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# **The Usage of Third Party Logistics in New Zealand**

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**A thesis presented in partial fulfillment of the requirements  
for the degree of Master in Applied Science in Logistics and Supply Chain  
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## **ABSTRACT**

The aim of this research is to investigate the use of third party logistics in New Zealand companies from the users' perspective and to identify the improvement opportunities in the New Zealand environment.

The empirical research is used to investigate the reasons for undertaking or not outsourcing logistics activities in New Zealand companies; to investigate the extent of use of third party logistics services in New Zealand and the influence of firm sizes and different industries on different aspects of 3PL (third party logistics) practices; to investigate critical success factors and attributes of selecting and evaluating 3PL service providers by users of 3PL in New Zealand; to establish the impact of usage of 3PL providers on New Zealand companies; to evaluate the satisfaction level of New Zealand 3PL services; to investigate the future plans of current 3PL users in New Zealand.

The results showed that 3PL has been accepted by New Zealand organizations; with more than half of the respondents using 3PL. Current users accepted that 3PL allows them to gain a number of benefits and believe that 3PL has more positive impacts than negative. With a high level of satisfaction, a large number of user firms are likely to maintain and moderately increase the use of 3PL in the near future.

The results of this study provide useful information for both 3PL providers and users. Providers should be aware of the most frequently used services, the potential trend, and develop their capabilities accordingly in terms of these future requirements. The experience of the firms in this study also provides insights as to the benefits of outsourcing logistics activities and how to plan for implementation for 3PL users.

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# **1. Chapter 1 – INTRODUCTION**

## **1.1 Introduction**

The purpose of this chapter is to set out the background of the subject to provide a general overview and to offer an outline of the study undertaken. The aim is to investigate the status of third party logistics (3PL) in New Zealand. The objectives and contents for this research are based on reviews of previous researches in similar circumstances and relevant papers. This research however is bounded by limitations that are identified and explained subsequently.

## **1.2 Background**

### **1.2.1 The increased importance of logistics and supply chain management**

Logistics and supply chain management have become increasingly important over the last two decades. Over that period the conditions for doing businesses have changed significantly. Globalisation, new technologies and consumer demands have driven companies to an extremely competitive and demanding market (Rushton & Walker, 2007). Companies seek ways to adapt to the ever changing processes in order to survive successfully in the market. All of these changes have affected companies' supply chains and logistics requirements. Therefore, logistics and supply chain performance is recognized as a strategy for improving competitiveness by improving customer value and reducing cost (Mentzer, 2004).

### **1.2.2 The growth of third party logistics**

Outsourcing of the logistics function is widely prevalent all over the world due to the growth of business dynamics. A company may consider the following options in order to handle its logistics activities effectively and efficiently (Sahay & Mohan, 2006). It can provide the in-house function by servicing the changes. For example, warehouses, trucks and terminals are owned by their own respective company. A company can be made to manage everything from purchasing to delivery and after sales service. It can

own its own logistics subsidiaries through setting up or buying a logistics firm. It can outsource the logistics function to third party logistics (3PL) service providers and buy the service of interest. Currently, there has been a growing interest in the last option – third party logistics (3PL). Its recognition is growing around the world and more and more companies are outsourcing mainly transportation, warehousing and other logistics function activities to 3PL service providers (Rushton & Walker, 2007). According to the survey of Lieb and Bentx (2005), about 80 percent of the Fortune 500 companies used 3PL services and there is an increasing trend of their logistics operating budgets to 3PL providers.

There is a number of reasons for different companies to outsource logistics such as gaining a source of competitive advantage (Göl & Catay, 2007), reducing cost and reducing capital investment (Aktas & Ulengin, 2005), focusing on their core competency, increasing customer satisfaction, globalization, increasing speed to market, improving service quality, fostering innovation, increasing revenue, reducing staff headcount and improving supply chain management (Simchi-Levi, Kaminsky, & Simchi-Levi, 2008).

Moreover, the 3PL markets play an important role in the macro economy. It has grown at a rate of greater than 20 percent per year since the mid-1990s (Gordon, 2003). Globally around US \$ 148 billion is spent on outsourced contract logistics, with a further US \$ 117 billion spent with forwarders (Transport Intelligence, 2006). However, considering the fact that the 3PL market in the US is about 10% of its annual logistic cost, there is still immense potential for growth of 3PL in the US in particular, and in the world in general.

### **1.3 Problem definition**

The export and import potential in New Zealand is strong and will continue to grow in the future (Bascand, 2008). Therefore, the 3PL industry is expected to play a significant role in this country. Nevertheless, there is not much detailed research that has been conducted about 3PL in New Zealand. One study made by Sankaran, Mun, and Charman (2002) was to develop theoretical insights into effective logistics

outsourcing that are relevant to the New Zealand context through in-depth interviews with two third party logistics providers and two client organizations. Despite so, there has been no comprehensive study reported in the literature that has focused on third party logistics services in New Zealand.

In the last decade, a lot of survey-based papers have been published in the academic journals to measure 3PL usages in different countries. These studies have been carried out in North America (Lieb & Randall, 1996, 1999), Europe (Lied, Millen & Van Wassenhove, 1993; Wilding & Juriado, 2004), Australia (Dapiran, Lieb, Millen, & Sohal, 1997; Sohal, Millen, & Moss, 2002), Malaysian (Sohail & Sohal, 2003), Singapore (Bhatnagar, Sohal & Millen, 1999), India (Sahay & Mahan, 2006a), and Saudi Arabia (Sohail & Al-Abdali, 2005). Moreover, these studies have been taken into account to identify the major issues, industry dynamics, current status and future prospects of the 3PL industry from both users and service providers. However, most of these studies are descriptive in nature (Selviaridis, & Spring, 2007) and statistical analysis of the survey data is not involved.

Due to such lack of information, this study is designed to investigate the improvement of 3PL industry in New Zealand. This thesis reports a survey of the New Zealand 3PL industry from the perspectives of service users, and tries to address the concerns about descriptive and statistical analysis for deeper understanding.

## **1.4 Aims and objectives**

The aim of this research is to investigate the use of third party logistics in New Zealand companies from the users' perspective and to identify the improvement opportunities in the New Zealand environment.

In order to achieve the aim of this research, the following six supporting objectives are established.

- Objective 1  
To investigate the reasons for outsourcing logistics activities and also the reasons for not outsourcing logistics activities in New Zealand companies.
- Objective 2  
To investigate the extent of use of third party logistics services in New Zealand and the influence of firm sizes and different industries on different aspects of 3PL practices.
- Objective 3  
To investigate critical success factors and attributes of 3PL service providers which are considered most important for employing, evaluating and selecting 3PL by users of 3PL in New Zealand.
- Objective 4  
To establish the impact of usage of 3PL providers on New Zealand companies.
- Objective 5  
To evaluate the customer satisfaction level of New Zealand 3PL services.
- Objective 6  
To investigate the future plans of current 3PL users in New Zealand.

These objectives are of interest because they give light to the different angles and facilitate the provision of a broad view of the usage of third party logistics services. The retrieved information can be used in statistical analysis for deeper understanding.

## **1.5 Limitation of study**

This research focuses only on the third party logistics services from the users' perspective. Moreover, this research study employs a convenience sample. It is prone to the various biases and is not a generalised study. This study therefore is not a representative of the true population due to the limitation of funds and timeframe.

## **1.6 Outline of the thesis**

### **Chapter 1 – Introduction**

The purpose of this chapter is to set out the background of the subject to provide a general overview and to offer an outline of the study undertaken. The aim is to improve the third party logistics industry in the New Zealand environment. The objectives and contents for this research are based on reviews of previous researches in similar circumstances and relevant papers. This research however is bounded by limitations that are identified and are discussed later.

### **Chapter 2 – Industry review**

This chapter provides a brief history of 3PL industry and describes the trends and services offered in 3PL industry all over the world. One of the most important elements within the chapter is the recognition of the areas of growth and changes concerning logistics outsourcing. The discussion focuses on worldwide (North America, Western Europe, Asia Pacific, Australia and New Zealand).

### **Chapter 3 – Literature review**

This chapter provides a theoretical and empirical framework for third party logistics. It begins with an examination of the definitions of supply chain management, logistics and third party logistics. These concepts lay the foundation for the scope of this research and also establish a vision of how third party logistics is viewed in relation to other operations of a company. Logistics outsourcing is a focus in this literature review. The literature review shows the trend in doing logistics outsourcing together with its reasons and pitfalls in theoretical background and as a consideration in making a decision to outsource the logistics functions. Furthermore, current practices and the experience of the implementation of logistics outsourcing as well as an insight as to what the future trends are likely to be in some countries are given. This chapter states the theories and previous researches related to the formulated questions.

### **Chapter 4 – Methodology**

This chapter explains the quantitative methods that have been used for conducting the research and for the analysis of the data used in this study. It describes the study sites

and participants, the operational procedures used for this study, the instruments for data collection, the selection of data for analysis, and the methods of questionnaire analysis for this study.

#### Chapter 5 – Survey results and Discussions

This chapter presents the questionnaire results. A respondent profile is analyzed first, followed by descriptive results that summarize respondents' answers to the questions used in the analysis. It also shows some trends like the extent of usage of 3PL services, the reasons of outsourcing and not outsourcing, the most common outsourced logistics functions and the potential, and the impact of the usage of 3PL services etc. Then a number of statistical results from independent-test, ANOVA and Chi-square are presented to provide in-depth investigation of the relationships between different variables. This chapter demonstrates the retrieved empirical findings received from the conducted survey. In addition, all percentages shown in this chapter do not contain missing values.

#### Chapter 6 – Conclusions and Recommendations

This chapter summarizes the research findings, draws conclusions from those findings based on the research objectives, and indicates some of the implications of the findings. Limitations of the study and recommendations for further researches in this field are also considered.

## **2. Chapter 2 – INDUSTRY REVIEW**

### **2.1 Introduction**

This chapter provides a brief history of 3PL industry and describes the trends and services offered in 3PL industry all over the world. One of the most important elements within the chapter is the recognition of the areas of growth and changes concerning logistics outsourcing. The discussion focuses on worldwide (North America, Western Europe, Asia Pacific, Australia and New Zealand).

### **2.2 Brief history of 3PL industry**

In the 1970s and 1980s, a number of large organizations began to outsource some non-core activities in order to achieve economies of scale and to protect profit (Lonsdale & Cox, 2000). At that time, companies started to contract out transportation and physical distribution activities such as warehousing and materials handling. During the 1990s, organizations outsourced more activities such as accounting, human resources, data processing, security and maintenance because of under cost pressures in a more global environment (Corbett, 2004). While that was happening, transportation and distribution companies started to see an opportunity to also operate other parts of the logistics process such as stock control, order processing and returns operations (Rushton & Walker, 2007). It was at this period that the industrial term ‘3PL’ was then first mentioned.

### **2.3 Worldwide**

In the past few years, the extent of businesses and industry globalization has expanded tremendously. The third party logistics industry in New Zealand and worldwide is currently a fast changing area and is in constant growth (Rushton & Walker, 2007). The Cap Gemini (2004; 2007; 2008) annual third party logistics studies and a number



of other previous studies in specific countries have addressed the trends and issues of growth in the 3PL industry in detail.

### **2.3.1 Trends and services offered in 3PL industry**

- Overall, the 3PL industry is a growing industry. According to the Cap Gemini's 9<sup>th</sup> (2004) and 12<sup>th</sup> (2007) Annual Report on 3PL trends, there is a continuous increase from 1996 to 2007 in the percentage of 3PL usages by companies all over the world. During the first six years (1996-2001), about 72 percent of the respondents described themselves as users of 3PL services. Since then this has increased to 82 percent in 2007.
- Recent studies had also shown the high percentage of respondents using 3PL services in different countries. The respondent companies using 3PL services in following countries are over 60 percent: USA (79%) (Lieb & Bentz, 2005), Mexico (78.7%) (Arroyo, et al., 2006), Saudi Arabia (63.5%) (Sohail & Al-Abdali, 2005), Malaysia (63%) (Sohail & Sohal, 2003) and Singapore (60.3%) (Sohail, et al., 2006). Around half of the respondent companies use 3PL services in Western Europe (52%) (Millen, Sohal, Daparin, Lieb, & Van Wassenhove, 1997), India (55.4%) (Sahay & Mohan, 2006), and Turkey (47%) (Aktas& Ulengin, 2005). From the data above, those companies outsourcing logistics services mostly indicated that their firms employed the services of more than one 3PL provider in all of the countries.
- Lieb and Bentz (2005) notice the most frequently cited services to be warehousing, freight bill payment, freight charge auditing, customs clearance, pickup and delivery, freight consolidation, consulting, information technology/EDI capability; inter modal services, order picking and packaging in North America.
- The Cap Gemini's 12<sup>th</sup> Annual Report (2007), has mentioned the most common logistics services: domestic transportation, international transportation, warehousing, customs clearance and brokerage, forwarding, shipment consolidation, product labeling, packaging, assembly, kitting, transportation

management, reverse logistics, cross-docking, freight bill auditing and payment, fleet management, supply chain consultancy, order entry, processing and fulfillment, customer service, information technology, and Lead Logistics Provider (LLP)/Fourth Party Logistics (4PL) services.

Table 2.1: Outsourced logistics services

Outsourced Logistics Service	All Regions	North America	Europe	Asia Pacific	Latin America
Domestic Transportation	83%	77%	91%	85%	79%
International Transportation	79	68	87	89	71
Warehousing	69	71	68	73	60
Customs Clearance and Brokerage	67	65	58	78	64
Forwarding	51	51	51	60	38
Shipment Consolidation	43	44	44	45	37
Product Labeling, Packaging, Assembly, Kitting	34	31	33	34	41
Transportation Management	32	33	41	27	24
Reverse Logistics	31	32	33	29	29
Cross-Docking	31	36	35	26	25
Freight Bill Auditing and Payment	25	51	18	14	10
Fleet Management	15	11	21	12	13
Supply Chain Consultancy	14	18	11	11	17
Order Entry, Processing and Fulfillment	14	13	7	15	28
Customer Service	13	10	10	17	18
LLP/4PL Services	11	13	11	10	10

Source: Cap Gemini, 2007

- Table 2.1 shows the most frequently outsourced logistics services, are transportation (domestic 83% and international 79%, respectively), and warehousing (69%) (Cap Gemini, 2007). In general, the preferred outsourcing activities are transport and warehousing related functions. Other studies also seem to stress the prominence of transportation and warehousing services. They also identify other activities with the potential of growth (Dapiran et al, 1996; Bhatnagar et al., 1999; Sohal et al., 2002; Sankaran et al., 2002; Sohail & Sohal, 2003).

- Millen et al. (1997) identified the most frequent 3PL services used by West European firms as Warehouse management/operation (78%), Shipment consolidation (56%) and carrier selection (52%). According to Wilding and Juriado (2004)'s study, firms within the European consumer goods industry most often outsourced transportation (primary transport 86% and secondary transport 74%) and storage (60%).
- In the mid 1990s, the most frequently used contract logistics services by Singaporean firms are shipment consolidation which is outsourced by more than one half (55.3%) of the firms. Other major outsourced activities include order fulfilment (40.8%), carrier selection (40.8%) and freight payment (39.5%) (Bhatnagar et al, 1999). The functions that are least outsourced include product assembly or installation, order processing and inventory replenishment.
- In Saudi Arabia (Sohail & Al-Abdali, 2005), functions relating to carrier selection have been outsourced by almost one-third of the firms, shipment consolidation activities have been outsourced by about 28 percent of the respondents. Other major logistics functions outsourced include freight payment, order fulfilment, and product assembly and installation.
- In India, out of the total number of respondents, more than half the organizations have already outsourced logistics activities such as transportation, and custom clearing and forwarding. The other important services that are already being outsourced are import and export management, warehousing, labelling and packing, fleet management and consolidation (Sahay, et al, 2006).
- The more sophisticated 3PL services like outsourcing customer facing activities and other strategic services remain substantially less common. However, during the last 10 years other services have increasingly been outsourced including customs clearance and brokerage (67%), forwarding (52%), and shipment consolidation (43%) (Cap Gemini, 2007).

