery” had the negative impacts. These results show that people issues are the critical factor and need to be considered in the logistics outsourcing industry in China. The user company should try to minimize these negative impacts. The negative impact of “employee morale” may be due to the elimination of logistics positions after implementing third party logistics.

Table 4.20 Degree of Organization Impacts

Impacts	Mean	Very Negative	Negative	Neither	Positive	Very positive
On time delivery	3.98	0.00	11.70	3.30	60.00	25.00
Expending geographic reach	3.90	0.00	0.00	33.30	43.30	23.30
Logistics system performance	3.80	0.00	3.30	30.00	50.00	16.70
Customer satisfaction	3.72	0.00	11.70	16.70	60.00	11.70
Reducing inventory levels	3.63	0.00	5.00	45.00	31.70	18.30
Sales revenue	3.60	0.00	3.30	45.00	40.00	11.70
Acquiring new customers	3.45	1.70	5.00	56.70	35.00	8.30
Employee morale	3.07	1.70	11.70	65.00	21.70	0.00

Notes: all values are in percentage (%) except means

4.7.2 Elimination Logistics Positions

Another impact of implementing third party logistics is the elimination of logistics related positions. Of these 3PL services users, 66.7 percent of them do not eliminate any logistics related positions after implementing third party logistics, and 33.3 percent of users eliminate some logistics related positions. These 33.3 percent of users were also asked to specify the number of eliminated working position. Most of companies eliminated less than 100 logistics positions, few companies only eliminated less than 10 logistics positions.

Compare with other studies, the rate of the logistic working position being eliminated in China is relatively lower than the other countries. For most of countries, around 50 percent of companies eliminated the logistics positions, such as USA (69%) (Lieb & Randell, 1996), Australia (50 percent) (Daprian, 1996), Saudi Arabia (49%) (Sohail & Al-Abdali, 2005) and Sweden (67.3 percent) (Sjöholm & Wang, 2007). In USA, Western Europe, Malaysian, Saudi Arabia and Sweden, the most common way to address these displaced personnel is to transfer employees within the company. The other ways of dealing these displaced personnel includes early retirement, or release employees from their employment or terminated.

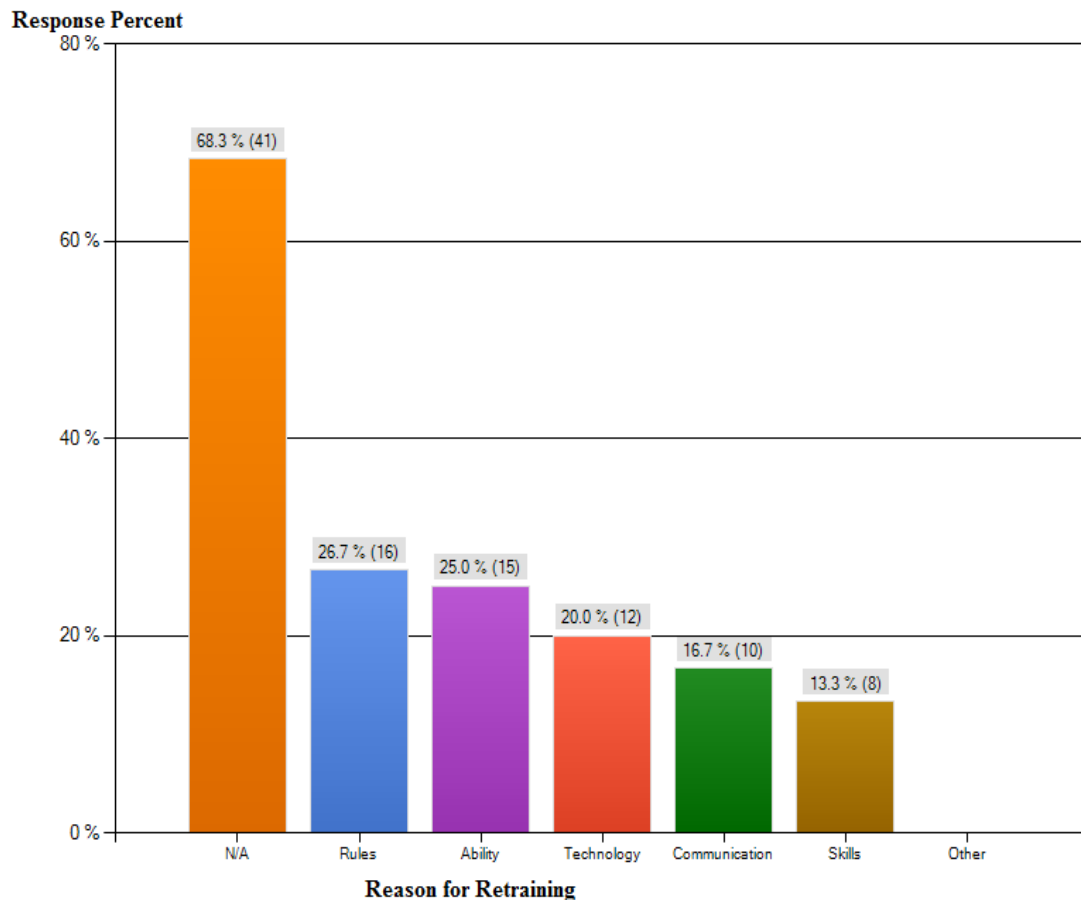
4.7.3 Necessity of Retraining Logistics Employees

Since the 3PL services are introduced into a company, the normal business practice activity may shift, therefore the related training may become necessary. The necessity of retaining logistics employees and the reasons for retraining them were asked in the survey. Figure 4.7 demonstrates that 68.3 percent of companies do not think it necessary to retrain their own logistics employees. Of the respondents who believed the retraining was necessary, 26.7 percent of companies indicated that the main reason for the retraining was to “familiar with different rules/management, 25 percent of companies thought “improve the ability to adjust to the new environment” was the main reason for retraining, 20 percent of companies thought the main reason was “familiar with new technologies”, 16.7 percent of companies believed the main reason was “improve communication skills” and only 13.3 percent of companies thought “upgrading skills” was the main reason.

In Saudi Arabia (Sohail & Al-Abdali, 2005), Singapore (Bhatnagar et al., 1999), Australia (Millen et al., 1995, 1997), USA (Lieb & Randell, 1991, 1994, 2000); India (Sahay & Mohan, 2006) and Malaysian (Sohail & Sohal, 2003), studies results showed that retraining of logistics employees was not necessary. In Australia

(Millen et al, 1995, 1997), Sweden (Sjöholm & Wang, 2007) and Saudi Arabia (Sohail & Al-Abdali, 2005), the main reason for retraining the logistics employees was to focus on upgrading skills related to use of computerized systems, which was different to China.