- “Outsourcing of bill auditing and payment (51%) tends to be much higher for organizations in North America than organizations in the other regions studied (i.e., 18% in Europe and 14% in Asia Pacific, 10% in Latin America)” (Cap Gemini, 2007, p.12).

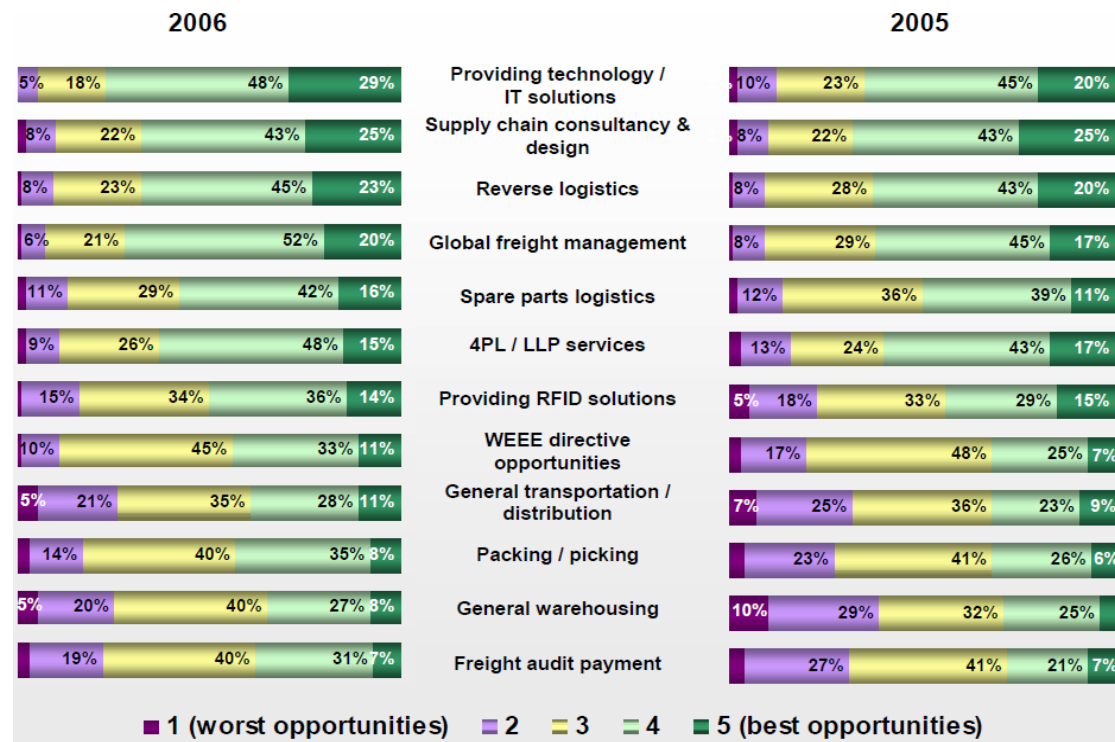
Overall, these findings indicate the importance of transportation, warehouse and administration related services. It confirms the continuing growth of logistics outsourcing. There also appears to be a weak demand for value adding solutions such as information systems, 4PL and manufacturing related services (van Hoek, 2000).

### **2.3.2 Future 3PL industry trends**

- There is a clear indication that 3PL was mostly used previously for transportation and warehouse functions. There has since been a trend toward 3PL outsourcing to not only include transportation and warehouse functions but also strategic supply chain (Capgemini, 2004). 3PL service providers continue to shift toward a one-stop model to provide comprehensive services and control more of the supply chain and the surveys in North America note opportunities for 3PL companies including supply chain integration, IT integration and customer collaboration as global expansion (Lieb & Bentz, 2005).
- In the future, the customer will be expecting more IT-based services such as visibility tools, web-enabled communication, transportation management (execution) system, and warehouse management systems (Capgemini, 2007).
- There is a need for linking both technology and the logistics services outsourced (Brewer, Button, & Hensher, 2001). For instance, “providers of transportation management services are likely to provide transportation management technology as part of their service offering” (Capgemini, 2007, p.26)
- Figure 2.1 shows the opportunities for the growth in the European 3PL industry. Providing technology or IT solutions was rated by 29 percent of companies as

having the best opportunity for growth, well up from 20 percent in 2005. This was followed by supply chain design (25 percent in both 2006 and 2005), reverse logistics (23% against 20% in 2005) and global freight management (20% against 17% in 2005) (Eyefortransport, 2006).

Figure 2.1: Opportunities for growth in the European 3PL industry

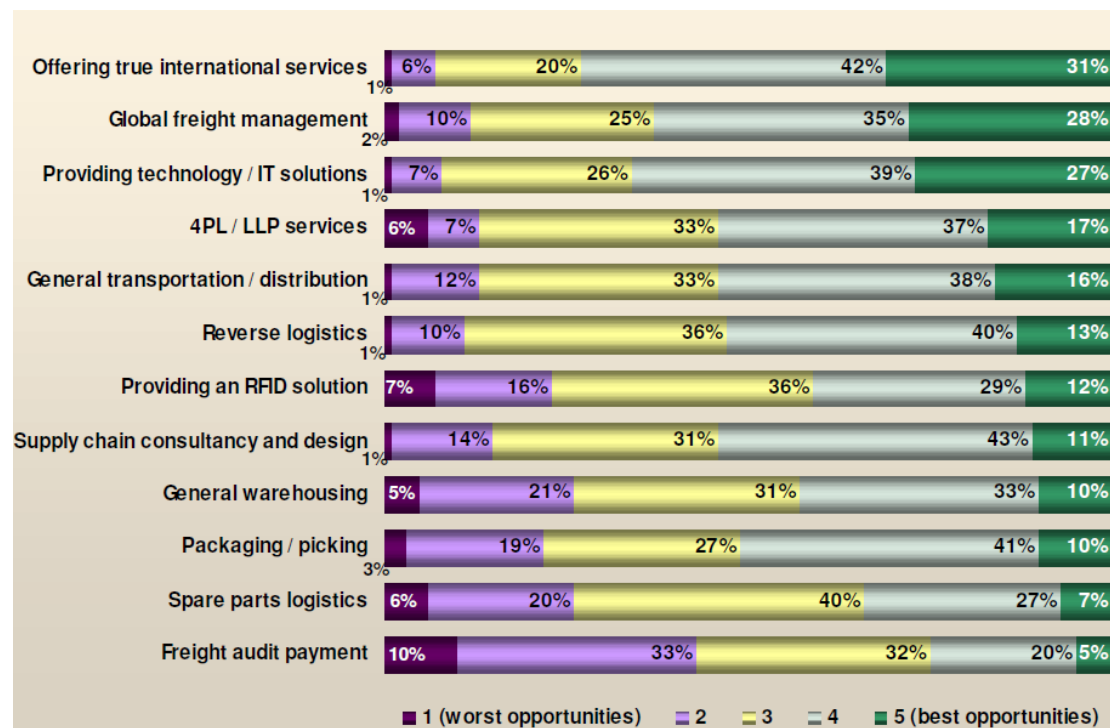


Source: Eyefortransport, 2006

- Figure 2.2 shows that the demand for true international services and global freight management presents the greatest growth opportunities for 3PLs in North America (93% and 88% respectively). The reasons for this are growing trends to outsource manufacturing and production activities to low-cost countries and globalization of the wholesale and retail marketplace (Eyefortransport, 2007a). The globalization of manufacturers has created the need for international supply chain services and 3PL service activities in the countries of source and destination are integrated with freight-forwarding services to establish an end-to-end supply chain solution (Rushton & Walker, 2007).

- In the US Survey (Eyefortransport, 2007a), the survey respondents see considerable growth opportunities in the provision of technology and IT solutions, and Fourth Party Logistics (4PL) and Lead Logistics Providers (LLP) services (93% and 87 % respectively). Furthermore, more than three-quarters of the survey respondents see huge growth opportunities in the provision of RFID solutions.

Figure 2.2: Growth opportunities in the US 3PL industry



Source: Eyefortransport, 2007a

- Reverse logistics is now an estimated US\$36 billion market, including damaged merchandise, seasonal inventory, restock, salvage, recalls, recycling, hazardous material, obsolete equipment disposition, and asset recovery across the entire supply chain (Reverse Logistics Association, 2008, on line). Many retailers seek new ways to develop or to enhance their return systems. In addition, the introduction of the Waste Electrical and Electronic Equipment (WEEE) directive in Europe is likely to stimulate significant growth in that region because it aims to encourage recovery, reuse and recycling of products (Rushton & Walker, 2007).

- Packaging service is a growing opportunity for 3PLs. Contract packaging is growing at a rate of 15-20% each year (Stephens, 2006). Manufacturers need flexible packaging services to support both their manufacturing and marketing strategies, and the globalization of manufacturing is driving this service and local customization through packaging (Rushton & Walker, 2007).
- Added value services, post-sales service and service parts logistics are all becoming rapidly growing important services (Rushton & Walker, 2007).
- Table 2.2 below shows almost unanimous (98%) in respondents' belief that green supply chain initiatives are somewhat or very important to their companies' futures (Cap Gemini, 2008). The solutions are considered in the Cap Gemini's 13<sup>th</sup> Annual Report (2008) including improving transportation and equipment efficiency, shifting modes, changing packaging, optimizing the network, and moving toward greener buildings. Therefore, green becomes an element in managing a supply chain, those outsourcing these functions unavoidably depend on 3PLs to help satisfy green goals.

Table 2.2: How important are "green" supply chain initiatives to your company?

Level of Importance	All Regions		North America		Europe		Asia Pacific		Latin America	
	Today	In The Future	Today	In The Future	Today	In The Future	Today	In The Future	Today	In The Future
Very Important	34%	73%	31%	66%	29%	74%	36%	79%	51%	77%
Somewhat Important	52	25	55	32	55	24	52	19	36	18
Not Important	14	2	14	2	16	2	12	2	13	5

Source: Cap Gemini, 2008

## **2.4 Australia**

### **2.4.1 Australian logistics markets**

The logistics industry in both Australia and New Zealand is relatively mature in support of the strong economies of the two countries. The logistics market in the two countries is estimated in excess of AU\$66 billion (US\$49 billion) per annum (Toll, 2008). The industry is made up of both strong local service providers and global providers, which both support domestic logistics activities and freight imports and exports. It is estimated that half of the logistics market is outsourced (Toll, 2008).

The Australian logistics industry is extremely competitive and has rapidly evolved as it has taken on the challenges of globalization, new production and supply-chain processes and technological advances. It is forecast that the size of the freight market in Australia will double over the next 15 years (Toll, 2008). Imports from China and other Asian countries are expected to grow, necessitating the use of integrated logistics solutions (Rushton & Walker, 2007).

### **2.4.2 Trends and services offered and future opportunities in Australian 3PL industry**

- Seventy five percent of the respondent companies in Australia are using 3PL services (Sohal, Millen, & Moss, 2002).
- Outsourcing is used most prevalently for fleet management (52%), warehouse management (43%), shipment consolidation (40%), carrier selection (38%) and order fulfilment (34%) (Sohal, Millen, & Moss, 2002).
- 90% of 3PL users were either “satisfied” or “very satisfied” with 3PL services in Australia (Gattorna, Selen, & Ogulin, 2004).
- Table 2.3 shows the outsourced logistics activities results from ALPHA survey in Australia (1 = not at all or low to 5 = very extensive or high). These results are



similar to the research findings in the USA. The most popular 3PL services are outbound transportation (4.70), inbound transportation (4.18), warehousing (3.07), fleet management and operation (3.00).

Table 2.3: Logistics activities outsourced in Australia

Activity	Mean rating
Outbound Transportation	4.70
Inbound Transportation	4.18
Warehousing	3.07
Fleet Management and operations	3.00
Shipment Consolidation	2.95
Order Fulfilment	2.85
Product returns	2.76
Logistics Information Systems	2.48
Carrier selection	2.28
Product Assembly/Installation	2.03
Rate Negotiation	1.95
Customer Spare parts	1.92
Freight payment	1.91
Inventory Replenishment	1.88

Source: Gattorna, Selen, & Ogulin, 2004, p.24

- Warehouse management/operations, carrier selection, order fulfilment, logistics information systems, freight payment and product assembly/installation are less likely planned to be outsourced in Australia (Sohal, Millen, & Moss, 2002).
- The ALPHA survey indicated that both 3PL providers and 3PL users have a tendency to increase the scale and scope of outsourcing in the future. Over two thirds of 3PL users noted they were either “likely” or “very likely” to increase the use of 3PL services over the next two years and this trend is consistent with reports from other regions of the world (Gattorna, et al., 2004).
- The ALPHA survey indicates that more 3PL users are looking for value-add solutions (Gattorna, et al., 2004).

- Most logistics service companies realized the importance of building strategic alliances or partnerships in order to maintain a competitive advantage in the marketplace. 3PL users seem to be looking for providers that can provide one-stop-shopping services rather than coordinating multiple 3PLs themselves (Gattorna, et al., 2004).

## 2.5 New Zealand

### 2.5.1 New Zealand economy

New Zealand has transformed its economy into an industrialized, free market and globally competitive economy (Rushton & Walker, 2007). Such dynamic growth has boosted real incomes, broadened and deepened the technological capabilities of the industrial sectors, and controlled inflationary pressures. The per capita income has risen for nine consecutive years and reached \$28,500 in 2008 in purchasing power parity terms (CIA, 2008). However, the economy has fallen into recession in 2008 and in line with its global peers, the central bank has cut its interest rates aggressively. The new government is responding with plans to raise productivity growth and develop infrastructure. New Zealand is heavily dependent on trade, especially in agricultural products, in order to drive growth (CIA, 2008). These are the New Zealand exports and imports facts and figures.

Table 2.4: New Zealand exports & imports facts and figures

Exports:	\$ 29.53 billion (2008 est.)
Exports – commodities:	Dairy products, meat, wood and wood products, fish, machinery
Exports – partners:	Australia 22%, US 11.5%, Japan 9.2%, China 5.3%, UK 4.6% (2007)
Imports:	\$31.11 billion (2008 est.)
Imports- commodities:	Machinery and equipment, vehicles and aircraft, petroleum, electronics, textiles, plastics
Imports – partners:	Australia 20.7%, China 13.4%, US 9.7%, Japan 9.5%, Singapore 4.9%, Germany 4.7% (2007)

Source: CIA, 2008

Globalization brings large opportunities for New Zealand companies. It is extremely important for New Zealand industry to access foreign markets since the size of the home market is relatively small. It relies on foreign trade which has been an important force behind the development of New Zealand into an industrialized nation with a high standard of living. Exports equate to about 22 percent of GDP (CIA, 2008). The foreign trade for New Zealand today is mostly with Australia. Trading countries such as United States, Europe, China and Japan are also important markets for New Zealand.

### **2.5.2 Trends and services offered and future opportunities in 3PL industry**

As mentioned briefly above, the 3PL industries in Australia and New Zealand are both quite similar. There has been limited research done regarding the 3PL industry in New Zealand. This is also one of the motivations to conduct this study.

- The logistics outsourcing industry in New Zealand has experienced growth and is predicted to continue expanding in growth (Eltringam, 1999).
- Research shows that 67% of survey respondents were using 3PL service (Gou, 2003).
- Gou (2003) indicated that the common outsourced logistics services in New Zealand were outbound transportation (78.9%), warehousing (52.6%), and cross-docking/shipment consolidation (47.4%).

### **3. Chapter 3 – LITERATURE REVIEW**

#### **3.1 Introduction**

This chapter provides a theoretical and empirical framework for third party logistics. It begins with an examination of the definitions of supply chain management, logistics and third party logistics. These concepts lay the foundation for the scope of the research and also establish a vision of how third party logistics is viewed in relation to a company's other operations. Logistics outsourcing is a focus in this literature review. The literature shows the trend in doing logistics outsourcing together with its reasons and pitfalls in theoretical background as a consideration in making a decision to outsource the logistics functions. Furthermore, current practices and the experience of the implementation of logistics outsourcing as well as an insight as to what the future trends are likely to be in some countries are given. This chapter states the theories and recent researches related to the formulated questions.

#### **3.2 Definitions of third party logistics**

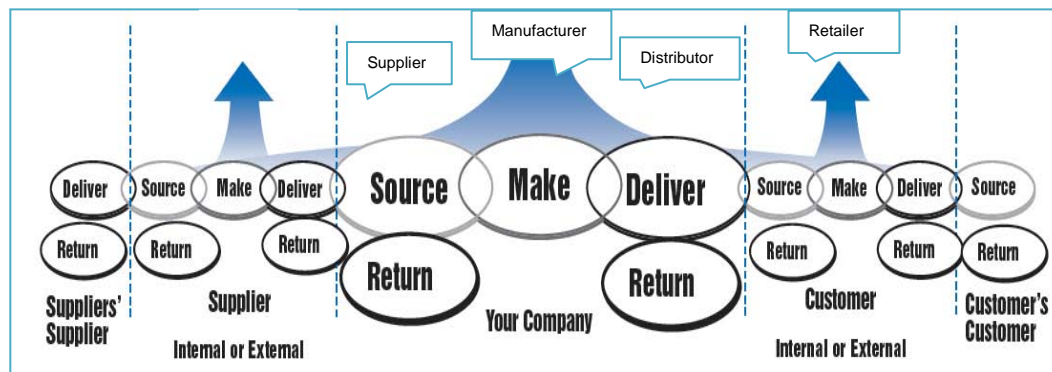
A brief discussion about the basic terms used in the thesis is presented below in order to understand the main task and studied topic thoroughly. The concepts are defined and an appropriate definition is developed relevant to the use in this thesis.

##### **3.2.1 Supply chain management**

In order to better understand the usage of third party logistics from the buyers' perspective, supply chain is reviewed in this research study.

“The supply chain encompasses all activities associated with the flow and transformation of goods from the raw materials stage (extraction), through to the end user, as well as the associated information flows” (Handfield & Nichols, 1999, p.2).

Figure 3.1: A chain of supply chains



Source: Supply Chain Council, 2009

A typical supply chain is shown in Figure 3.1. It includes different tiers of suppliers, manufacturer, distributors, retailers, and the end users. Each step in the process adds value and each stage in a supply chain is connected through the flow of products, information and funds, which move in both directions (Klobas, 1998). Usually raw materials are purchased and products are produced at the factories. These products are then shipped to distributors for intermediate storage, and later transported to retailers or customers (Schechter, 2002). However, some of these organizations do not have to exist in every supply chain for example Dell, which has no distributors and retailers (Chou, Tan, & Yen, 2004). The relationships between every two steps which directly connect organizations in the chain are “demand” and “supply” (Ross, 2004). All these stages in a supply chain are directly or indirectly involved in fulfilling customer requests (Hugos, 2006). Moreover, a member within a supply chain may be a member of another supply chain. Therefore, they are operating either in a supply network or supply web, rather than a supply chain (Trent, 2007).

Supply chain management is defined in a number of ways.

“Supply chain management is the integration of these activities through improved supply chain relationships, to achieve a sustainable competitive advantage” (Handfield & Nichols, 1999, p.2).

“Supply chain management is a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses, and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize system wide costs while satisfying service level requirements” (Simchi-Levi, Kaminsky, & Simchi-Levi, 2008, p.1).

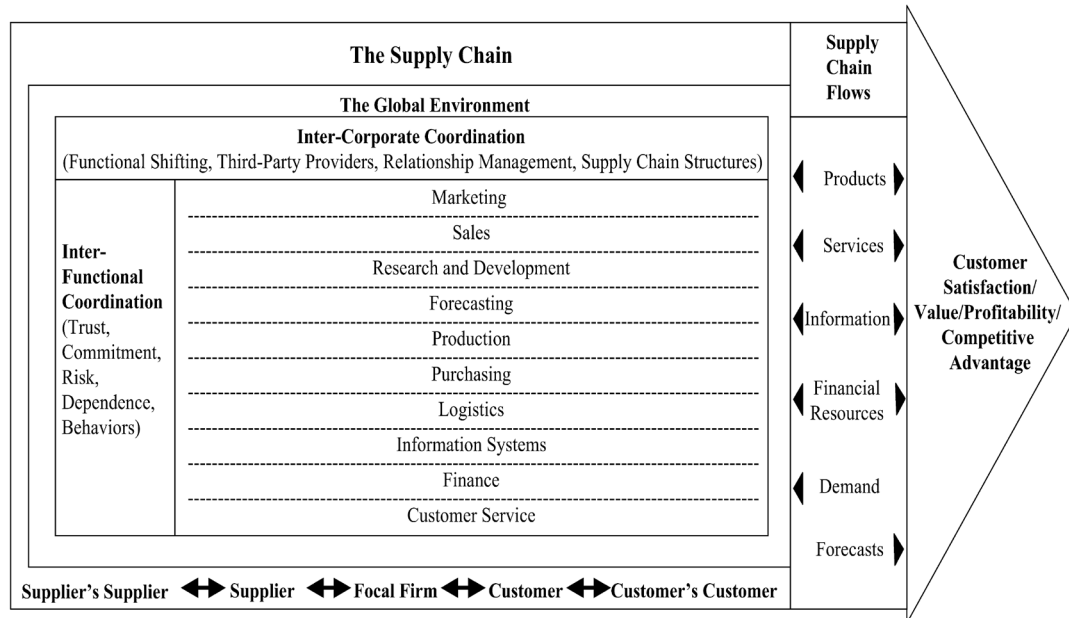
From above definitions, several key areas should be emphasized.

*Firstly*, the goal of supply chain management is to satisfy the ultimate customers, which in turn leads to sustainable supply chain competitive advantage by continuous balancing between responsiveness and efficiency of the entire supply chain (Kampstra, Ashayeri, & Gattorna, 2006). The activities of interest not only stay within the domain of one individual firm, but they also extend to the supply chain where many interorganizational activities are carried out. This ultimately improves the profitability of the supply chain and its members (Sadler, 2007). Supply chain profitability is gross profit to be shared by each member in the supply chain (Bowersox, Closs, & Cooper, 2007). Therefore, a supply chain success should be measured by total supply chain profitability or the customer satisfaction, not just an individual profit (Simchi-Levi, et al., 2008). In addition, to be efficient and cost-effective, supply chain management takes a systems approach rather than emphasizing a set of fragmented parts like just reducing inventories. The whole system wide costs are to be minimized from transportation and distribution to inventories of raw materials, work in process, and finished goods (Sarmah, Acharya, & Goyal, 2006). It is clear that the ultimate objective of every supply chain is to maximize the overall supply chain profitability.

*Secondly*, it is important to recognise that supply chain management involves a set of interrelated process management (Mentzer, 2001). Figure 3.2 shows that supply chain management includes the process of managing relationships, information, products, services and funds flow. The product flow is the movement of goods from a supplier to a customer, or the opposite way such as any customer returns or service needs (Mentzer, et al., 2001). The information flow includes current inventory levels, production and forecast changes, transmitting orders and updating the status of delivery, and the latest product design changes (Wisner & Stanley, 2008). The funds flow involves credit terms, payment schedules, and consignment and title ownership arrangements (Mangan, Lalwani, & Butcher, 2008). In addition, the supply chain

includes internal functions, upstream suppliers, and downstream customers from Figure 3.2.

Figure 3.2: A model of supply chain management



Source: Mentzer, et al., 2001

It is necessary to consider the suppliers' suppliers and the customers' customers because they have an impact on supply chain performance (Simchi-Levi, et al., 2008). Supply chains are actually a series of linked suppliers and customers. Every customer is in turn a supplier to the next downstream organization until a finished product reaches the ultimate end user. A third party logistics provider is performing the logistics activities between two of the companies (Mentzer, et al., 2001). Therefore, in this thesis, supply chain is the representation of the total network of points of activity from raw material to final consumer.

*Thirdly*, supply chain management requires integration and collaboration between all the parties in the supply chain to enhance the performance of the whole system (Lee, Kwon, & Severance, 2007) so that the supply chain remains competitive in the market. It requires partnerships to be built and to maintain long-term relationships between supply chain partners in order to improve the efficiency and competitive capacity of the supply chain (Knemeyer & Murphy, 2004). Moreover, mutually sharing

information (e.g. forecasts, inventory, marketing strategies) and channeling risks and rewards among the members in the supply chain are required to reduce uncertainty and enhance performance (Mentzer, et al., 2001). Furthermore, cooperation among these members of the chain towards a shared objective is required (Mentzer, 2001). This includes from planning to control activities to evaluate performance. Supply chain management requires all activities and functions to operate as one individual entity and be managed in a coordinated manner (Lambert & Cooper, 2000). It concerns upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole (Christopher, 2005). Therefore, it integrates and coordinates all the activities, material, financial and information flows of these relationships in order to maximize profitability of the supply chain for all parties in the chain. According to Bask (2001), an effective SCM includes creative thinking about how to integrate and perform logistics and manufacturing activities, and third party logistics providers can be seen as supportive supply chain members.

### **3.2.2 Logistics management**

- **Definition**

There is some confusion about the definition of logistics management because it has been called by a number of other names, such as business logistics, logistics, channel management, material management, distribution, physical distribution, industrial logistics, quick-response systems, logistics management, and supply chain management (Coyle, et al., 2003). What is common in these terms is that they deal with the management of the flow of goods or materials from point of origin to point of consumption. There is no agreement on a universal definition of logistics management. One widely adopted view in the recent studies (Mentzer, 2001, 2004; Ayers, 2006) is from the Council of Supply Chain Management Professionals (CSCMP).

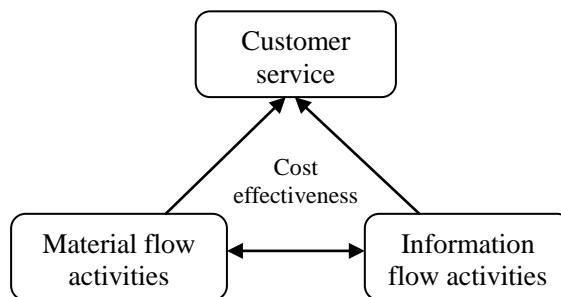
“Logistics management is that part of the supply chain management that plans, implements, and controls the efficient, effective forward and reverse flows and storage of goods, services, and related information between the point of origin to



the point of consumption in order to meet customers' requirements”(CSCMP, 2009, on line).

The above definition emphasizes the four key areas of logistics management. The primary objective of logistics management is to provide a certain level of customer service cost effectively through efficient management of material and information flows in the supply chain. These key areas of logistics management are illustrated in Figure 3.3. Logistics plays a major role in enhancing organizational competitiveness by improving the information and material flows along the supply chain (Gunasekaran, & Sarkis, 2008).

Figure 3.3: Cornerstones of logistics management



Source: Wollaston, 1995, p.5

This definition also clearly states that logistics is part of the supply chain management. In contrast to supply chain management, logistics management focuses on managing the flow of services as well as physical goods (Stock & Lambert, 2001). The products flow from the beginning of the chain where they exist as raw materials to the end where they are finally discarded. In this definition is also mentioned the importance of reverse flows and storage (reverse logistics). Logistics is a process which includes all the activities that have an effect on making goods and services available to customers when and where they wish to acquire them. In other words “logistics is the work required to move and position inventory throughout a supply chain” (Bowersox, et al., 2007, P. 4).

In the above definition logistics should be involved in all three activities - planning, implementing and controlling. “Logistics is the process that creates value by timing

and positioning inventory” (Bowersox, et al., 2007, P. 4). Earlier, logistics management is defined as being focused within an organization and its goal is to maximize the profitability of the organization through integrating the process and optimizing the flows of materials and supplies (Lee & Billington, 1992). Furthermore, logistics integrates a firm’s order management, inventory, transportation, warehousing, materials handling, and packaging, which can become a source of competitive advantage for supply chain management (Tan, 2001). In this case, integrated logistics can serve as a link and synchronize the whole supply chain to be a continuous process (Bowersox, et al., 2007). It is important to have effective supply chain connectivity. Therefore, the way logistics is performed can be a competitive advantage for the supply chain management.

- The important role of logistics

It is important to note the key role and impact of logistics in the company as well as in the economy of a country.

Logistics plays an important role for companies seeking to increase their competitive advantage and corporate profitability (Bagchi, 1996). Companies are forced to turn to logistics activities to improve the efficiency and effectiveness of their operations under growing pressure from both customers and shareholders (Rushton & Walker, 2007). They want to seek ways to decrease their costs and increasing performance in the same time. Furthermore, logistics is an important activity in facilitating the sale of virtually all goods and services. Sale of goods can not be achieved if they can not be delivered at the right time, to the right place, in the right condition, and with the right price. Therefore, improved logistics brings higher customer satisfaction.

All economic activities throughout the supply chain would suffer without smooth logistics (Lambert, Stock, & Ellram, 1998). Meanwhile, the improvement of logistics productivity can significantly improve the economy. Logistics is one of the major expenditures for businesses and therefore affects the economy. In US, the amount spent on business logistics is 10 times that spent on advertising, twice that spent on national defense and equal to that spent on medical care (Stock & Lambert, 2001). In

2005, the U.S. industry spent approximately US\$583 billion on transportation of freight and about US\$393 billion on warehousing, storage, and carrying inventory. Total logistics costs are up to about US\$1,183 billion. According to the 17<sup>th</sup> Annual State of Logistics Report (CSCMP, 2006, on line) logistics in the United States contributed approximately 9.5 percent of GDP in 2005 and average 9.6 percent of GDP between 1995 and 2005. Hundreds of billions of dollars are invested in logistics activities each year in an industrialized country like the USA.

Therefore, if all the organizations could improve their logistics productivity and efficiency by minimizing its input and maximizing its output, such savings would be significant. It may have significant impact on every aspect of the whole economy such as the rate of inflation, interest rates, energy costs and availability. Moreover, this may have positive effects on the prices paid for the goods and services, currency valuation, the ability to compete effectively in global markets, the availability of investment capital, and economic growth.

### **3.2.3 Third party logistics**

- Third party logistics defined

There is no accepted standard definition of third party logistics (3PL) even though it is a term that has become more and more popular. Since there are various explanations of 3PL, a number of definitions are used to identify the typical characteristics for 3PL.

Lieb, et al. (1993) defined 3PL as:

“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” (p.35).

According to this definition, third party logistics providers add value to their customers by providing any form of externalization of logistics activities previously performed “in-house” like transportation activities, integrated warehousing, distribution, forwarding, packaging, customs handling, kitting, and information

management activities.

The Council of Supply Chain Management Professionals (CSCMP)'s formal definition of third party logistics provider is as follows:

“A firm which provides multiple logistics services for use by customers. Preferably, these services are integrated, or “bundled” together by the provider. These firms facilitate the movement of parts and materials from suppliers to manufacturers, and finished products from manufacturers to distributors and retailers. Among the services which they provide are transportation, warehousing, cross-docking, inventory management, packaging, and freight forwarding” (CSCMP, 2009, on line).

This definition has a clear statement concerning integration of multiple activities. It states that bundling is preferred. Bagchi and Virum (1996) noticed there is a high level of integration between the 3PL provider and its customers and between the performed functions. Furthermore, there is a common feature of 3PL as being a long-term relationship, the customer and a provider encompassing the delivery of a wide range of logistics needs. In a logistics alliance the two parties regard each other as partners and both partners take part in designing and developing logistics solutions and measuring performance (Skjoett-Larsen, 2000). The primary goal is to achieve a win-win arrangement.

Moreover, 3PL providers can be seen as supportive supply chain members because it involves a separate organization which does not have any real role in the supply chain. Earlier, Lambert, Cooper and Pagh (1998) define supportive members as “companies that simply provide resources, knowledge, utilities or assets for the primary members of the supply chain” (p.5). As mentioned above, 3PL service provider steps in as an intermediate between two participants, and as a result, becomes involved as a third party. 3PLs may perform any logistics activity at any point in the supply chain. They play a key integrative role linking the different supply chain elements more effectively (Evangelista & Sweeney, 2006).