Figure 4.7 Main Reasons for Retraining



4.8 Future Trend of Logistics Services in China

4.8.1 Satisfaction Rate of Current 3PL Services Providers

The respondents were asked to rate their current 3PL services providers. The results are showed on table 4.21. Eighty percent companies are at least “satisfied” with their 3PL services providers (Very satisfied 20% + satisfied 60%). Twenty percent of companies are “dissatisfied” or “very dissatisfied” with their 3PL services

providers. It means that there is room of improvement for 20 percent of companies.

The satisfaction rate for the service provided by the 3PL in China is a bit lower than it in the other countries. In USA (Lieb & Randell, 1991, 1994, 2000), India (Sahay & Mohan, 2006) and Saudi Arabia (Sohail& Al-Abdali, 2005), Over 85 percent of the respondents are “satisfied” and “very satisfied” with 3PL service providers. The percentage of “satisfied” and “very satisfied” rate in Australia (Millen et al., 1997) and Malaysia (Sohail & Sohal, 2003) are even higher (over 96 percent).

Table 4.21 Percentage of Satisfaction Rate with Current Providers

Satisfaction Rate	Percentage
Very satisfied	20.0
Satisfied	60.0
Dissatisfied	18.3
Very dissatisfied	1.7

4.8.2 The Use of 3PL Services in the Future

The last question of this survey is to ask if the respondent’s company would modify the use of 3PL services in the future. More than 50 percent of companies would “moderately increase” or “substantially increase” the use of 3PL services in the future (56.6 percent). Thirty-three percent of companies would stay the same. It implies that the usage of 3PL services in China would be continually increased. More details are shown in table 4.22.

The respondents were also asked whether they would like to have any 3PL services that are not available in the market yet. Fifteen percent of respondents responded “yes”. However, no respondents provided the specific information about the services that should be appeared in the market. Only one respondent thought that there should be more and better 3PL services providers available in the market. It

shows that there would be high expectations for Chinese 3PL services providers to improve.

Table 4.22 Percentage of Future Usage of 3PL Services

The use of 3PL services in the future	Percentage
Substantially decrease	6.7
Moderately decrease	3.3
No change	33.3
Moderately increase	48.3
Substantially increase	8.3

4.9 Summary

The results gathered from the survey are analyzed through the way of SPSS, chi-square tests and ANOVA. The main results are shown as the following:

- Sixty percent of respondents are from small companies. These companies are mainly located at the eastern part of China and northern part of China. Forty percent of these companies' sales revenues in 2009 were more than 100 million Chinese Yuan
- Sixty-nine percent of companies outsource 3PL services in China. The main reasons for these companies to outsource are “cost reduction”, “focus on core strengths” and “improve efficiency”. In-depth investigation shows that there is a relationship between “more logistics expert/equipment” and company employee numbers. Large companies are more rely on “reducing inventory”. The main reasons for those companies do to outsource 3PL services are “core competency”, “loss of control of logistics” and “have more expertise than 3PL companies”.
- More than half of the companies allocate more than 40 percent of total logistics

budget to their 3PL services, and more than half of the companies outsource 3PL services for both domestic and international purpose.

- The frequently outsourced services in China are “transportation”, “warehouse management”, “custom clearance & brokerage” and “shipment consolidation”. Companies are overall satisfied with these 3PL services that they are using.
- Most companies use two to five 3PL providers, and most companies have had the experience of using 3PL services for more than five years. By using ANOVA test, researcher find out there is a relationship between “warehouse management” and the length of service used. There is also a relationship between “product assembly and installation” and the length of service used. Researcher also find out the history for large companies using 3PL services is longer than the small companies. Of these outsourced companies, 60 percent of them signed 1-3 years contracts with their 3PL services providers.
- “Quality of service”, “price”, “reputation” and “experience” are the main selection criteria for choosing 3PL services providers. “On-time shipment”, “shipment errors”, “fill rates” and “customer complaints” are the commonly used criteria for evaluating provider’s performance.
- “on-time delivery” imposes the most positive impact on the respondents’ companies; “employee moral” does the most negative impact on the respondents’ companies. More than half of the companies did not eliminate any logistics related positions, and more than half of companies did not think retraining was necessary.
- Most of companies (80percent) are “satisfied” and “very satisfied” with their 3PL services providers. More than half of companies would “increase” or “moderately increase” the use of 3PL services.

CHAPTER FIVE: CONCLUSION

5.1 Introduction

This chapter reviews research objectives, summarizes the overall conclusions from the survey results and discussions, and then followed by the limitations of this study and recommendations for the future research.

5.2 Research Objectives

The aim of this study is to identify the current status of third party logistics industry in China, and to investigate the current situation of using of 3PL services in China. The study is carried out to determine these following six supporting objectives.

- The extent of using of the third party logistics services in China
- Reasons for Chinese firms outsourcing logistics activities
- Reasons for Chinese firms not outsourcing logistics activities
- The level of satisfaction for their 3PL providers
- Selection criteria of choosing 3PL providers
- Organization impact of logistics outsourcing
- Future trend of Chinese logistics services.

5.3 Conclusions

The key findings of this survey are summarized as following:

5.3.1 Objective 1: The Extent of Use of the Third Party Logistics Services in China

- Outsourcing 3PL services has become more and more popular in China. The use of 3PL services has been increasing. Sixty-nine percent of Chinese firms are currently using 3PL services. The majority of these outsourced companies were small and medium sized, with the total employees less than 1000. The sales revenues of most of companies that outsource 3PL in 2009 were more than 100 million Chinese Yuan. The most of logistics outsourcing firms in China are concentrated in eastern part of China and Northern part of China.
- Similar to the survey findings from the survey made in Sweden (Sjöholm & Wang, 2007), India (Sahay & Mohan, 2006) and USA (Lieb & Randell, 1996, 1997). The purpose of using 3PL services is mostly for both domestic and international purpose. The study also find that Chinese companies allocate higher percentage of their budget to 3PL services than Australian firms (Sohal, et al, 2002), European firms (Wilding & Juriado, 2004), New Zealand firms and Singaporean firms do (Sohail, et al., 2006).
- The top ranked services used in China are transportation, warehouse management, custom clearance & brokerage and shipment consolidation. The 3PL service providers in China are well performing these traditional logistics services. Outsourcing firms are overall satisfied with these services provided by the 3PL providers. However, the satisfaction for the performance of those value-added services is lower than the traditional logistics services due to most of 3PL providers in China are small and medium sizes. They might lack of financial resources, employees with those abilities and operation scale to expand the scope of their services. Moreover, there is inefficient demand for the services such as “product assembly and installation” and “rate negotiation”.

- Similar to the findings from the study made in Australia (Sohal, et al., 2002), USA (Lieb & Bentz, 2005), Singapore (Sohail et al., 2006) and New Zealand (Zhang, 2009), more than half of the outsourced companies use two to five 3PL providers, and most of outsourcing companies have signed the contract with their 3PL providers. However, most of the companies only signed the contract for 1-3 years that is also similar to the situation from with other studies. The study also finds out that Chinese companies have a long history of using 3PL services (experience for more than five years) which is similar to it in USA, Australia and New Zealand). Moreover, companies with different time of using 3PL services have different choices for using warehouse management service. The history of large companies for using 3PL services is longer than the small companies.