Third party logistics is also referred to as outsourced or contract logistics. Rushton & Walker (2007) described third party logistics as an external provider who manages outsourced activities on behalf of the shippers or customers whose business processes

they support. 3PL services typically include: outbound transportation, warehousing, inbound transportation, freight bill auditing/payment, customs brokerage, freight forwarding, customs clearance.

### **3.3 Reasons for outsourcing logistics activities**

Companies can either keep logistics functions in house or outsource them. A number of the articles proposed some reasons to outsource logistics by companies in different countries. The following reasons (Foster & Muller, 1990; Byrnes, 1993; Daugherty & Pittman, 1995; Sink & Langley, 1997; Sohail & Sohal, 2003; Aktas & Ulengin, 2005) are discussed.

- ***Focus on core competence.***

One of the important reasons of outsourcing is that it allows a company to focus on its core competencies. It is often difficult to be an expert in every aspect of the business. By carefully choosing logistics providers and leaving the logistics expertise to the logistics companies, the buyer is able to focus on its company's particular area of expertise, which differentiates the company from its competitors and gives it an advantage in the eye of the customers (Simchi-Levi, Kaminsky, & Simchi-Levi, 2008). 3PL providers have the ability to provide their clients with expertise and experience that would be difficult to acquire, or costly to have in-house (Byrne, 1993). Sink & Langley (1997) found that the most important criterion was core competencies. Focus on core business was also identified by around 40 percent of the Singaporean users as being substantially important or very important (Bhatnagar et al., 1999). In the European consumer goods industry, 50 percent of 3PL users indicated that focus on core competence was important (Wilding & Juriado, 2004). In India, 76 percent of the respondents wanted to use the 3PL service providers so that they can focus on their core competencies (Sahay & Mohan, 2006a).

- ***Logistics cost reduction.***

A major benefit of 3PL are the cost savings provided by 3PL providers. Operating costs are the most important consideration for many firms to consider outsourcing. Employing 3PL providers enables user firms to reduce cost (Aktas & Ulengin, 2005). 3PL providers can combine business from several companies and offer frequent pickups and deliveries. They provide economies of scale due to consolidation of shipments originating from different sources. This might be difficult for individual companies to achieve. Therefore, the outsourcers expect the outside facilities to operate at a lower cost or achieve savings that could not be generated internally. Earlier comparison studies done by Lieb et al. (1993) indicated that some current users had lowered logistics costs up to 30-40 percent and Western European firms have attained more positive results regarding the logistics costs. 87 percent of the users in Singapore indicated that cost savings were substantially important or very important in their decision to outsource (Bhatnagar et al., 1999). Sohail & Sohal (2003) identified the major factors in Malaysia as depending on cost savings, improved service, better transportation solutions and better professionalism. Another comparison study shows that firms in Europe and USA focus more on cost reduction when using 3PL while Mexican firms aim for improving customer service and concentration on core activities (Arroyo, Gaytan, & de Boer, 2006). 80 percent of Indian 3PL users stated that logistics cost reduction was an important reason for outsourcing logistics (Sahay & Mohan, 2006a).

- ***Reducing capital investments.***

Employing 3PL providers reduces capital investments in facilities and equipment such as warehouse facilities, materials handling, order picking, transportation equipment, and information technology. User firms can get rid of the related assets, and invest the released capital in their core competencies or other areas productively (Mentzer, Myers, & Stank, 2007). In an earlier European study (Van Laarhoven, Berglund, & Peters, 2000), the most important strategic reason for European users outsourcing their logistics activities is due to the need to reduce cost or amount of capital invested. 38 percent of European 3PL users indicated

that reducing capital investments was important in determining why to outsource their logistics functions (Wilding & Juriado, 2004).

- ***Access to new technologies***

Access to technologies is another important advantage of the use of 3PL providers in this E-business era (Foster & Muller, 1990). Often individual firms do not have the time, resources, or expertise to update their technology regularly but the better 3PL providers constantly update their information technology and equipment. Third-party logistics providers often can meet different retailers' requirements such as changing delivery and information technology in a quicker, more cost-effective way. In Singapore, obtaining access to up-to-date techniques and expertise was also mentioned by around 40 percent of the users as being substantially important to very important (Bhatnagar et al., 1999). In 2006, access to up-to-date technology, techniques and special expertise from the contract logistics firms were also mentioned as important benefits by respondents in Singapore (Sohail, Bhatnagar, & Sohal, 2006). The Cap Gemini's 12<sup>th</sup> (2007) Annual Report, which is a web-based survey of 1568 logistics executives from 61 countries, shows that IT expectation is 92%. The survey of Eyefortransport (2007a) revealed that one of the biggest opportunities for growth (92%) lies in providing technology/IT solutions to customers in North American.

- ***Improving customer service***

A number of findings show that the prime motivator for the implementation of 3PL is an organisations desire to improve customer service. In determining why Singaporean companies decide to outsource their logistics functions, 76.3 percent of the respondents see customer satisfaction as substantially important (Bhatnagar et al., 1999). In India, 71.3 percent of the respondents stated improving customer service as an important reason for using the service (Sahay & Mohan, 2006a). Outsourcing logistics gives firms the flexibility to better react to changes in customer demand. Organizations want to provide improved customer service by using the increased competence of service providers (Sjöholm & Wang, 2008). For example, suppliers are requiring rapid replenishment, which in turn may

require regional warehousing. By utilizing third-party providers for warehousing, this gives flexibility in geographic locations to a company, which can meet customer requirements without committing capital.

- ***Improving the logistics process***

Usually the 3PL providers have both the expertise and the requisite resources to handle logistics operations for their clients. Providers can deliver a high quality operation including maintaining and developing their systems. They have the ability to adapt quickly to business forces and/or changes, which leads to faster delivery and less damage (Byrne, 1993). Furthermore, firms are able to achieve superior customer service by working closely with their partners to improve the logistics process (Razzaque & Sheng, 1998). Most 3PL providers have better processes and technical knowledge to reduce the risk of misplaced or outdated facilities and equipment in their core areas compared to their user firms (Mentzer, et al., 2007). A 3PL provider may also overcome internal organizational inertia that hinders a company by making its own logistics process improvements. Therefore, outsourcing logistics is the best solution for firms to keep their logistics practices updated.

- ***Expansion to unfamiliar markets***

Bagchi and Virum (1996) presented that 3PL providers can contribute to provide access to unfamiliar or international markets. A key rationale for outsourcing of logistics functions is the intensified globalization of businesses (Sahay & Mohan, 2006b). Lack of specific knowledge of customs, tax regulations and infrastructure of destination countries has caused firms to acquire the expertise of third party logistics service providers. 40 percent of the Indian 3PL users indicated expansion to unfamiliar markets as substantially important or very important in their rationale for outsourcing of logistics functions (Sahay & Mohan, 2006a).



- ***Increasing inventory turnover***

Increasing inventory turnover is often attributed to provider expertise. 3PL providers give operational advantages including reduction in order cycle times, inventory levels, lead times and improvement in customer service (Bhatnagar & Viswanathan, 2000). 60.6 percent of the Indian 3PL users indicated productivity improvement as substantially important or very important in their rationale for outsourcing logistics functions (Sahay & Mohan, 2006a).

- ***Productivity improvements***

Most 3PLs enhance production rates and order fill rates. In Singapore around two-thirds of the users identified productivity improvement as substantially important or very important for the decision making process of 3PL users (Bhatnagar et al., 1999). Increased productivity of the user firm is one of the chief benefits reported from respondents in Singapore (Sohail, Bhatnagar, & Sohal, 2006). 56.5 percent of the Indian 3PL users indicated productivity improvement as substantially important or very important in their rationale for outsourcing of logistics functions (Sahay & Mohan, 2006a).

### **3.4 Reasons for not outsourcing logistics activities**

Although there are a number of advantages in logistics outsourcing, there are also some potential problems that discourage it. A few of the most common reasons faced by 3PL users are the following.

- ***Loss of control over the logistics function*** (Byrne, 1993; Cooke, 1994; Lieb & Randall, 1996; Blumberg, 1998; Lau & Zhang 2006; Sanders, et al., 2007).

As the logistics function passed to the 3PL provider increases, the ability to retain control of the function decreases. It is hard to identify key performance metrics and their values, particularly for service types of tasks where the final "product" is intangible and often difficult to quantify (Sanders, et al., 2007).

- ***Uncertainty in service levels provided*** (Lieb et al., 1996; Jennings, 2002; Lau & Zhang 2006).

This is the major problem of outsourcing identified in Lau and Zhang's research in China (2006). It is because of the inability to provide effective transportation networks, poor transportation tools, old-designed warehousing facilities, lack of qualified staff, and lack of IT capability. Management often lacks confidence to use a 3PL firm to deliver products or services to their customers. There is uncertainty about whether third party capabilities are adequate to meet user's expectations.

- ***Hidden true cost of outsourcing*** (Lieb et al., 1996; Kakabadse & Kakabadse, 2005; Eyefortransport, 2007b; Sanders, et al., 2007).

3PL users may easily omit, overlook, or underestimate costs due to variations of outsourcing engagements. For example, the user may be unaware or simply forgot to include an important task in the contract. The provider may eventually perform the task, however, at an additional cost. Another example is the under forecasting of work volumes by the user. In this case, the supplier may find the work volumes to be higher than anticipated by the client and charge accordingly (Sanders, et al., 2007).

- ***Company has adequate skills and resources*** (Sanders, et al., 2007; Rushton & Walker, 2007).

Often large companies may find that they have adequate skills and resources, which are equally effective at meeting expectations as outside logistics providers due to their large scale. Therefore, they do not need to engage in the outsourcing process. If this is true then the choice of not using a 3PL is understandable.

- ***Difficulty in obtaining organisation support*** (Bowman, 1995; Ellram, 1995; Razzaque & Sheng, 1998; Elmuti & Kathawala, 2000).

Obtaining organizational support is one of the difficulties for outsourcing logistics. Previous outsourcing research was done by Elmuti and Kathawala (2000) in United States, Europe, and the Middle East. It shows that inadequate support by both top management and supporting infrastructure such as communications equipment had caused serious problems in organizations that had been

unsuccessful in their effort to outsource projects. Management has lost its confidence with the third party logistics service providers' capabilities. Furthermore, the use of an outside firm may make the firm's logistics people fear changes and job loss.

- ***Losing touch with important information and customer feedback*** (Bradley, 1995; Sanders, et al., 2007)

Some researchers find that losing touch with important information and customer feedback are major negative issues. Moreover, this situation may create certain risk factors. It is also a potential source for user information, such as a unique technology or process, to leak business information to an external party or another 3PL user (Sanders, et al., 2007).

- ***Lack of shared goals*** (Ellram, 1995; Bradley, 1995; Gattorna, 1998; Tsai, Liao, & Han, 2008)

Lack of shared goals in implementing outsourcing can become a main problem for both parties. A lack of shared goals between 3PL providers and their users usually means that financial gains are obtained once only when the 3PL arrangement is established. After this, the benefits from many 3PL relationships begin to decrease (Gattorna, 1998). This is because of different degrees of business vision, style, and bureaucracy between the two parties (Tsai, Liao, & Han, 2008).

### **3.5 Extent of use of the third party logistics services**

#### **3.5.1 Global logistics outsourcing trends and geographical coverage**

Overall, the 3PL industry is growing. According to the Cap Gemini's 9<sup>th</sup> (2004) and 12<sup>th</sup> (2007) Annual Report on 3PL trends, there is a continuous increase from 1996 to 2007 in the percentage of 3PL usage by companies all over the world. During the first six years (1996-2001) about 72 percent of the respondents described themselves as users of 3PL services, this has increased to 82 percent in 2007.

Recent studies have shown that the percentage of respondents using 3PL services varies in different countries. The respondent companies using 3PL services in the following countries are over 60 percent: USA (79%) (Lieb & Bentz, 2005), Mexico (78.7%) (Arroyo, et al., 2006), Australia (75%) (Sohal, Millen, & Moss, 2002), Saudi Arabia (63.5%) (Sohail & Al-Abdali, 2005), Malaysia (63%) (Sohail & Sohal, 2003) and Singapore (60.3%) (Sohail, et al., 2006). Around half of the respondent companies use 3PL services in Western Europe (52%) (Millen, Sohal, Daparin, Lieb, & Van Wassenhove, 1997), India (55.4%) (Sahay & Mohan, 2006), and Turkey (47%) (Aktas& Ulengin, 2005). Those companies outsourcing logistics services mostly indicated that their firms employed the services of more than one 3PL provider.

According to above studies, the geographical coverage of 3PL services from firms in different countries are different, more percentage of firms from Australia have used more for domestic purposes (Sohal, et al., 2002), firms in USA, Western Europe, Singapore and Malaysia have used more for both, domestic and international purpose (Lieb & Bentz, 2005; Millen, et al., 1997; Sohail, et al., 2006; Sohail & Sohal, 2003). Different from the other studies, Lieb and Bentz (2005) pointed out that many of the companies identified as 3PL users use outsourcing logistics services in multiple geographies such as Canada, Mexico, Latin America, Western Europe, Eastern Europe, Asia(excluding China), China and India.

### **3.5.2 Length of experience in using 3PL services**

The survey in Australia (Sohal, et al, 2002) had shown that 66 percent of the users have been using 3PL services for more than three years. In Lieb and Bentz (2005), 84 percent of respondents in the survey were found to have negotiated specific 3PL contracts for periods of more than three years in America. The Singaporean survey indicated that 84 percent of the respondents have been using the services of 3PL providers for more than three years (Sohail, Bhatnagar, and Sohal, 2006). This represents a significant amount of experience with 3PL amongst the companies in these countries.

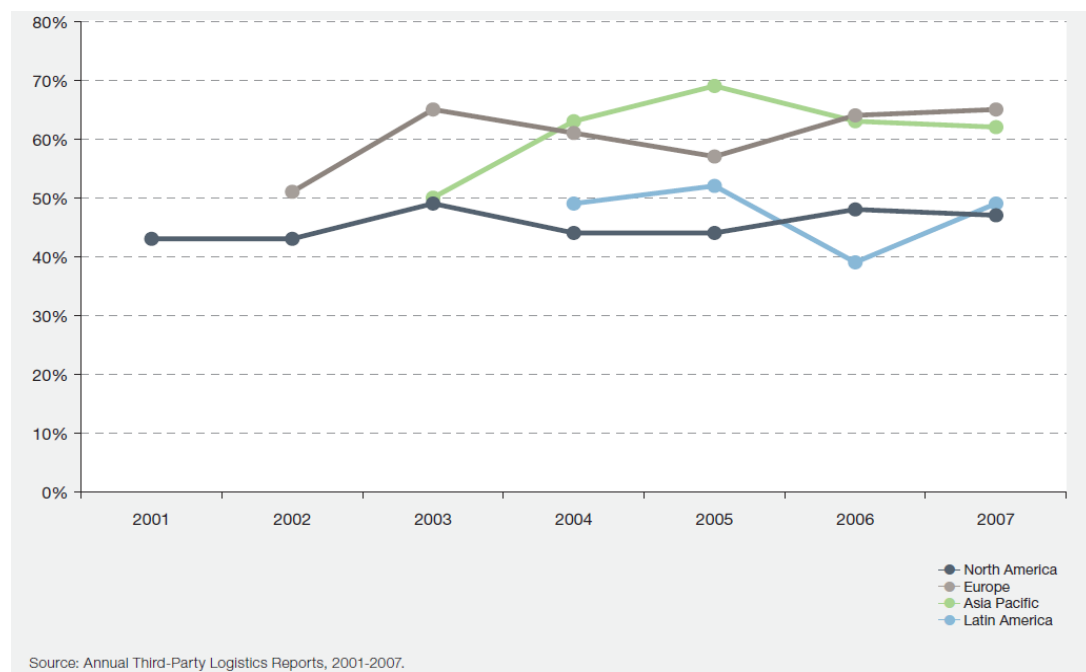
A study in Saudi Arabia also indicates that firms using 3PL services are relatively experienced with 50 percent of them doing so for more than three years (Sohail & Al-

Abdali, 2005). The survey by Sahay & Mohan (2006) in India indicated that 28.6 percent of the respondents have been using the 3PL services for over three years. This indicates a relatively low amount of experience with 3PL service providers in India as a result of which the concept of outsourcing logistics functions to third party logistics service providers is still in its early stage in India.

### 3.5.3 Percentage of total logistics budget allocated to 3PL providers

Figure 3.4 provides a 7 years perspective on the total percentages for logistics spending attributed to outsourcing as reported from 2001-2007 in North America, Europe, Asia Pacific, Latin America. There are no extraordinary growth rates for any of the regions. The trend lines of North America and Latin America seem relatively flat during this period, and Europe and Latin America present modestly increasing trends. The current logistics expenditures directed to outsourcing in Asia Pacific and Europe were between 50 percent and 70 percent during this period; comparatively, in North America and Latin America it is lower, between 40 percent and 50 percent.

Figure 3.4: Current logistics expenditures directed to outsourcing (as percentages of total logistics expenditures)



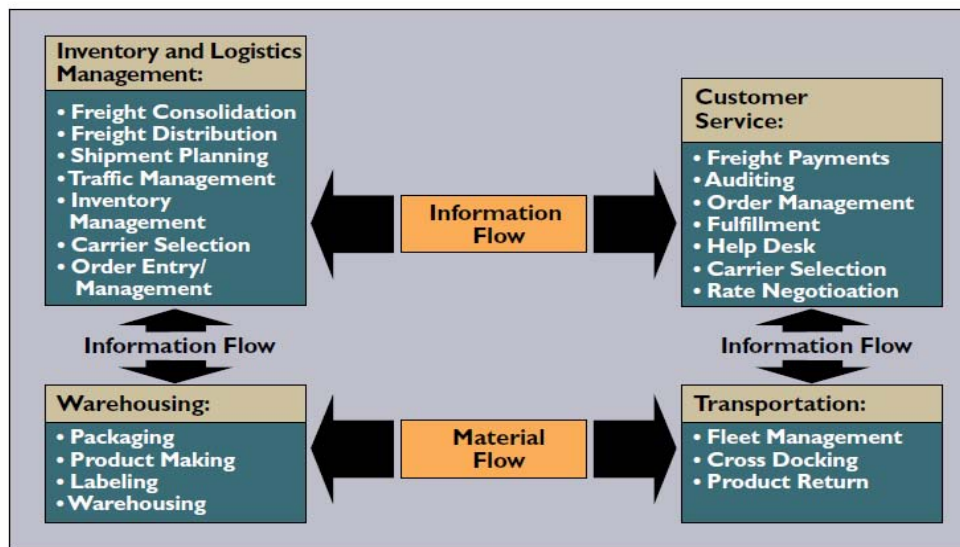
Source: Cap Gemini, 2007

The survey findings on the 3PL usage of large Australian firms indicated that 24 percent of the firms allocated more than half of their total logistics budget to contract providers and 61 percent of the firms allocated less than 30 percent of their logistics budget (Sohal, et al, 2002). The study by Wilding and Juriado (2004) indicated that European firms allocated a large share of the overall logistics budget to their 3PL providers. Sohail et al. (2005) reported that in Saudi Arabia nearly 45 percent of the users allocated 20 percent or less of their logistic budget to 3PL and 13 percent of the users allocated over 60 percent of their logistics budget. Nearly 60 percent of European firms allocated more than half of their total logistics budget to 3PL providers. Sohail, et al. (2006) stated that 48.5 % of the Singaporean firms allocating over 30% of their total logistics budget to 3PL providers. However, in India, 63 percent of the firms allocated 11-20 percent of their logistics budget to 3PL providers, and only 29 percent allocated over 50 percent of logistics budget to 3PL providers (Sohay & Mohan, 2006).

#### **3.5.4 3PL services used**

As mentioned previously, there are a lot of choices concerning different logistics services that can be outsourced like transportation, warehousing, freight consolidation and distribution, product making, labelling, and packaging, inventory management, traffic management and fleet operations, freight payments and auditing, cross docking, product returns, order management, packaging, carrier selection, rate negotiation, logistics information systems (Rushton & Walker, 2007). As shown in Figure 3.5, 3PL services can be divided into four categories: warehousing, transportation, customer service, and inventory and logistics management (Vaidyanathan, 2005). This is a good way to understand the opportunities available in logistics outsourcing. It represents the relationship among these four categories.

Figure 3.5: Categorization of logistics functions



Source: Vaidyanathan, 2005

The Cap Gemini's 12<sup>th</sup> Annual Report (2007), mentioned some logistics services such as customs clearance and brokerage, consulting services, operation of IT systems, Lead Logistics Provider (LLP)/Fourth Party Logistics (4PL) services. The most common logistics services are transportation (domestic 83% and international 79%, respectively), and warehousing (69%). While outsourcing customer facing activities and other strategic services remain substantially less common. In general, the preferred outsourcing activities are transport and warehousing related functions. However, during the last 10 years other services have increasingly been outsourced as well, including customs clearance and brokerage (67%), forwarding (52%) and shipment consolidation. There is more information concerning the different regions in the Table 3.1.

Table 3.1: Outsourced logistics services

Outsourced Logistics Service	All Regions	North America	Europe	Asia Pacific	Latin America
Domestic Transportation	83%	77%	91%	85%	79%
International Transportation	79	68	87	89	71
Warehousing	69	71	68	73	60
Customs Clearance and Brokerage	67	65	58	78	64
Forwarding	51	51	51	60	38
Shipment Consolidation	43	44	44	45	37
Product Labeling, Packaging, Assembly, Kitting	34	31	33	34	41
Transportation Management	32	33	41	27	24
Reverse Logistics	31	32	33	29	29
Cross-Docking	31	36	35	26	25
Freight Bill Auditing and Payment	25	51	18	14	10
Fleet Management	15	11	21	12	13
Supply Chain Consultancy	14	18	11	11	17
Order Entry, Processing and Fulfillment	14	13	7	15	28
Customer Service	13	10	10	17	18
LLP/4PL Services	11	13	11	10	10

Source: Cap Gemini, 2007

Researches on 3PL services include experiences from specific areas and countries. These specific studies also seem to stress the prominence of transportation and warehousing services and also identify other activities with potential to grow (Dapiran et al, 1996; Bhatnagar et al., 1999; Sohal et al., 2002; Sankaran et al., 2002; Sohail & Sohal, 2003).

Lieb and Bentz (2005) notice the most frequently cited services to be warehousing, freight bill payment, freight charge auditing, customs clearance, pickup and delivery, freight consolidation, consulting, information technology/EDI capability; inter modal services, order picking and packaging in North America. Organizations in North America have a much greater tendency to outsource freight bill auditing and payment (51%) than organizations in the other regions studied (i.e., 10% in Latin America, 18% in Europe, and 14% in Asia Pacific) (Cap Gemini, 2007).

Millen et al. (1997) identified the most frequent 3PL services used by West European firms are warehouse management or operation (78%), shipment consolidation (56%)



and carrier selection (52%). According to Wilding and Juriado (2004), firms within the European consumer goods industry most often outsourced transportation (primary transport 86% and secondary transport 74%) and storage (60%). From the Cap Gemini's 12<sup>th</sup> Annual Report in 2007, outsourcing of transportation tends to be somewhat higher for firms located in Europe.

In the mid 1990s, the most frequently used contract logistics service by Singaporean firms was shipment consolidation which is outsourced by more than one half (55.3%) of the firms. Other major outsourced activities include order fulfilment (40.8%), carrier selection (40.8%) and freight payment (39.5%) (Bhatnagar et al, 1999). The functions that are least outsourced include product assembly or installation, order processing and inventory replenishment. In Australia, outsourcing is used most prevalently for fleet management, warehouse management, shipment consolidation, carrier selection and order fulfilment (Sohal, Millen, & Moss, 2002).

In Saudi Arabia (Sohail & Al-Abdali, 2005), functions relating to carrier selection have been outsourced by almost one-third of the firms and shipment consolidation activities have been outsourced by about 28 percent of the respondents. Other major logistics functions outsourced include freight payment, order fulfilment, and product assembly and installation. In India, out of the total number of respondents, more than half the organizations have already outsourced logistics activities such as transportation, and custom clearing and forwarding. The other important services that are already being outsourced are import and export management, warehousing, labelling and packing, fleet management and consolidation (Sahay, et al, 2006).

Overall, these findings indicate the importance of transportation, warehouse and administration related services. It confirms the continuing growth of logistics outsourcing. There also appears to be a weak demand for value adding solutions such as information systems, 4PL and manufacturing related services (van Hoek, 2000). The literature review highlighted a mismatch between supply and demand for logistics services (Murphy and Poist, 2000).

### **3.5.5 Nature and length of third party contract**

When a provider is selected and the services included in the arrangement are specified, a contract can be signed between the parties, in which the main terms of the deal are specified. These should include detailed working manuals, duration, joint efforts to develop further cooperation, a customerization of the solution, together with a fair sharing of benefits and risks (Bagchi & Virum, 1996). Routine contract periods of one to three years are most commonly agreed upon, but longer periods might be required if 3PL providers are to undertake major investments for a specific customer (Sink & Langley, 1997).

In Saudi Arabia, a little over 60 percent of the respondents had signed contracts with their services providers (Sohail & Al-Abdali, 2005). About 53.9 percent of the respondents in Singapore had signed a specific contract with the third party providers and of those companies using contract logistics services most are relatively experienced with the concept of using contract logistics services with 84 per cent of them doing so for more than three years (Sohail, et al., 2006). The Malaysian survey revealed that nearly 40 per cent of the respondents had signed contracts with their services providers and almost one-half (45%) of the firms had entered into contracts for usage of services beyond 5 years (Sohail, et al., 2006).

Honouring contract agreements, integrity and long-term relationships have a positive impact on perception of top management and operating personnel in shaping 3PL relationships (Sahay & Mohan, 2006b).

### **3.5.6 Information sources for finding 3PL service providers**

Previous studies suggest that there are different ways to achieve knowledge about 3PL providers such as direct mail advertising, advertising in professional publications, sales contacts at a logistics conference, sales calls by representatives of the 3PL firms and discussions with other logistics professionals. Millen et al (1997) indicated that the most common ways are sales calls by representatives of the 3PL firms and discussions with other logistics professionals in Australia, Western Europe and America. In Saudi Arabia, a sales call from representatives of 3PL firms was the most popular way, with 40% (Sohail & Al-Abdali, 2005). In a Singaporean survey by

Sohail, et al. in 2006, three common sources of information that emerged were sales calls from logistics representatives(40%), discussion with other logistics professionals(18.7%), and recommendations from friends, suppliers, market contacts and those appointed by customers( 37.3%). The sources of information in Malaysia were identical, calls from logistics representative was most popular with 60 percent of respondents obtaining information through this source (Sohail, et al., 2006).

### **3.6 Critical success factors of selecting and evaluating 3PL providers**

The purpose of 3PL selection is to determine the optimal service provider who offers the best products and services for the lowest cost. When selecting 3PL, companies should have clear objectives for outsourcing that can be used to establish the criteria for the selection. Managers have been asked to specify important factors that define the decision making process and evaluate 3PL providers.

The Cap Gemini's 12<sup>th</sup> Annual Report (2007) showed that most companies' rank pragmatic options as the most important criteria like price of 3PL services, quality of tactical, operational services and range of available, value-added services to the expected ease of doing business and the 3PL's global capabilities. There are details about these factors in different areas in Table 3.2.

Table 3.2: Factors considered when 3PL providers selected

Factors	All Regions	North America	Europe	Asia Pacific	Latin America
Price of 3PL Services	87%	89%	88%	88%	83%
Quality of Tactical, Operational Services	87	88	86	88	87
Expected Capability to Improve Service Levels	67	61	67	75	65
Range of Available, Value-Added Services	62	62	61	66	59
Capable Information Technologies	61	64	54	65	61
Expected Ease of Doing Business	57	62	47	62	55
Availability of Strategic Logistics Services	54	51	48	60	60
Global Capabilities	51	50	52	58	42
Knowledge and Advice on Supply Chain Innovations and Improvements	44	38	40	54	46
Cultural and Strategic Fit With 3PL Provider	42	49	42	43	34
Ability to Deliver End-To-End Solutions Across Supply Chain Processes and Regions	40	35	33	52	39
Coverage and Experience in Emerging Markets	35	38	26	53	19
3PL Vision and Investment Strategy	33	34	29	41	28

Source: Cap Gemini, 2007

Lieb et al. (1993b) and Dapiran et al. (1996) found that while cost and service are the most important criteria, prior experience with the 3PL provider, company reputation, “total service package offered”, and information system compatibility were other important factors.

Bottani and Rizzi (2006) derived the relevant factors to ponder in the 3PL selection process from the analysis of the scientific and informative bibliography related to logistics outsourcing. Criteria are presented and detailed in the following: breadth of service, business experience, characterization of service, compatibility, financial stability, flexibility of service, performance, price, physical equipment and information systems, quality, strategic attitude, trust and fairness.

Završnik, Jerman, & Vukovi (2007) studied managers perceptions of the importance of characteristics of logistics providers in the Slovenian Market. Results show in Table 3.3 include competitive price and payments conditions, adequate quality of logistics services, on-time delivery, reliability of offered logistics services, technical equipment and ability to manage the entire logistics function, the full services of logistics and connected services, the speed of delivery, and the size of logistics provider.

Table 3.3: The indicators to evaluate logistics in Slovenian Market

<b>The indicators to evaluate logistics suppliers</b>	<b>Frequency</b>	<b>(%)</b>
Competitive price and payments conditions	26	68,4%
Adequate quality of logistical services	23	60,5%
On-time delivery	21	55,3%
Reliability of offered logistical services	17	44,7%
Technical equipment and ability to manage the entire logistical function	12	31,6%
The full service of logistics and connected services	10	26,3%
The speed of delivery	7	18,4%
The size of logistics provider	1	2,6%

Source: Završnik, et al., 2007

After all the discussions above, there are a number of factors deemed significant to the critical success of selecting and evaluating 3PL providers. These factors are discussed as follows:

- **Breadth of service offerings**

Coyle, Bardi, & Langley (2003) indicated that there might be increased interest at the client level for a single-source solution to the provision of integrated logistics services. Moreover, the study of Cap Gemini (2004) reported that respondents agree significantly with the statement that, 3PL suppliers should provide a broad, comprehensive set of service offerings. The finding in USA is that the strength of 3PL service performance and the breadth of diverse 3PL services is somewhat correlated to the operational efficiency of 3PLs and a growing number of 3PL users desire one-stop shopping with more diversified service offerings; niche-oriented 3PL users desire one-newly emerging market segment (e.g. reverse logistics) to stay profitable (Min & Joo, 2006).

- **Price**

An earlier review of the literature shows that price or cost factor is always taken into account when the logistics partner has to be selected (Spencer, Rogers, & Daugherty, 1994; Maltz, 1995). Moreover, it emerges that the role of price is commonly regarded as less important than operational performance and service when evaluating a 3PL provider in US (Sink, Langley, & Gibson, 1996). Therefore, outsourcing decisions are highly affected by cost and service tradeoffs and the cost evaluation between options: costs connected with performing logistics activities in-house and investment in capital of assets in tradeoffs against service provider's fees (Van Damme & Ploos Van Amstel, 1996). However, Harrington (2000) found from a survey in New York that the pricing factor was the first determinant for participants to pick a 3PL provider. The Malaysian survey focused on determining the most important factor in making the final selection among competing companies and one-third of the respondents stated cost considerations as the most important selection factor, while 16.7% stated that

service considerations were most important (Sohail & Sohal, 2003). Therefore, although price should not be considered the all-important factor, it should not be necessarily neglected either (Bottani & Rizzi, 2006).