5.3.2 Objective 2: Reasons for Chinese Firms Outsourcing Logistics Activities

More than half of the companies outsource 3PL services because they want to reduce the cost, focus on their own core strengths and improve customer services. The results are similar to the other studies conducted in Australia (Daprian, et al, 1996), USA (Lieb & Randell, 1996), Western Europe (Millen et al., 1997), Singapore (Bhatnagar et al., 1999), India (Sohail &Albdali,2005) and New Zealand (Zhang, 2009). It also shows that inventory reduction is more important to the large companies (more than 1000 employees) rather than to small companies (less than 1000 employees).

5.3.3 Objective 3: Reasons for Chinese Firms Not Outsourcing Logistics Activities

Of the companies which do not outsource 3PL services, the three top ranked reasons

are as following: “logistics being the core competency of the companies”, “companies worrying about loss of control of logistics activities” and “the companies having more expertise than logistics companies having”. For the large companies to control the logistics activities is more important than for small companies to do.

5.3.4 Objective 4: Selection Criteria of Choosing 3PL Providers

Quality of services, price, reputation and experience are regarded as the most important criteria to select 3PL service providers. Almost all of outsourced companies believed that on-time delivery is the important criteria to evaluate 3PL provider’s performance. The other frequently used criteria include shipment errors, fill rates and customer complaints.

5.3.5 Objective 5: Organization Impact of Logistics Outsourcing

More than half of respondents believed that after implementing third party logistics, “on-time delivery”, “expanding geographic reach”, “logistics system performance”, “customer satisfaction”, “reducing inventory levels” and “sales revenue” had positive impacts on the organizations. However, the companies should pay attention on the negative impacts of customer satisfaction and employee morale and should try to minimize these negative impacts. There is another impact of implementing 3PL. Thirty three percent of user firms eliminate logistics related positions. The most of companies eliminate less than 100 logistics related positions. In additional, most of companies did not think retraining logistics employees was necessary after implementing 3PL. The respondents who believed the retraining was necessary, thought that their employees should be familiar with different rules/management. In other countries, the main reason for retraining the logistics employees is to focus on upgrading skills related to use of computerized systems.

5.3.6 Objective 6: Future Trend of Chinese Logistics Services

The majority of companies are satisfied with their current 3PL providers. However, the satisfaction rates from other previous studies are higher. There is a need for more and better available 3PL providers in the market and a need for 3PL services providers to improve. It believes that the use of 3PL services would be continually increasing as the majority of companies in China are increasing their use of 3PL services.

5.4 Limitations

The current study tries to provide the useful reference for the logistics companies in the logistics industry in China. However, there are still some limitations in this study. First of all, the research is limited by the time and budget which lead to the small samples. Time is needed to find out more contact information of people who is at the manager level or above manager level in the Chinese firms. The researcher also needs more funds to contact each of them in order to increase the response rate. As mentioned earlier, China is a large country, different parts of China may reflect very different situation of using 3PL services. In order to provide precise results about the Chinese logistics industry, the sample size should be increased. There is also a need for a more comprehensive questionnaire.

5.5 Future Research

China is a large country. It is hard to describe precisely the situation of logistics industry in the whole country. Therefore, it is worthwhile investigating and analyzing the use of 3PL in China deeply. For example, the study area could narrow down to one part of China or one city. There are so many cities in China, there must be some cities in where the situation has not been studied before. Future studies

could investigate the use of 3PL services in one particular industry and compare it with other industries in China to find out the similarities and difference. The future study could also be conducted from 3PL services provider's perspective.

REFERENCES:

- Ackerman K.B. (1996). Pitfalls in logistics partnerships. *International Journal of Physical Distribution & Logistics Management*, 26(3), 35-37.
- Al-Mudimigh, A.S., Zairi, M. & Ahmed, A.M. (2004). Extending the concept of supply chain: The effective management of value chains. *International Journal of Production Economics*, 87 (3), 309-320.
- Anu. H. & Bask. A.H. (2001). Relationships among TPL providers and members of supply chains-a strategic perspective. *The Journal of Business and Industrial Marketing*, 16(6), 470-486.
- Araujo L.M., Easterby-Smith, M.P.V. & Snell R. (1999). *Organizational Learning and the Learning Organization: Developments in Theory and Practice*, Sage, London.
- Arroyo, P., Gaytan J. & de Boer, L. (2006). A survey of third party logistics in Mexico and a comparison with reports on Europe and USA. *International Journal of Operations & Production Management*, 26(6), 639-667.
- Austin, N.K., Sohail, M.S. & Rushdi, M. (2004). The Use of Third-party Logistics Services: Evidence from a sub-Sahara African Nation. *International Journal of Logistics: Research and Applications*, 7(1), 47-57.
- Bagchi, P.K. & Virum, H. (1996). European logistics alliances: a management model, *International Journal of Logistics Management*, 7 (1), 93-108.
- Baker, J. & Chauncey B. (1905). *Transportation of Troops and Material*, Kansas City. Missouri: Hudson Publishing, p. 125.
- Bardi, E.J. & Tracey, M. (1991). Transportation outsourcing: a survey of US practices. *International Journal of Physical Distribution & Logistics Management*, 21(3), 15-21.
- Bask, A.H. (2001). Relationships between 3PL providers and members of supply chains –a strategic perspective. *Journal of Business and Industrial Marketing*, 16(6), 470-486.
- Berglund, M., Laarhoven, P., Sharman, G. & Wandel, S.(1999). Third party logistics: is there a future? *International Journal of Logistics Management*, 10 (1), 59–70.

- Bhatnagar, R., Sohal, A.S. & Millen, R. (1999). Third party logistics services: a Singapore perspective. *International Journal of Physical Distribution and Logistics Management*, 29 (9), 569–587.
- Bhatnagar, R. & Viswanathan, S. (2000). Re-engineering global supply chains: alliances between manufacturing and global logistics service providers. *International Journal of Physical Distribution & Logistics Management*, 30(1), 13-34.
- Bottani, E. & Rizzi, A. (2006). A fuzzy TOPSIS methodology to support outsourcing of logistics services. *Supply Chain Management: An International Journal*, 11(4), 294-308.
- Bowman, R.J. (1995). A high-wire act. *Journal of Distribution*, 94 (13), 36-9.
- Brannick, T. & Roch (1997). *An overview of the research process, Business research methods: Strategies, techniques*. Dublin: Oak Tree Press. 1-30.
- Byrnes, P.M. (1993). A new road map for contract logistics. *Transportation and distribution*, April, 58-62.
- Capgemini (2006). *2006 Third-Party Logistics results and Findings of the 11th Annual Study*. Retrieved May 28, 2011 from the World Wide Web:
<http://www.scl.gatech.edu/research/supply-chain/20063PLReport.pdf>
- Capgemini Consulting & Langley, J. (2009). *The state of logistics outsourcing*. Retrieved May 18, 2010 from the World Wide Web:
http://www.at.capgemini.com/m/at/tl/Third-Party_Logistics_2009.pdf
- Chapman, R.L., Soosay, C. & Kandampully, J. (2002). Innovation in logistics services and the new business model: a conceptual framework. *Journal of Managing Service Quality*. 2(6), 358-371.
- Chen, Y.C. (2002). An application of fuzzy set theory to the external performance evaluation of distribution centers in logistics. *A Fusion of Foundations, Methodologies and Applications* 6(1), 64-70.
- Chow, G., Heaven, T.D. & Henriksson, L.E. (1994). Logistics performance: definition and measurement. *International Journal of Physical Distribution and Logistics Management*, 24(1), 17-28.

- Collins, J.S. & Millen, R.A. (1995). Information systems outsourcing by large American industrial firms: choices and impacts. *Information Resources Management Journal*, 8(1), 5-13.
- Collis, J. & Hussey, R. (2003). *Business research* (2nd ed.) New York: Palgrave Macmillan.
- Cook, J.A. (1994). Third- party logistics: has its time come? *Traffic Management*, 33(10), 71-73.
- Cooper, M.C., Lambert, D.M. & Pagh, J.D. (1997). Supply Chain Management: More Than a New Name for Logistics. *The International Journal of Logistics Management*, 8(1), 1-14.
- Cooper, R.R. & Schindler, P.S., (2003), *Business Research Methods*, McGraw-Hill, Boston.
- Coyle, J.J., Bardi, E.J., Langley C.J. Jr., Gibson B. & Novack R.A. (2009), *Supply Chain Management: a logistics perspective*, South-Western, Manson, OH.
- Closs, D.J., Goldsby, T.J. & Clinton St. R. (1997). Information technology influences on world class logistics capability. *International Journal of Physical Distribution & Logistic Management*, 27(1), 4-17.
- Dai, J., Deng, S.J., Ou, J., Tsui, K., Wang, Y. & Zhang, H. (2002). *2002 China logistics provider survey*. Retrieved, October 10, 2007, from <http://www.tliap.nus.edu.sg>.
- Daprian, P., Lieb, R., Millen, R. & Sohal, A. (1996). Third party logistics services usage by large Australian firms. *International Journal of Physical Distribution and Logistics Management*, 26 (10), 36-45.
- Daugherty, P.J. & Droge, C. (1997). Organizational structure in divisionalized manufacturers: the potential for outsourcing logistical services. *International Journal of Physical distribution & Logistics Management*, 27 (5/6). 337-349
- Dai, J., Wang, Y., Wong, N., Wang, D., Liu, X. & Li, R., (2003). *2003 China logistics user survey*. Retrieved, October 10, 2009, from World Wide Web <http://www.tliap.nus.edu.sg>.
- Dai, J., Deng, Li, Y., Liu, X., Wang, Y., Wong, N. & Zhou, C. (2005). *2004 China road transportation enterprise survey report*. Retrieved, October 10, 2009, form <http://www.tliap.nus.edu.sg>.
- Dekker, N. (2002). Gold Rush. *Containerization International*, 35 (1), 29-31.

- DiBenedetto, B. (2008). Fertile field for 3PLs. *Journal of Commerce*, 9(4), 24-26.
- Easterby-Smith, M., Thorpe, M & Lowe, A. (1991). *Management research*. Redwood Books, Trowbridge, UK.
- Ellram, L. M. & Cooper. M.C. (1990). Supply Chain Management, Partnerships, and the Shipper-Third-Party Relationship. *The International Journal of Logistics Management*, 1(2), 1-10.
- Elmuti, D. & Kathawala, Y. (2000). The effects of global outsourcing strategies on participants' attitude and organizational effectiveness. *International Journal of Manpower*, 21(2), 112-128.
- Fernie, J. (1999). Outsourcing distribution in UK retailing. *Journal of Business Logistics*, 20(2), 83-95.
- Findlay, C. & Luo, W., (2001). *Logistics in China: Implications of Accession to the WTO*. Oxford: The World Bank.
- Foster, T.A. & Muller, E.J. (1990), Third parties: your passport to profits. *Journal of Distribution*, 89(10), 31-32
- Fu, C.C., Bae, J. & Kim G.O. (2005). A survey on the logistics service providers in Shanghai. *International Journal of Physical Distribution and Logistics Management*, 29(9), 588.
- Fuller, J.B., O'Connor, J. & Rawlinson, R. (1993). Tailored logistics: the next advantage. *Harvard Business Review*, 71 (3), 87-98.
- Ghauri, P. & Grønhaug, K. (2002). *Research Methods in Business Studies*, Harlow, UK, Financial Times Prentice Hall, 2nd Edition.
- Goh, M. & Ling C. (2002). Logistics development in China. *International Journal of Physical Distribution & Logistics Management*, 33(10), 886-917.
- Hair, J. F. Jr., Money, A. H., Samouel, P. & Page, M. (2007) *Research Methods for Business*. The UK: John Wiley & Son Ltd
- Houlihan, J. B. (1988). International Supply Chains: A New Approach. *Management Decision*, 26(3), 13-19.
- Jharkharia, S. & Shankar, R., (2007). Selection of logistics service provider: An analytic network process approach. *Omega* 35, 274-289.

- Jiang, B. & Prater, E. (2002). Distribution and logistics development in China: the revolution has begun. *International Journal of Physical Distribution & Logistics Management*, 32 (9), 783-798.
- Jones, T. & Daniel W. R. (1985). Using Inventory for Competitive Advantage through Supply Chain Management. *International Journal of Physical Distribution and Materials Management*, 15(5), 16-26.
- Kim, J., Cheong, K., & Cho, G. (2002). Evaluating the service quality of third- party logistics service providers using the analytic hierarchy process. *Journal of Information Systems and Technology Management*, 3(3), 261-270.
- Kremic, T., Tukul, O.I. & Rom, W.O. (2006). Outsourcing decision support: A survey of benefits, risks, and decision factors. *Supply Chain Management: An International Journal*, 11(6), 467-482.
- La Londe, B. J. & James M. M. (1994). Emerging Logistics Strategies: Blueprints for the Next Century. *International Journal of Physical Distribution and Logistics Management*, 24(7), 35-47.
- Lacity, M.C. & Hirschheim, R. (1993). The information systems outsourcing bandwagon. *Sloan Management Review*, 35(1), pp.73-86.
- Lacity, M.C. & Willcocks, L.P. (1998). An empirical investigation of information technology sourcing practices: lessons from experience", *MIS Quarterly*, 22 (3). 363-408.
- Lacity, M.C., Willcocks, L.P. & Feeny, D.F. (1996). The value of selective IT outsourcing. *Sloan Management Review*, 37(3). 13-25.
- Lambert, D.M., Stock, J.R. & Ellram, L.M. (1998). Fundamentals of logistics Management. Irwin/McGraw-Hill. pp.5
- Lai, F., Zhao, X. & Wang, Q. (2006). The impact of information technology on the competitive advantage of logistics firms in China. *Industrial Management & Data systems*, 106(9), 1249-1271.
- Langley, C.J. (1986). The Evolution of the Logistics Concept. *Journal of Business Logistics*, 8(6). 1-12
- Larsen, T.S. (1999). Third party logistics: from an inter-organizational point of view. *International Journal of Physical Distribution & Logistics Management*, 30(2). 112-127.