- **Quality of logistics services**

Cost is not the sole most important decision variable; logistics service issues are also well thought-out (La Londe and Maltz, 1992; McGinnis et al., 1995). As the competition in the 3PL market intensified, service quality became an important differentiator among service providers (So, Kim, Cheong, & Cho, 2002). The concept of service quality goes beyond the technical aspects of providing the service. 3PL service providers should understand how customers perceive and evaluate service quality, because service quality is related to customer satisfaction, which in turn influences the performance of their organizations. In addition, 16.7% of respondents in Malaysia stated that service considerations were most important (Sohail & Sohal, 2003).

- **Flexibility to meet unanticipated customer needs**

Hong Kong survey results revealed that it is important to improve customer service by offering flexibility in their operations to cope with fluctuating customer demands (Yeung, Selen, Sum, & Huo, 2006). The buyer's needs may change over time as the marketplace is constantly changing. It is important that the 3PL service provider has adequate flexibility to respond to changes in this constantly evolving marketplace. 3PL service provider should have the potential to foster buyers' growth such as the launch of a new product or the expansion into new markets (Bottani & Rizzi, 2006). Therefore flexibility of service is a potential criterion which should characterize a 3PL service provider (Qureshi, Kumar, & Kumar, 2008).

- **Financial stability**

Another important and essential consideration is financial stability, because it makes sure that performance standards can be maintained and that products and services continue to be available. A number of authors (Sink and Langley, 1997; Bradley, 1994; Boyson, Corsi, Dresner, & Rabinovich, 1999) indicated financial stability as an essential criterion for logistics partners. In a survey conducted by the authors among 163 logistics buyers, the importance of financial stability scores 4.268 in a 1 to 5 points scale (Bottani & Rizzi, 2006). Arroyo et al. (2006) noted that financial stability, quality certification, and global good reputation were important factors associated with outsourcing and quite surprisingly, the American study mentioned financial stability more often selected as important factor than both price and customer service.

- **Experience as a 3PL provider**

According to Bradley (1994) and Bhatnagar et al. (1999), a third party firm with experience is often cited as one of the most important factors when assessing viable suppliers. A 3PL provider should be well grounded in the services being provided and preferably with experience in the industry; it should have depth-skilled, qualified management and workforce characterize the organization and highly thought among other client (Bottani & Rizzi, 2006).

- **Reputation**

Byrne (1993) revealed that reputation is on the top of participants' lists of third party selection factors. Lieb et al. (1993) noted that reputation, experience and price are considered the most important factors in the selection process. He also suggests that user firms need to trade off between service and cost. Companies should prepare for higher costs if they want to employ 3PL providers that have a high reputation and quality. 21 percent of the respondents considered the reputation of the contractor as the most important factor in making the final selection (Sohail & Sohal, 2003).



- **Investment in information systems**

Earlier study by Closs, Goldsby and Clinton (1997) concluded that information technology capabilities significantly influence overall logistics competence. A study in France shows that technological effort becomes a key variable and means of differentiation between third-party logistics providers (Sauvage, 2003). Moreover, IT links members of the supply chain, such as manufacturers, distributors, transportation firms and retailers, as it automates some elements of the logistics workload, such as order processing, order status inquiries, inventory management, or shipment tracking (Vaidyanathan, 2005). Thus, IT is a critical factor for 3PL performance since the logistics provider must integrate systems with its clients. The recent research conducted by Lai, Zhao and Wang (2006) in China found that IT significantly influences 3PL firms' competitive advantages.

- **Skilled logistics professionals**

Sink et al. (1996) indicated that 3PL companies must employ the best people with the relevant expertise in order to provide the high level of customer service. High quality management talent is also an important factor that distinguishes 3PL providers from the competition due to the growth of logistics outsourcing and the level of competition within the 3PL industry (Gibson& Cook, 2001).

### **3.7 Impacts of the use of 3PL providers on user firms**

It is important to consider carefully the impact on the firm before making the decision for outsourcing. According to the Table 3.4 from Cap Gemini's 12<sup>th</sup> Annual Report (2007), the most significant outcome of 3PL is cost reduction. Logistics cost reduction across all regions averaged 13 percent, and the fixed logistics asset reduction was 18 percent. These two were led by Latin America respectively at 16 percent and 41 percent. The average length of an order cycle has dropped, and these percent reductions are greater than those reported in the preceding years of this study. In addition, the percentage of all the regions is lower than average (from 14.0 to 10.3) except North America.

Table 3.4: Results experienced from use of 3PL services

Results		All Regions	North America	Europe	Asia Pacific	Latin America
Logistics Cost Reduction (%)		13	11	13	12	16
Fixed Logistics Asset Reduction (%)		18	14	20	17	25
Average Order Cycle Length	Changed FROM Days	14.0	17.4	12.7	13.8	10.2
	Changed TO Days	10.3	13.1	10.2	9.7	6.8

Source: Cap Gemini, 2007

Moreover, earlier studies show that 94 percent of the Australian respondents, 98 percent of the Western European respondents and 90 percent of the US respondents indicated that the use of contract logistics services had been a positive development in the on-time delivery performance (Millen et al, 1997).

A number of researchers agree that outsourcing has had strong positive impacts on costs, system performance, response time, inventory levels, enhanced flexibility, and customer satisfaction (Bhatnagar et al., 1999; Sohal & Sohal., 2003; Sahay & Mohan, 2006b). In Malaysia, users are quite satisfied with their logistics outsourcing experiences as a means to enter new markets, develop new customers or expanding their current offerings (Sohal & Sohal., 2003).

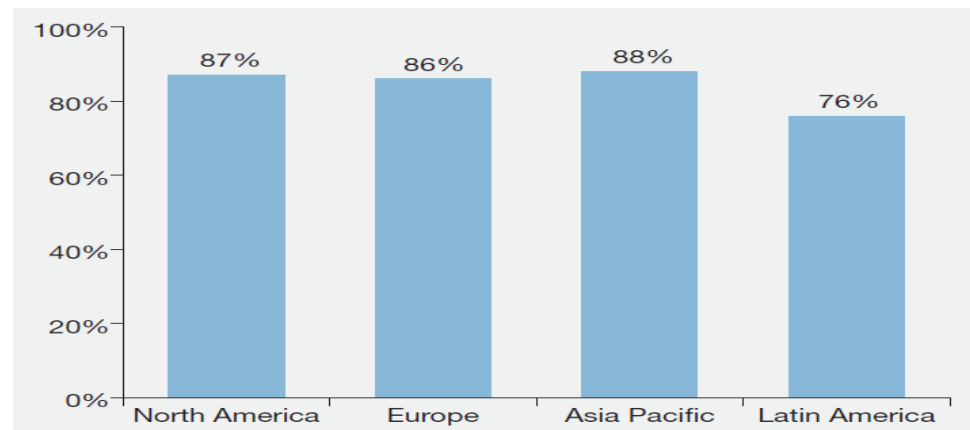
Also the use of outsourcing had a highly positive impact on employee morale in Malaysia and Thailand (Sohail & Sohal, 2003; Kotzab, Seuring, Muller, & Reiner, 2005). In USA, 40 percent of respondents reported a negative impact on employee morale (Lieb, R., & Bentz, B.A. (2005).

Over 95% of the respondents indicate that the use of 3PL has had a positive impact on business objectives (Sahay & Mohan, 2006b). 3PL allows their users expand geographical reach (Chandra & Grabis, 2007).

### 3.8 Logistics outsourcing plans for the future

This issue deals with the future plans of companies with regard to the utilization of third party logistics services, whether firms are satisfied or not with the performance of their current 3PL providers and whether firms are considering changes in the level and nature of their involvement with third party providers. In Figure 3.6, we can see apparently that outsourcing is successful for most companies all over the world.

Figure 3.6: Percentages of companies that consider their outsourcing to be successful



Source: Cap Gemini, 2007

A number of studies have indicated that the user firms using 3PL services are either satisfied or very satisfied with the performance of their 3PL services providers. In USA, India and Saudi Arabia, over 85 percent of the respondent users are both satisfied and very satisfied with the 3PL services (Millen et al, 1997; Bhatnagar et al, 1999; Sohail et al, 2005; Sahay et al, 2006). The percentage numbers in Australia and Malaysia for satisfied and very satisfied customers are also very high: almost all the respondent users (over 96%) are at least satisfied with the 3PL services (Millen et al, 1997; Sohail & Sohal, 2003).

Millen et al. (1997) also showed that over 60 percent of the respondents in Australia, USA and Western Europe would moderately increase their companies' use of third party logistics services. The same result is also obtained from the Singaporean perspective, with over 70 percent (Bhatnagar et al, 1999). Likewise, more than 80 percent of respondents in Indian would at least moderately increase the outsourced logistics services (Sahay & Mohan, 2006). So all in all, the conclusion drawn from

these studies all indicate that there is a positive development regarding outsourcing logistics activities.

### **3.9 Summary**

- This chapter focuses on 3PL and its relationship with supply chain management and logistics management.
- Third party logistics is defined as “a firm which provides multiple logistics services for use by customers. Preferably, these services are integrated, or “bundled” together by the provider. These firms facilitate the movement of parts and materials from suppliers to manufacturers, and finished products from manufacturers to distributors and retailers. Among the services which they provide are transportation, warehousing, cross-docking, inventory management, packaging, and freight forwarding” (CSCMP, 2009, on line). Therefore, 3PL providers can be seen as supportive supply chain members.
- Supply chain management is “a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses, and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize system wide costs while satisfying service level requirements” (Simchi-Levi, et al, 2008, p.1). The goal of supply chain management is to ultimately satisfy customers in order to achieve a sustainable competitive advantage by continuous balancing between responsiveness and the efficiency of the entire supply chain.
- “Logistics management is the part of the supply chain management that plans, implements, and controls the efficient, effective forward and reverse flows and storage of goods, services, and related information between the point of origin to the point of consumption in order to meet customers’ requirements” (CSCMP, 2009, on line). Logistics management is part of supply chain management. In

contrast to it, logistics management emphasizes managing the flow of services and physical goods. In other words, “logistics is the work required to move and position inventory throughout a supply chain” (Bowersox, et al., 2007, P. 4). Logistics plays an important role for companies seeking both, profitability and economy improvements.

- Reasons to outsource logistics are as follows:
  - Focus on core competence
  - Logistics cost reduction
  - Reducing capital investments
  - Access to new technologies
  - Improving customer service
  - Improving the logistics process
  - Expansion to unfamiliar markets
  - Increasing inventory turnover
  - Productivity improvements
  
- Reasons for not outsourcing logistics are as follows:
  - Loss of control over the logistics function
  - Uncertainty in service levels provided
  - Hidden true cost of outsourcing
  - Company has adequate skills and resources
  - Difficulty in obtaining organizational support
  - Losing touch with important information and customer feedback
  - Lack of shared goals
  
- Overall, 3PL is a growing industry and there is a continuous increase in the percentage of 3PL usages all over the world. However the percentage of respondents using 3PL services varies in different countries. To date, there are a lot of choices of different logistics services that can be outsourced. They are transportation, warehousing, freight consolidation and distribution, product making, labelling, and packaging, inventory management, traffic management and

fleet operations, freight payments and auditing, cross docking, product returns, order management, packaging, carrier selection, rate negotiation and logistics information systems (Rushton & Walker, 2007).

- As mentioned in a number of previous studies, there are different ways to obtain information about 3PL providers:
  - Direct mail advertising
  - Advertising in professional publications
  - Sales contacts at a logistics conference
  - Sales calls by representatives of the 3PL firms
  - Discussions with other logistics professionals
  
- With respect to the factors used in selecting 3PL service providers, significant critical success factors have been identified as follows:
  - Breadth of service offerings
  - Price
  - Quality of logistics services
  - Flexibility to meet customer needs
  - Financial stability
  - Length and depth of 3PL relationships
  - Experience as a 3PL provider
  - Investment in information systems
  - Skilled logistics provider
  - The size of logistics provider
  - Company reputation
  - Focus on specific industries
  - The speed of delivery

- A number of benefits using 3PL are indicated in previous studies:
  - Reducing inventory levels
  - Reducing logistics costs
  - Increased customer service satisfaction level
  - Acquiring new customers
  - On-time delivery performance
  - Expanding geographic reach
  - Positive employee moral
  - Improved logistics system performance

The conclusion drawn from the above mentioned studies have all indicated positive results when outsourcing logistics activities. The 3PL industry will continue to develop rapidly towards maturity. Companies will seek a more integrated and strategic approach from their 3PLs providers (Rushton & Walker, 2007).

## **4. Chapter 4 – METHODOLOGY**

### **4.1 Introduction**

This chapter explains the quantitative methods that have been used for conducting the research and for the analysis of the data used in this study. It describes the study sites and participants, the operational procedures used for this study, the instruments for data collection, the selection of data for analysis, and the methods of questionnaire analysis for this study.

### **4.2 Research objectives**

- Objective 1  
To investigate the reasons for outsourcing logistics activities and also the reasons for not outsourcing logistics activities in New Zealand companies.
- Objective 2  
To investigate the extent of use of third party logistics services in New Zealand and the influence of firm sizes and different industries on different aspects of 3PL practices.
- Objective 3  
To investigate critical success factors and attributes of 3PL service providers which are considered most important for employing, evaluating and selecting 3PL by users of 3PL in New Zealand.
- Objective 4  
To establish the impact of usage of 3PL providers on New Zealand companies.
- Objective 5  
To evaluate the customer satisfaction level of New Zealand 3PL services.
- Objective 6  
To investigate the future plans of current 3PL users in New Zealand.



### **4.3 Basic research designs - qualitative versus quantitative approaches**

Generally, research can be conducted by one of these two broad methods – qualitative or quantitative studies (Cavana, Delahaye, & Sekaran, 2001). Qualitative and quantitative research differs in a number of ways. The main differences between the two approaches are the nature of information collected and the way it is analysed (Veal, 2005).

The qualitative approach to research are descriptions of things that are made without assigning numbers directly (Hair, Babin, Money, Samouel, & Page, 2007). It is not concerned with statistical analysis and it involves gathering a great deal of information about a relatively small number of subjects (Veal, 2005). The qualitative method is generally used while conducting some type of unstructured interview or observation (Blumberg, Cooper, & Schindler, 2005). The information collected is generally not presentable in numerical form and conclusions are not based on statistical analysis (Veal, 2005). Qualitative methods do not depend on the instruments employed to gather and analyze or measure the data (Ruyter & Scholl, 1998). Qualitative data are empirical information about the world, most of the time this means words (Punch, 2005). This approach is based on belief in the value of a full and rounded understanding of the experiences and situations of a few individuals (Veal, 2005). Furthermore, qualitative methods are more suitable for social and behavioural sciences and among practitioners who want to understand human behaviour and functions (Ghauri & Grønhaug, 2005).

As Cavana et al. (2001) concluded quantitative methods focus on measuring the phenomena under investigation and the use of statistics to analyse the raw data. Quantitative researchers emphasize gathering of numerical data and relying on numerical evidence to draw conclusions or to test hypotheses (Veal, 2005). The quantitative approach places considerable trust in numbers that represent opinions or concepts (Amaratunga, Baldry, Sarshar, & Newton, 2002). Therefore, quantitative data are numerical; they are information about the world. Measurement turns the data into numbers, and its function is to make comparisons (Punch, 2005). Collection of data in quantitative approach includes a collection from questionnaire-base surveys,

from observation or from secondary sources and this method relies on the instruments employed to gather and analyze data (Punch, 2005).

The aim of this research is to have an exploratory study about the usage of 3PL in New Zealand companies. Therefore, a quantitative method would be more appropriate concerning this topic.

Table 4.1: Differences between qualitative and quantitative research

<b>Qualitative</b>	<b>Quantitative</b>
Words-based	Number-based
No statistical tests	Statistical tests are used for analysis
More in-depth information on a few cases	Less in-depth but more breadth of information across a large number of cases
Methods include focus groups, in-depth interviews, and reviews	Surveys, observation, secondary sources
Subjective	Objective
Sample size: small 'n'	Large 'n'
Interpretive	Measurable
Inductive	Deductive
Identifiable	Generalisable

Adapted from Ruyter & Scholl, 1998; Cavana et al., 2001; Amaratunga, et al., 2002; Blumberg, et al., 2005; Ghauri & Grønhaug, 2005; Punch, 2005; Veal, 2005; Hair, et al., 2007.

## **4.4 Data collection methods**

### **4.4.1 Sampling**

A sample from the population can be selected by either a probability or non-probability approach (Hair et al., 2007). In probability sampling, the researchers know the probability of choosing subjects or cases from a population such as random sampling, every member of the population has the same chance of being selected as any other member (Vogt, 2007). However, in non-probability sampling design, the

elements in the population do not have any probabilities attached to their being chosen as sample subjects (Sekaran, 2003). This method of selection of the sample is very subjective depending on the researcher. Convenience sampling is a main type of non-probability sampling and it is designed for the collection of information from members of the population who are conveniently available to provide it (Sekaran, 2003).

The non-probability sampling - convenience sample is chosen in this study mainly because of limited funds and time. Convenience sampling can be particularly useful in exploratory studies when a researcher has limited time or money to compile a random sample (Wrench, et al., 2008). Probability sampling clearly calls for more planning and repeated call backs to ensure that each selected sample member is contacted. These activities are expensive. Carefully controlled non-probability sampling often seems to give acceptable results (Cooper & Schindler, 2008).

The target sample size of this research was 250 companies within New Zealand. The sampling frame for the selection of businesses was mainly derived from the Chartered Institute of Logistics and Transport (CILT) database. The target respondents typically hold the title of Manager, Director, or Vice President of Logistics or Supply Chain Management in a number of key industries including automotive, retail, chemical/healthcare, high-tech/electronics, fashion/textiles, food and beverage, FMGG and industrial. Financial, real estate, insurance, 3PL provider and consulting organizations were not included in the sample group as they were considered less likely to have significant logistics needs. This resulted in a list of 170 companies. The name and address of these senior logistics executives from different areas of New Zealand were obtained from CILT. Moreover, 80 companies were chosen from Yellow Pages and the name and address of logistics executive were searched from the company's websites.

#### **4.4.2 Mail questionnaires**

The mail questionnaire is selected for use in this study in order to obtain the effective data for a number of reasons. A mail questionnaire is best designed for measuring

variables with numerous values or response categories that are too much to read and investigates attitudes and opinions that are not usually observable (Nardi, 2006). A mail study can cost less than surveys via personal interviews because it is often a one-person job (Cooper & Schindler, 2008). Furthermore, a mail questionnaire is able to cover a wide geographic area and it allows respondents to have greater flexibility (Cavana et al., 2001). Also, large samples can be taken through mail questionnaires (Collis & Hussey, 2003). Another advantage of the mail survey is sample accessibility. In this study general managers or logistics managers were difficult to reach in person or by phone. But researchers can often access these special participants by mail (Cooper & Schindler, 2008). Mail surveys also provide more anonymity than other communication modes (Cooper & Schindler, 2008).

However, the return rates of mail questionnaires are typically low and questionnaires take time to mail out and get returns (Kervin, 1992). Another disadvantage of the mail questionnaire is that any queries the respondents might have would not be able to be clarified (Cavana et al., 2001).

#### **4.4.3 Questionnaire development**

The overall research issue is to study the usage of 3PL services in New Zealand. This general issue is broken down into small sets of more specific research issues that generate specific questions as follows:

- Reasons for outsourcing logistics activities
- Reasons for not outsourcing logistics activities
- Extent of use of third party logistics services
  - Global logistics outsourcing trends and geographical coverage
  - Length of experience in using 3PL services
  - Percentage of total logistics budget allocated to 3PL providers
  - 3PL services used
  - Nature and length of third party contract
  - Used information sources for finding 3PL service providers
- Critical success factors of selecting and evaluating 3PL providers

- Impacts of the use of 3PL providers on user firms
- Logistics outsourcing Plans for the future

The first three questions included information concerning the company profiles of the respondents which include number of employees, annual turnover, and business category.

It serves as the implication whether the size of different companies and different business category companies utilize the third party logistics services differently.

Hair, et al., (2003) had highlighted that better response rates can be achieved when using attractive envelopes with well-written cover letters and questionnaires of reasonable length. A three-page questionnaire is used to collect data in this study. Questions were designed to be short and simple, and worded in a way to avoid complexity, ambiguity and misunderstanding by respondents. The respondents were required to indicate their level of agreement or rating with a particular statement or company performance using 5-point Likert scales in questions 14, 15, 17, 18, and 20. Some questions in the questionnaire are intently merged into one question in order to minimize the questionnaire pages and to have a clear, readable space in between the lines. For instance, question number 14 not only listed the services which are provided for respondents to choose for both current and potential areas of interest, but also evaluates the satisfaction level for these services. Furthermore, the questionnaire is designed with closed ended response questions so that it is easy for respondents to understand and to fill in their replies. At the same time, some open-ended questions are also given to the respondents. This avoids setting limits to the options provided in the close ended questions and it allows managers to express their thoughts.

This study therefore consist of an introduction by way of a covering letter accompanying the questionnaire and explaining its purpose and origin, along with a self-addressed freepost envelope to encourage responses. Furthermore, Groves, Dillman, Eltinge, & Little (2002) highlight that survey design which includes features such as providing gifts as incentives tend to bring more resistant respondents into the study and encourage some earlier replies. Where respondents supplied their email addresses, a summarized copy of the results of this study has been provided as recognition of their participations and contributions to this study.

## 4.5 Data collection and problems

After 250 questionnaires were sent out, 84 usable questionnaires were returned. This was equivalent to a 33.6% response rate, with a further 10 (4.0%) returned by the postal service as the businesses were no longer in operation or the persons had left the companies. So the effective response rate was 35% if the questionnaires returned by post office were removed. There were no follow-up questionnaires sent out as this questionnaire was anonymous. To ensure confidentiality and objectivity, companies were not asked to provide specific information on which 3PL providers they used. This response rate compares favorably with a number of previous surveys. The study in European consumer goods industry is Wilding and Juriado (2004) which had 50 responses from 330 surveys sent, giving them a response rate of 15%. The use of 3PL study conducted in the United States, which out of 456 target firms had response rates 60 (13%) (Lieb & Bentz, 2005). However, the study by Sohal, Millen, and Moss (2002) in Australia involved a survey that was mailed to a sample of 209 companies and a total of 94 of the surveys were returned for a response rate of 45%. Overall, the response rate of 35% in this research is acceptable. In addition, other kinds of follow-ups are eliminated due to acceptable response rate.

There is a possible bias within the survey toward underestimation of the level of logistics outsourcing in New Zealand. Overall there is a low risk of non-response bias and the number of returns of the survey is reasonable.

On review of responses it has been identified that several respondents did not complete two questions which were printed on the back of the first page. Any subsequent surveying would only be printed single-sided. Furthermore, there have been only two respondents ticking the boxes of potential outsourced logistics services under question 14. The cause for the possible omission of data is probably because the position of the option box may have misled the respondents in the way it separates with other questions on the right hand side of the page. Due to time constraints, there was no opportunity to recollect new data once the problems were detected. This has left a gap of information regarding the respondents' perceptions about the potential of the outsourced logistics services.

## 4.6 Data analysis methods

The data are analyzed mainly by using the statistics program SPSS (Statistical Package for the Social Sciences) in supplement with Minitab. Although SPSS provides richness of statistics techniques, Minitab can generate much more complex graphical function necessary for this research. In this research, a number of statistics techniques are used including descriptive statistics, Chi-square, t-test and ANOVA. Descriptive statistics are used to provide an overview on the background and the profile of NZ's 3PL surveyed as well as 3PL's activities related to research questions. ANOVA and T-test are applied to compare means for the number of 3PL services that the company use. Chi-square test is employed to discover relationship for the size of the company and the use of 3PL services, and the association between the turnover of the company and the number of 3PL providers that the company use.

## 4.7 Research Process

The research process was performed in a sequential stepped scheme as indicated in the following components, which is also demonstrated in figure 4.1.

- Reviewing industry and relevant literature and theoretical studies  
Most of previous relevant both experimental and theoretical studies in 3PL industry are reviewed and the data about usage of third party logistics in different countries by different authors at different time are also reviewed.
- The specification of the research questions  
After reviewing previous literature and theoretical studies regarding 3PL, the theoretical framework served as the basis for the development of the questions.
- Development of questionnaire  
The issues under questionnaire were developed with the great assistance and guidance from Dr. Norman Marr and Alan Win for the first draft questionnaire. It was handed to them for the first review. The revision to the questionnaire was mainly about the order of questions, wording and the proper time needed to fill it.

- Data collection

After the revision version of questionnaire was handed in, logistics managers or general manager's names and addresses of about 200 companies under the list of CILT was gone through. This highly increased the response rate. All the companies were asked to send back the questionnaire no later than 9 April 2009.

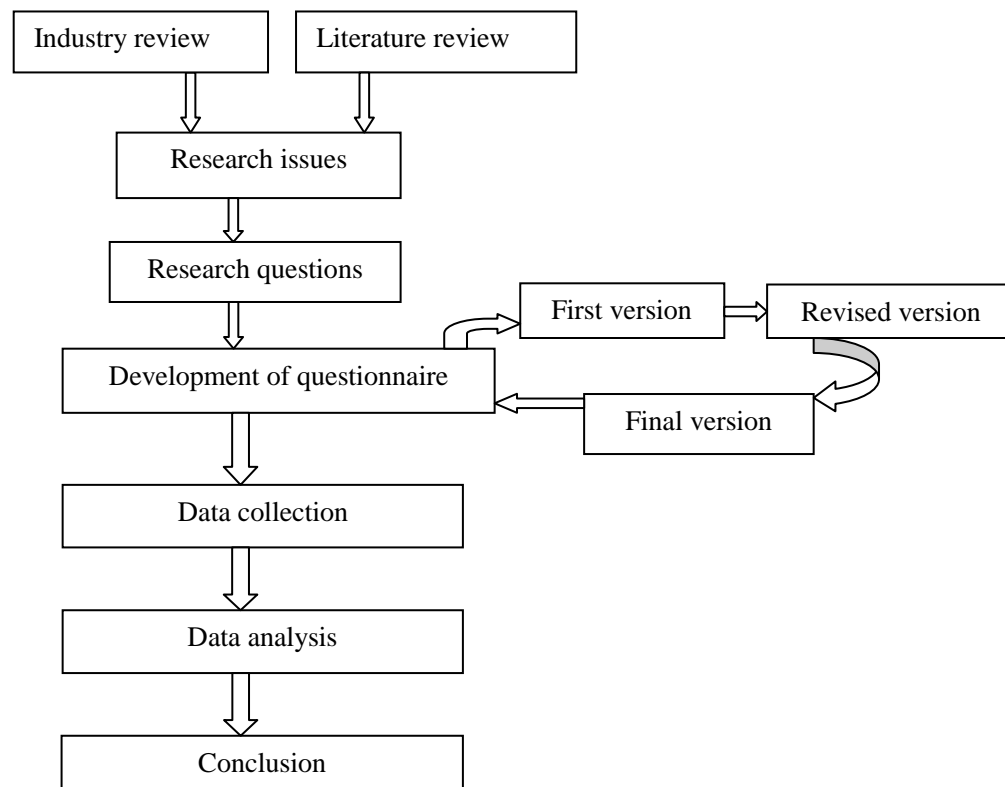
- Data analysis

Collected data was input to the statistics software for analysis.

- Conclusion

The research findings were summarized and conclusions were drawn from those findings. Some of the implications of the findings were given. Limitations of the study and recommendations for further research in this field are considered.

Figure 4.1: Research process



Source: Own



## **5. Chapter 5 – SURVEY RESULTS AND DISCUSSION**

### **5.1 Introduction**

This chapter presents the questionnaire results. A respondent profile is analyzed first, followed by descriptive results that summarize respondents' answers to the questions used in the analysis. It also shows some trends like the extent of usage of 3PL services, the reasons of outsourcing or not outsourcing, the most common outsourced logistics functions plus the potential and the impact of the usage of 3PL services. Then a number of statistical results from independent-test, ANOVA and Chi-square are presented to provide in-depth investigation of the relationships between different variables. This chapter demonstrates the retrieved empirical findings received from the conducted survey. In addition, all percentages shown in this chapter do not contain missing values.

### **5.2 Respondent profile**

As this questionnaire is anonymous, there is no company-specific information on which companies responded and which companies did not. However the questionnaire did collect some general statistics about the size and the industry of the respondents. This research has achieved replies from 84 companies and out of these 84 companies, there are 48 companies currently employing 3PL services.

#### **5.2.1 Company employee numbers**

The first question in the questionnaire deals with the number of employees in each company responding. This was used to measure respondent size. The results are shown below in table 5.1. It reflects the different categories provided as well as the responses received, with regard to the number of 3PL users and non-users of the respondent companies. Of the respondents to this question, 61% of the respondents indicated that their employee numbers were more than 20 while the remaining of the

respondents had the employment characteristics ranging between 0-20 employees. The details of employee numbers of each group are available in table 5.1. As the respondents were small in group between 6-10, 11-15, and 16-20, these groups were recategorized into small (0-20) and large (20+) companies.

Table 5.1: General company information and number of 3PL users and non-users in each category

Categories	No.	Percentage	Use of 3PL		Not use of 3PL	
			No.	Percentage	No.	Percentage
Number of Employee						
0-5	14	17%	5	10%	9	25%
6-10	9	10%	7	15%	2	6%
11-15	6	7%	2	4%	4	11%
16-20	4	5%	3	6%	1	3%
21+	51	61%	31	65%	20	55%
Turnover in 2008 (\$millions)						
0-5	24	29%	11	23%	13	36%
6-10	7	8%	4	8%	3	8%
11-15	2	3%	2	4%	0	0%
15-25	6	7%	4	8%	2	6%
26-100	12	14%	7	15%	5	14%
100+	33	39%	20	42%	13	36%
Business Category						
Automotive	9	11%	7	15%	2	5%
Retail	8	10%	3	6%	5	13%
Chemicals/Healthcare	2	2%	0	0%	2	6%
Hi-tech/Electronics	3	3%	3	6%	0	0%
Fashion/Textiles	4	5%	3	6%	1	3%
Food & Beverage	16	19%	14	29%	2	6%
FMCG	5	6%	4	8%	1	3%
Industrial	10	12%	9	19%	1	3%
Others	27	32%	5	11%	22	61%
Notes: *Total respondents are 84, with 48 using 3PL(s)						

### 5.2.2 Company turnover

The company size of the respondents was also measured by asking respondents to indicate the level of annual turnover of the company in 2008. Turnovers of the respondent companies in 2008 ranged from \$0 million to more than \$100 million, representing from very small to very large firms in the sample. Thirty nine percent of

respondents were in excess of \$1 billion. The results also showed an increasing relationship between the number of employees and level of turnover. Further results are shown above in table 5.1.