- Lau, K.H. & Zhang, J. (2006). Drivers and obstacles of outsourcing practices in China. *International of Physical Distribution and Logistics Management*, 36(10), 776-792.
- Leahy, S.E., Murphy, P.R. & Poist, R.F. (1995). Determinants of successful logistical relationships: a third party provider perspective. *Transportation Journal*, 35(2), 5-13.
- Lee, H.L. & Sasser, M. (1995). Product Universality and Design for Supply Chain Management. *Production Planning and Control: Special Issue on Supply Chain Management*, 6(3), 270-277.
- Lee, H.L. (1995). The evolution of supply-chain-management models and practice at Hewlett-Packard. *Interfaces Providence*, 25(5), 42.
- Lieb, R.C. (1992). The use of third party logistics services by large American manufacturers. *Journal of Business Logistics*, 13(2), 29-42.
- Lieb, R.C. & Bentz, B. (2005). The North American third party logistics industry in 2004: the provider CEO perspective. *International Journal of Physical Distribution & Logistics Management*, 35(8), 595-611.
- Lieb, R.C. & Randall, H.L. (1996). A comparison of the use of third party logistics services by large American manufacturers, 1991, 1994 and 1995. *Journal of Business Logistics*, 17(1), 305-20.
- Lieb, R.C., Millen, R.A. & Wassenhove, L.N.V., (1993). Third party logistics services: a comparison of experienced American and European manufacturers. *International Journal of Physical Distribution and Logistics Management*, 23 (6), 35-44.
- Lieb, R.C. (1992). The use of third party logistics services by large American manufacturers. *Journal of Business Logistics*, 13(2), 29-42.
- Lieb, R.C. & Randall, H.L. (1996). A comparison of the use of third party logistics services by large American manufacturers, 1991, 1994 and 1995", *Journal of Business Logistics*, 17(1), 305-20.
- Lindskog M. (2003). *Changing to Third Party Logistics*. Prentice: Institute of Technology, Linköping University, p. 140.

- Liu, Y. (2008). The current situation Chinese third-party logistics companies are facing: an exploratory study. The degree of Master of Applied Science (MApplSc) in Logistics and Supply Chain Management at Massey University, Auckland, New Zealand.
- Logistic Information Center of China and China Federation of Logistics and Purchasing (2005). *China's logistics report (January-June 2005)*. Retrieved March 24, 2010 from the World Wide Web
www.chinawuliu.com.cn/bake/uploadFace/200572516123120a.htm
- Loo, D. (2002). *China's logistics industry holds a golden opportunity*. Retrieved March 24, 2010 from the World Wide Web
www.tdctrade.com/imn/imn190/markettrends17.htm
- McMullan, A. (1996). Supply chain management practices in Asia Pacific today. *International Journal of Physical Distribution & Logistics Management*, 26 (10), 79-95.
- Meade, L. & Saekis, J. (1998). Strategic analysis of logistics and supply chain management systems using the analytical network process. *Transportation Research Part E: Logistics and Transportation Review*, 34 (3), 201-215.
- Mercer Management Consulting (2002). *Third-Party Logistics in China*, Mercer Management Consulting, Beijing.
- Mentzer, J.T., Dewitt, W., Keebler, J.S., Min, S., Smith, C.D. & Zacharia, Z.G. (2001). *Journal of Business Logistics*, 22 (2), 1-25.
- Millen R., Sohal, A., Daparin P., Lieb R. & Wassenhove L.N.V. (1997), a comparison with American and Western European practice. *Benchmarking for Quality Management & Technology*, 4(1), 34-36.
- Minahan, T. (1997). Are buyers gumming up the supply chain?. *Purchasing*, January 16, 79-80.
- Monczka, R., Trent, R. & Handfield, R. (1998). *Purchasing and supply chain management*. Cincinnati, Ohio: South-Western College Publishing.
- National Bureau of Statistics of the People's Republic of China (2001). *China Statistical Yearbook 2001*, China Statistics Press, Beijing.
- National Bureau of statistics of the People's Republic of China, (2003). *China Statistical Yearbook 2003*, China Statistics Press, Beijing.

- National Bureau of statistics of the People's Republic of China, (2006). China Statistical Yearbook 2006, China Statistics Press, Beijing.
- Neuman.W.L. (2006). Social Research Methods: Qualitative and Quantitative Approaches, 6th edition, Pearson International Edition.
- Punch K.F., (2000), Introduction to Social Research: Quantitative & Qualitative Approaches, Sage Publications, London.
- Quinn, J.B. & Hilmer, F.G. (1994), Strategic outsourcing. *Sloan Management Review*, 35 (4), 43-55.
- Razzaque, M.A. & Sheng, C.C., (1998). Outsourcing of logistics functions: a literature survey. *International Journal of Physical Distribution & Logistics Management*, 28(2), 89-107.
- Roberts, K. (1994). Choosing a quality contractor. *Logistics Supplement*. 4-5.
- Ross, D.F. (1998). *Competing Through Supply Chain Management*. New York, NY: Chapman & Hall.
- Russell, S.T. (2000). Growing world of logistics: A general theory of Logistics practices. *Air Force Journal of Logistics*, 24(4), 12-18.
- Rushton, A., Oxley J., & Croucher P. (2000). The handbook of logistics & distribution management. *The Institute of Logistics & Transport*
- Sahay, B.S. & Mohan, R. (2006). 3PL practices: an Indian perspective. *International Journal of Physical Distribution & Logistics Management*, 36(9), 666-689.
- Sanders, N.R., Locke, A., Moore, C.B. & Autry, C.W. (2007). A multidimensional framework for understanding outsourcing arrangements. *The Journal of Supply Chain Management*, 43, 4, 3-15.
- Simpson, J.A & Weiner E.S.C. (1989). *The Oxford English Dictionary* 3, Clarendon Press, Oxford
- Simchi-Levi, D., Kaminsky, P. & Simchi-Levi, E. (2003). *Designing and managing the supply chain: concepts, strategies and case studies* (2nd ed.). Boston, Mass,: McGraw-Hill/Irwin
- Simchi-Levi, D., Kaminsky, P. & Simchi-Levi, E. (2008). *Designing and managing the supply chain: concepts, strategies and case studies* (3rd ed.). Boston, Mass: McGraw-Hill/Irwin.

- Sink, H. & Langley, C.J. (1997). A managerial framework for the acquisition of third party logistics services. *Journal of Business Logistics*, 18(2), 163-189.
- Sjöholm, L. & Wang Y. (2007). TPL Practices: A Swedish Perspective. Master's thesis within International Logistics and Supply Chain Management. Sweden.
- Sohail, M. S. & Al-Abdali O. S. (2005). The usage of third party logistics in Saudi Arabia; current position and future prospects. *International Journal of Physical Distribution & Logistics Management*, 35(9), 637-653.
- Sohail, M.S., Ausrin, N.K.& Rushdi, M. (2004). The Use of Third-party Logistics Services: Evidence from a sub-Sahara African Nation. *International Journal of Logistics: Research and Applications* 7(1), 47-57.
- Sohail M. S., Bhatnagar R. & Sohal A. S. (2006). A comparative study on the use of third party logistics services by Singaporean and Malaysian firms. *International Journal of Physical Distribution & Logistics Managements*, 36(9), 2006
- Sohail, M.S. & Sohal, A.S. (2003). The use of third party logistics services: a Malaysian perspective. *Technovation*, 23(2), 401-408.
- Sohal, A.S., Millen, R. & Moss, S. (2002). A comparison of the use of third- party logistics services by Australian firms between 1995 and 1999. *International Journal of Physical Distribution & Logistics Management*, 32(1), 59-68.
- Stevens, G.C. (1989). Integrating the Supply Chains. *International Journal of Physical Distribution and Materials Management*, 8(8), 3-8.
- Strassmann, P.A. (1997). The squandered computer: evaluating the business alignment of information technologies. *Information Economics*, New Canaan, CT.
- Taylor, P., Richardson, J., Yeo, A., Marsh, I., Trobe, K., & Pilkington, A. (1995). *Sociology in Focus*. Ormskirk: Causeway Press
- The Economist (2001). China's economic power: enter the dragon. *The Economist*, 10(1), 23-25.
- Transport Intelligence (2006). *Global Supply chain intelligence portal*. Retrieve March 1, 2010 from the World Wide Web
<http://www.transportintelligence.com/>

- Wang, Q., Zantow, K. & Lai, F. (2006). Strategic postures of third-party logistics providers in mainland China. *International Journal of Physical Distribution & Logistics Management*, 36(10), 793-819.
- Waters, D. (Eds.). (2003). *Global Logistics and distribution planning: strategies for management (4th ed.)*. London: Kogan Page.
- Webster's New Encyclopedic dictionary (1993). New York: Black Dog & Leventhal Publishers.
- Wilding, R. & Juriado, R. (2004). Customer perceptions on logistics outsourcing in the European consumer goods industry. *International Journal of Physical Distribution & Logistics Management*, 34(7/8), 628-644.
- Wright, K.B. (2006). Researching Internet-Based Populations: Advantages and Disadvantages of Online Survey Research, Online Questionnaire Authoring Software Packages, and Web Survey Services. *Journal of Computer-Mediated Communication*, 10(3), 00.
- Vaidyanathan, G. (2005). A framework for evaluating third-party logistics, *communications of the ACM*, 48(1), 89-94.
- Van Laarhoven, P., Berglund, M. & Peters, M. (2000). Third party logistics in Europe –five years later. *International Journal of Physical Distribution & Logistics Management*, 30(5), 425-442.
- Veal, A.J. (2005). *Business Research Methods: A Managerial Approach*, Pearson Addison-Wesley, South Melbourne.
- Virum, H. (1993). Third party logistics development in Europe. *The Logistics and Transportation Review*, December, 355-362.
- Yeung, J.H.Y., Selen, W., Sum, C. & Huo, B. (2006). Linking financial performance to strategic orientation and operational priorities: an empirical study of third-party logistics providers. *International Journal of Physical Distribution & Logistics Management*, 36(3), 210-230.
- Zhang, Y. (2009). The usage of third party logistics in New Zealand. The degree of Master of Applied Science (MAppSc) in Logistics and Supply Chain Management at Massey University, Auckland, New Zealand.
- Zikmund, W.G. (2000). *Business Research Methods*, USA, the Dryden Press, 6th Edition

APPENDICES

APPENDIX A: Determinants of Successful Third Party

Relationships

1. Access of parties to the latest technology - allows the service buyer to use the latest technology and equipment of the provider without the burden of financial investment.
2. Change orientation (innovative) - the provider can easily adapt to a changing business environment and develop contingencies to minimize system breakdowns.
3. Channel perspective - all parties (i.e., both the provider and the buyer) view the relationship from the system perspective of the overall channel or supply chain.
4. Control and performance appraisal - there is agreement between the provider and buyer on performance measurement standards.
5. Convenience - the provider is readily available, cooperative, and easy to conduct business with.
6. Cost savings - the provider can perform the outsourced tasks at the same, or lower, cost.
7. Customer orientation (responsive to customer needs) - a philosophy that customer service is a process that results in value added to the service exchanged. This includes the provider's ability to customize or tailor its services to the buyer's needs.
8. Dependability - services are provided in a consistent and reliable manner.

9. Emphasis on long-term relationships - relationships between the provider and buyer that are characterized as contractual rather than transactional in nature.
10. Exit provisions exist - stability of the relationship must be balanced with the buyer's and provider's freedom to exit when, and if, it is in their long term-interest.
11. Financial strength - ensures that the provider's and buyer's financial position warrants a commitment of resources and that each party has the staying power to withstand economic conditions.
12. Focus on core competency - allows the provider and buyer to specialize in their primary business operation.
13. Guidelines exist to resolve issues or disputes - procedures have been established to identify and discuss matters, or issues, of interest to both parties (i.e., provider and buyer).
14. Improved service - providers can perform the outsourced tasks at the same, or higher, service levels.
15. Management expertise - the provider employs experienced professionals to manage all aspects of the supply chain.
16. Mutual consideration and trust - all operating objectives and motives are known by the provider and buyer.
17. Number of services offered - the provider offers a comprehensive set of value-added services to meet client needs.
18. Provider's knowledge of customer operations and vice versa - each party has a

clear understanding of the capabilities and limitations of those involved.

19. Provider's knowledge of the external or competitive environment - the provider has knowledge of competitors, industry regulations, political and market conditions.

20. Sharing of benefits and risks - an incentive program is established which involves the sharing of benefits and risks between the provider and buyer for any cooperative efforts.

21. Sharing of common goals (value consistency) - matching of the provider's and buyer's corporate cultures and philosophies.

22. Sharing of facilities and human resources - the provider and buyer agree to share physical facilities and employees.

23. Sharing of relevant information - establishing information systems, procedures, and meetings that involve the sharing of information between the buyer and provider.

24. Timeliness - services and information are provided to the buyer in a prompt and timely fashion.

25. Total organizational involvement - there are multiple levels of commitment by both the provider and buyer (including the commitment of top management).

APPENDIX B: Invitation Letter

尊敬的领导:

Dear:

您好! 我叫陈洁, 我现 在新西兰梅西大学攻读硕士学位。目前我正在做一项第三方物流在中国的应用情况的研究。学习的目的就是需要调查目前第三方物流在中国的应用情况。我相信此项研究的结果对我国第三方物流也会起到积极的作用。作为中国有影响的物流专家和管理者, 您的意见对于我的研究非常重要。如果你能抽出五分钟时间填写这份问卷调查, 我将非常感谢。调查的结果仅供本次学习统计分析所用, 绝不对外泄露所填写的内容。请您安心做答。

My name is Jie Chen. I am a master's student at Massey University in New Zealand. I am currently conducting a research study of the use of third party logistics services in China. The purpose of this study is to investigate the current usage of Third Party Logistics services in Chinese firms. Your opinion is very important to the success of my research. Please be kind enough to spare five minutes of your valuable time to complete the questionnaire. Research findings will be used for the purpose of this study. Your response will be treated with the strictest confidence-only aggregate results will be used.

请点击以下链接开始我们的问卷调查

Please click the link below to start out survey

http://www.surveymonkey.com/s/3PL_in_China

如果您希望得到一份调查结果,请把您的姓名和邮箱地址留在问卷调查的最后, 我会尽快电邮给您。感谢您对本次调查做出的贡献, 谢谢您的合作。

If you wish to receive a copy of my results, please leave your name and email address at the end of survey. I will reply you as soon as possible. Thank you for your valuable assistance to this research effort.

此致敬礼 Kind Regards

陈洁 Jie Chen

Massey University

College of Logistics and Supply Chain Management

Private Bag 102904, North Shore, Auckland, New Zealand

导师 Supervisor: Dr. Norman E. Marr

学生 Student: Jie Chen ,电话: (0064)212326877

邮箱 E-mail: chenjie0709@hotmail.com

APPENDIX C: Questionnaire-Survey on the Use of 3PL in China**第一部分：基本资料****Part One: General information of the company**

1. 公司的员工总数 The total number employees of your company:

2. 行业类型 Main Business Category:

☐ 零售业 Retail

☐ 计算机 IT

☐ 制造业 Manufacturing

☐ 食品 Food industry

☐ 高科技 High Tech

☐ 医疗业 Healthcare

☐ 纺织服装业 Textiles

☐ 物流 Logistics

☐ 电子 Electronic

☐ 其它（请填写） Other (please specify)

3. 贵公司位于中国的哪个地区（可多选） Which part of China is your company located? (You may select more than one).

☐ 华东 Eastern part of China

☐ 西北 North-western part of China

☐ 华南 Southern part of China

☐ 东北 North-eastern part of China

- ☐ 华北 Northern part of China ☐ 西南 South-western part of China
- ☐ 华中 Central part of China

4. 贵公司 2009 年的销售额大概是（¥百万）What is the annual sales revenues of your company (¥millions) in 2009?

- ☐ <1 ☐ 20.1-50
- ☐ 1.1-5 ☐ 50.1-100
- ☐ 5.1-10 ☐ 100+
- ☐ 10.1-20

第二部分：使用或没有使用第三方物流服务的原因

Part two: Reasons for outsourcing/not outsourcing logistics activities

5. 贵公司目前是否使用第三方物流的服务？Does your company use third party logistics (3PL) services currently?

- ☐ 是的 Yes
- ☐ 没有 No

6. 什么是贵公司选择第三方物流服务的原因？（可多选）.What are the main reasons for using 3PL services? (You may select more than one)

- ☐ 降低成本 Cost reduction
- ☐ 专注于公司的核心竞争力上 Focus on core strengths
- ☐ 提高客户服务质量 Improve customer service
- ☐ 提高灵活性（技术或服务上的）Provides flexibility

- ☐ 更多物流方面的专家或设施 More logistics expert/equipment
- ☐ 减少库存 Reducing inventory
- ☐ 扩大市场范围 Access to new markets
- ☐ 提高效率 Improve efficiency
- ☐ 利用率的提升（资金或人员 Improve utilization (budget or staff)
- ☐ 其它（请填写） Other (please specify)

7. 为什么贵公司没有使用第三方物流（可多选）. What are the main reasons for not using 3PL services? (You may select more than one).

- ☐ 失去对物流方面的控制 Loss of control of logistics
- ☐ 物流是本公司核心优势之一 Logistics is one of our core competencies
- ☐ 很难查明实际的费用 Ascertaining the true cost
- ☐ 对本单位物流员工的士气有负面的影响 A negative impact on employee morale
- ☐ 成本价 Price of outsourcing activities
- ☐ 很难得到公司的充分或适当的支持 Difficulty in obtaining organizational support
- ☐ 本公司有更多的物流专家 Have more experts than 3PL company
- ☐ 其它（请填写） Other (please specify)

第三部分：第三方物流的使用范围

Part Three: Extent of use of the third party logistics services

8. 贵公司大概有百分之多少的总物流预算用于第三方物流？What is the approximate percentage of total logistics budget allocated to the main 3PL providers?

☐ <20% ☐ 20-39% ☐ 40-59% ☐ 60-79% ☐ >80%

9. 第三方物流服务在贵公司的适用范围是在本国还是在国际使用？Is your company using 3PL services for domestic purposes or international purposes?

☐ 仅为本国使用 Domestic only
☐ 仅为国际使用 International only
☐ 都有 Both

10. 贵公司使用的第三方物流服务都包括以下哪些（如未使用此服务请选择N/A）？请您评价对他们服务的满意度。How do you evaluate the following third party logistics services provided in your company? Select N/A if the service has not been used.

	未使用 N/A	非常失望 Very Dissatisfied	失望 Dissatisfy	既不失望也 不满意 Neither	满意 Satisfied	非常满意 Very Satisfied
a. 仓库管理 Warehouse management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. 集中运输/拼装运 输 Shipment consolidation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. 船队/车队的管理 Fleet management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. 接单发货，履行 订单 Order fulfilment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. 标示和包装 Label and packing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. 承运人选择/运送 安排 Carrier selection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. 费率协商Rate negotiation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

h.商品组装Product assembly and installation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i.运输Transportation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j.存货补充Inventory replenishment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k.通关服务/关务代理Custom clearance and brokerage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l.单据的审查与支付Freight bill auditing / payment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m.提供物流管理信息系统 Logistics information system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n.其它 Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
请填写 (please specify)						
<input type="text"/>						

11. 贵公司目前使用了多少家第三方物流公司？How many 3PL services providers does your company currently use?

12. 贵公司使用第三方物流服务有多长的时间？How long has 3PL service been used in your company?

☒ < 1 年 year ☒ 1-3 年 years ☒ 4-5 年 years ☒ >5 年 years

13. 请问贵公司与目前最主要的第三方物流公司所签订的合同是多长时间？（如果没有签订合同请选择 N/A）What is the length of your current primary/main third party contracts? （If no contracts is in place, please choose N/A）

☐ N/A ☐ < 1 年 year ☐ 1-3 年 years ☐ 4-5 years ☐ >5 年 years

第四部分：关于选择第三方物流公司的标准

Part Four: Decision making process (selection criteria of choosing 3PL providers)

14. 下面哪些是贵公司选择第三方物流公司的主要标准？请填写您认为这些标准的重要性。 Which of the following factors are the main selection criteria of choosing 3PL providers in your company and how would you rate these factors?

	完全不重要 Very unimportant	不重要 Unimportant	既不是不重要 也不是重要 Neither	重要 Important	非常重要 Very important
a. 服务质量 Quality of services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. 成本 Price	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. 信誉 Reputation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. 经验 Experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. 员工士气 Employee morale	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. 信息技术能力 Information technology capability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. 专家或技术性的员工 Expertise or skilled staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. 物流公司的核心优势 Core competencies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. 财务状况的稳定性 Financial stability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. 其它 other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

请填写 (please specify)

15. 什么是贵公司评估第三方物流公司的工作表现的标准？(可多选) What are the criteria for evaluating the performance of your company's contract providers? (You may select more than one)

- ☐ 运输中的出错率 Shipment errors ☐ 库存缺货次数 Stock outs

- ☐ 是否准时运输 On-time shipment ☐ 任务完成率 Fill rates
- ☐ 客人的投诉率 Customer complaints ☐ 订货周期时间 Cycle time
- ☐ 其它（请填写）Other (please specify)

16. 以下哪些是使用第三方物流服务后对贵公司产生的影响？您认为他们对公司有怎样的影响？What has the impact on your company been after using 3PL services? And how would you rate the level of the impact?

	非常负面 Very Negative	负面 Negative	既不是负面也不是正面 Neither	正面 Positive	非常正面 Very Positive
a. 销售收入 Sales revenue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. 物流系统的表现 Logistics system performance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. 员工士气 Employee morale	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. 减少库存量 Reducing inventory levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. 按时发货 On time delivery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. 扩大市场的范围 Extending geographic reach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. 客户的满意度 Customer satisfaction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. 得到新的客户 Acquiring new customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. 其它 other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

请填写 (please specify)

17. 在和第三方物流公司合作后贵公司是否有裁掉一些与物流相关的部门或职

务？如果是的，请填写多少。Did your company eliminate any positions through changing to use of a 3PL service? If yes, how many?

☐ 没有 No

☐ 是的 Yes

请填写 (please specify)

18. 在使用第三方物流服务后是否需要重新培训公司物流方面的员工？如果是，请选择重新培训的主要原因。Has there been any retaining of logistics employees after implementing of 3PL services? if yes, what were the main reasons for retraining? If no, please choose N/A

☐ 不需要 N/A

☐ 提高技术 Upgrading skills

☐ 熟悉新的科技或技术 Familiar with new technologies

☐ 提升沟通技巧 Improve communication skills

☐ 熟悉新的规章制度 Familiar with different rules/management

☐ 提升适应新环境的能力 Improve the ability to adjust to new environment

☐ 其它 Other (please specify)

第六部分：第三方物流服务在中国的发展趋势

Part Six: Future trend of logistics services in China

19. 您怎样评价目前你们公司所使用的最主要的第三方物流服务公司？How would you rate the overall level of satisfaction with your main 3PL providers?

☐ 非常不满意 Very dissatisfied

☐ 满意 Satisfied

☐ 不太满意 Dissatisfied☐ 非常满意 Very satisfied

20. 目前您是否希望出现一些现在市场上所没有的第三方物流服务？ Would you like to have any 3PL services that are not available in the market yet?

☐ 没有 No☐ 有（请填写） Yes, please specify

21. 您是否会在未来对于第三方物流服务的使用情况做出什么改变？ How would you modify the use of 3PL services in the future?

☐ 极度减少 Substantially decrease☐ 适度减少 Moderately decrease☐ 没有变化 No change☐ 适当的增加 Moderately Increase☒ 极度的增加 substantially increase

非常感谢您完成本次问卷调查！

Thank you for your time!

如果您希望得到一份调查结果，请您在这里留下您的姓名和邮箱地址

If you would like to have a copy of survey results, please leave your name and email address here:

APPENDIX D: ANOVA: 3PL Services & Length of Service Used 1

3PL services		Sum of Squares	df	Mean Square	F	Sig.
Warehouse Management	Between Groups	32.550	4	8.138	3.319	.017
	Within Groups	132.399	54	2.452		
	Total	164.949	58			
Shipment Consolidation	Between Groups	6.413	4	1.603	.389	.816
	Within Groups	222.570	54	4.122		
	Total	228.983	58			
Fleet Management	Between Groups	12.543	4	3.136	1.372	.256
	Within Groups	123.457	54	2.286		
	Total	136.000	58			
Order Fulfillment	Between Groups	16.487	4	4.122	1.685	.167
	Within Groups	132.089	54	2.446		
	Total	148.576	58			
Label and Packing	Between Groups	20.796	4	5.199	1.257	.298
	Within Groups	223.374	54	4.137		
	Total	244.169	58			
Carrier selection	Between Groups	11.906	4	2.976	1.319	.275
	Within Groups	119.612	53	2.257		
	Total	131.517	57			
Rate negotiation	Between Groups	5.765	4	1.441	1.168	.335
	Within Groups	66.642	54	1.234		
	Total	72.407	58			
Product Assembly and Installation	Between Groups	15.275	4	3.819	2.745	.038
	Within Groups	75.132	54	1.391		
	Total					

APPENDIX E: ANOVA: 3PL Services & Length of Service Used 2

3PL services		Sum of Squares	df	Mean Square	F	Sig.
Transportation	Between Groups	5.277	4	1.319	1.007	.412
	Within Groups	70.757	54	1.310		
	Groups					
	Total	76.034	58			
Inventory Replenishment	Between Groups	8.240	4	2.060	.901	.470
	Within Groups	123.489	54	2.287		
	Groups					
	Total	131.729	58			
Custom clearance and brokerage	Between Groups	20.203	4	5.051	1.679	.168
	Within Groups	162.475	54	3.009		
	Groups					
	Total	182.678	58			
Freight bill auditing/payment	Between Groups	3.911	4	.978	.589	.672
	Within Groups	89.614	54	1.660		
	Groups					
	Total	93.525	58			
Logistics Information System	Between Groups	5.240	4	1.310	.511	.728
	Within Groups	138.489	54	2.565		
	Groups					
	Total	143.729	58			
Other (please specify)	Between Groups	1.612	4	.403	.327	.858
	Within Groups	66.489	54	1.231		
	Groups					
	Total	68.102	58			