### **5.2.3 Business category**

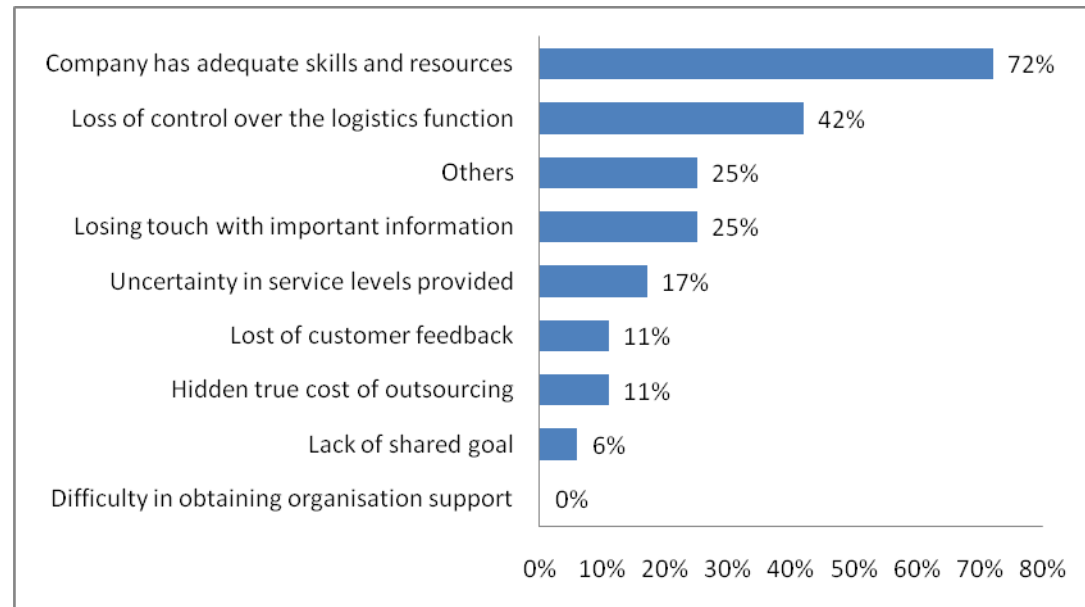
The responding companies were in a broad cross-section of the industry. The following categories were provided and responses were received. Of the respondents to this question, 19 percent were from food and beverage industry, 12 percent were involved in industrial, 11 percent in the automotive industry, 10 percent in retail, 6 percent in FMCG, and 5 percent in fashion/textiles. The respondents from hi-tech/electronics industry and chemicals/healthcare were 3 percent and 2 percent respectively. Respondents that had indicated 'Others' were mainly from industrial (construction / building, marine / boat building), wholesaler, and landscape industries. From this research, it was impossible to link trends and practices specifically to the different industry sectors as some of the responses were too small. This can be seen from table 5.1: the small number of 3PL users and non-users in each industry.

## **5.3 Reasons for not outsourcing logistics activities**

The main reasons why companies are not currently outsourcing logistics activities was ascertained by asking respondents to choose the reason(s) leading them not to outsource logistics activities from a list. The results in figure 5.1 showed that up to seventy two percent of the companies that did not outsource logistics had considered themselves to have adequate skills and resources instead. Some other concerns were the loss of control over the logistics function (42%), losing touch with important information (25%), uncertainty in service levels provided (17%), lost of customer feedback, hidden true cost of outsourcing (11%) and lack of shared goal (6%). Interestingly, difficulty in obtaining organization support was not selected by any respondent. With respect to the 25 percent of respondents that indicated that there were reasons in addition to the list as followings: Company has capital investment in

terms of warehousing and this is quite similar to company has adequate skills and resources; company concerns about transport damage; specialized product services not available; and a few of respondents were not aware of 3PL services.

Figure 5.1: Reasons for not outsourcing logistics activities



Notes: N=36 for each reason.

Therefore, companies seem to be disinterested in logistics outsourcing mainly because they are satisfied with their own logistics competence and apparently do not want to give up the control of logistics function in this survey. This may be due to a lack of the advantages of outsourcing and/or marketing by providers; and/or a lack of good experience of logistics function outsourcing. In addition, the majority of respondents did not see difficulty in obtaining organization support and lack of shared goal as important reasons not to undertake the outsourcing of their logistics activities.

Then an investigation on whether the size of a company has an impact on whether they choose a particular reason for not using 3PL services was conducted. This yielded meaningful information for 3PL providers to improve awareness by targeting specific groups of customers. Companies with less than 20 employees are categorized as small companies, whereas the rest are formed as large companies. Table 5.2 exhibits the results of the cross tabulation and Chi-square test for the size of

companies and whether they have selected a particular reason of not using a 3PLs services.

Table 5.2: Small companies vs. large companies: reasons for not outsourcing logistics activities

Type of Reasons	Percentage	Whether select the Reason		Pearson Chi-square value (df)	p-value
		Yes	No		
Loss of control over the logistics function	Small Company	5 (33%)	11 (52%)	1.286 (1)	.257
	Large Company	10 (67%)	10 (48%)		
Hidden true cost of outsourcing	Small Company	1 (25%)	15 (47%)	.689 (1)	.406*
	Large Company	3 (75%)	17 (53%)		
Losing touch with important information	Small Company	4 (44%)	12 (44%)	.000 (1)	1.00*
	Large Company	5 (56%)	15 (56%)		
Uncertainty in service levels provided	Small Company	3 (50%)	13 (43%)	.090 (1)	.764*
	Large Company	3 (50%)	17 (57%)		
Company has adequate skills and resources	Small Company	9 (35%)	7 (70%)	3.662 (1)	.056*
	Large Company	17(65%)	3 (30%)		
Lost of customer feedback	Small Company	3 (75%)	13 (41%)	1.702 (1)	.192*
	Large Company	1 (25%)	19 (59%)		
Difficulty in obtaining organization support	Small Company	0(0%)	16 (44%)	N/A	N/A
	Large Company	0(0%)	20 (56%)		
Lack of shared goal	Small Company	1 (50%)	15 (44%)	.026 (1)	.871*
	Large Company	1 (50%)	19 (56%)		
Others	Small Company	6 (67%)	10 (37%)	2.400 (1)	.121*
	Large Company	3 (33%)	17 (63%)		

Notes: \* represents cross tabulation has cells that have expected count less than 5

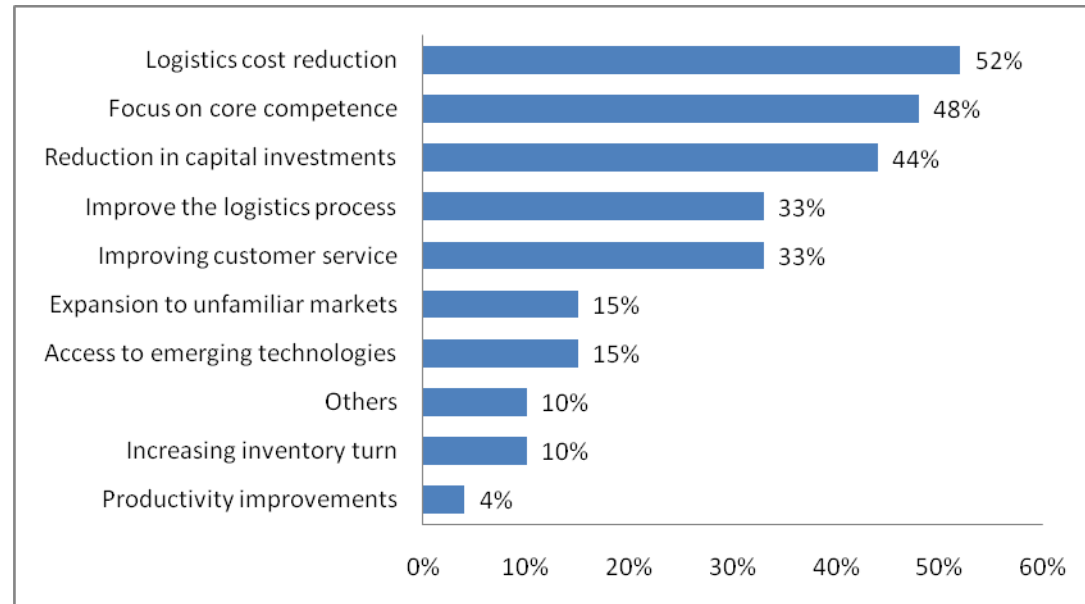
Significant Pearson Chi-square results are found on the reason of company has adequate skills and resources ( $\chi^2=3.662$ ,  $df=1$ , P two-tailed  $<0.1$ ). Where one cell has an expected count of less than 5, the results may not prove reliable. However, it is noticeable that compared to small company, the percentage of large company choosing this reason as not using 3PL is twice of that of small company, indicating a large difference on the selection. This may be that large companies are big enough to have their own logistics departments, which are equally effective at meeting expectations as outside logistics provider (Sanders, et al., 2007). By comparison, small companies tend to rely more on 3PL providers due to limited resources.

Another noticeable link to company size was 67 percent of the large companies and 33 percent of small companies have selected loss of control over the logistics function as a reason for not outsourcing. It reveals that large companies have more concerns about selecting a 3PL provider than small companies do. Such caution of large companies may also reflect lack of confidence over management of 3PL providers and unawareness of the benefits of outsourced logistics function.

## **5.4 Reasons for outsourcing logistics activities**

To determine why user companies employed 3PL providers, respondents were asked to identify their reasons for outsourcing logistics functions. The following categories were based on the benefits and advantages of outsourcing. Of the respondents to these questions, 52 percent of the respondents outsourced logistics activities due to the pressure to logistics cost reduction; 48% of them wanted to use the 3PL service providers so that they can focus on their core competencies; 44 percent of them due to the reduction in capital investments; 33% aim to improve the logistics process and customer services; and 15 percent due to expansion to unfamiliar markets and access to emerging technologies. Other reasons are reported in figure 5.2.

Figure 5.2: Reasons for outsourcing logistics activities



Notes: N=48 for each reason.

Therefore the majority of respondents consider logistics outsourcing to be a tool for achieving reduction in logistics cost and capital investments and focusing on their core competence. Similar result on logistics cost reduction has been ranked top from other studies made in USA, Australia, Western Europe, Singapore, Saudi Arabia, Malaysia and India (Lieb & Randell, 1994; Millen et al., 1997; Bhatnagar et al., 1999; Sohail & Sohal, 2003; Sohail & Al-Abdali, 2005; Sahay & Mohan, 2006). Unlike previous studies, improving customer service is not very high on the list.

Moreover, a cross tabulation is produced between small and large companies, and reasons for outsourcing logistics activities. This is to detect whether the size of a company based on the number of employees has effects on whether they choose a particular reason of using 3PL services. Categorization of company according to the number of their employees is applied following the same rule as discussed before. Table 5.3 shows the results of the cross tabulation and Chi-square test.

Table 5.3: Small companies vs. large companies: reasons for outsourcing logistics activities

Type of Reasons	Size of Company	Whether select the Reason		Pearson Chi-square value (df)	p-value
		Yes	No		
Focus on core competence	Small Company	4(17%)	13 (52%)	6.273 (1)	0.12
	Large Company	19 (83%)	12(48%)		
Logistics cost reduction	Small Company	6 (24%)	11(48%)	2.973 (1)	.085
	Large Company	19 (76%)	12(52%)		
Access to emerging technologies	Small Company	4 (57%)	13 (32%)	1.691 (1)	.193*
	Large Company	3 (43%)	28 (68%)		
Improving customer service	Small Company	10 (63%)	7 (22%)	7.696 (1)	.006
	Large Company	6 (37%)	25 (78%)		
Improve the logistics process	Small Company	9 (56%)	8 (25%)	4.554 (1)	.033
	Large Company	7 (44%)	24 (75%)		
Reduction in capital investments	Small Company	7 (33%)	10 (37%)	.071 (1)	.790
	Large Company	14 (67%)	17 (63%)		
Productivity improvements	Small Company	1 (50%)	16 (35%)	.194 (1)	.660*
	Large Company	1 (50%)	30 (65%)		
Increasing inventory turn	Small Company	4 (80%)	13 (30%)	4.850 (1)	.028*
	Large Company	1 (20%)	30 (70%)		
Expansion to unfamiliar markets	Small Company	3(43%)	14(34%)	.198 (1)	.656*
	Large Company	4(57%)	27(66%)		
Others	Small Company	0 (0%)	17 (40%)	3.061 (1)	.080*
	Large Company	5 (100%)	26 (60%)		

Notes: \* represents cross tabulation has cells that have expected count less than 5



Significant Pearson Chi-square results are detected on reasons including logistics cost reduction ( $\chi^2=2.973$ ,  $df=1$ , P two-tailed  $<0.1$ ), improving customer service ( $\chi^2=7.696$ ,  $df=1$ , P two-tailed  $<0.05$ ), improve the logistics process ( $\chi^2=4.554$ ,  $df=1$ , P two-tailed  $<0.05$ ). The results indicate that there is an association between the size of the company in terms of the number of employees and whether they were selected using these reasons via 3PL services.

For logistics cost reduction, it is observed that the percentage for small company is more than triple of the large company (24%, 76% respectively). The results may imply that larger companies tend to focus more on logistics costs due to better experiences with logistics reduction (Harrington, 2007). However, logistics cost reduction may not be the top priority for small companies to address, due to their greater flexibility. This can be explained by looking at the “improving customer service” column.

It is also noticeable that small companies tend to use 3PL services to gain improvement of their customer services rather than logistics cost reduction when compared with large companies (63% and 37% respectively). For reasons of improving the logistics process, the percentage of selecting it between small and large company does not make a big difference (56% and 44% respectively), indicating that significant results are not due to the difference between them.

In addition, other reasons such as access to emerging technologies, productivity improvements, increasing inventory turn, and expansion to unfamiliar markets and others are not discussed due to insufficient frequencies, which cannot produce reliable Chi-square results.

## **5.5 Extent of use of the third party logistics services**

### **5.5.1 Current level of logistics outsourcing**

The current levels of logistics outsourcing among respondent companies were identified by inquiring them to state whether or not their company had employed 3PL services. Companies which are current 3PL users were asked to complete the relevant questionnaires regarding their logistics outsourcing practices, trends, and opinions. Companies which are not current 3PL users were given a chance to explain the reason for not employing this service.

Among the respondents, the numbers of current users were 57 percent, while 43 percent are non-user firms. This indicates that a number of companies have realized the importance of employing third party logistics providers. For an overview of how the answers were divided among the different firms by number of employee, turnover, and business category see table 5.1.

Third party logistics play a significant role in New Zealand organizations as a whole. However, when considering international statistics such as the following: USA (79%) (Lieb & Bentz, 2004), Mexico (78.7%) (Arroyo, et al., 2006), Australia (75%) (Sohal, Millen, & Moss, 2002), Saudi Arabia (63.5%) (Sohail & Al-Abdali, 2005), Malaysia (63%) (Sohail & Sohal, 2003) and Singapore (60.3%) (Sohail, et al., 2006), this survey result may indicate that logistics outsourcing level in New Zealand is behind as compared to these countries.

### **5.5.2 Geographical coverage**

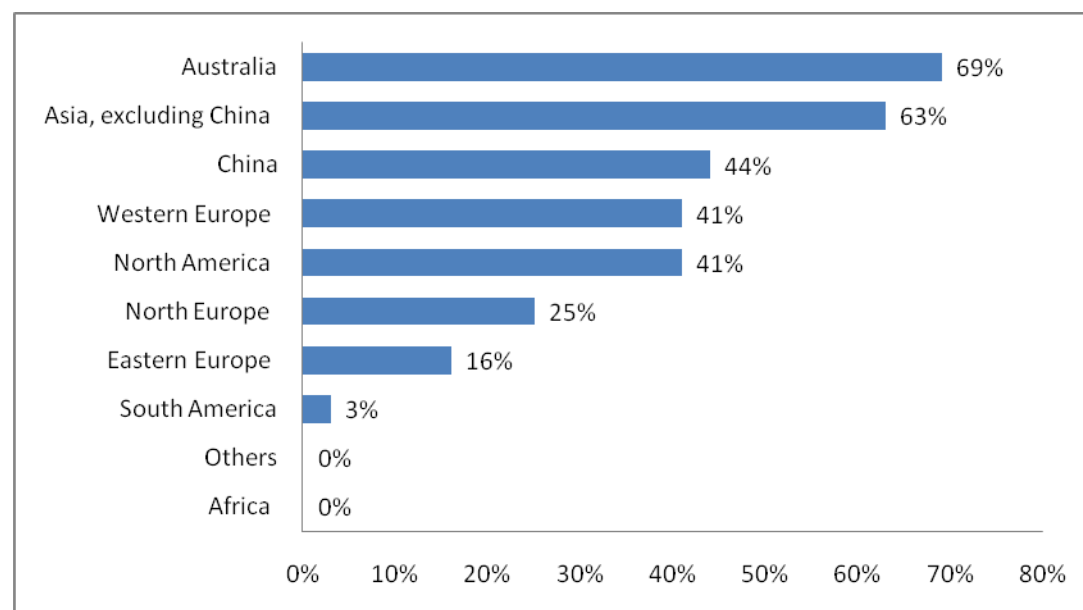
Table 5.4 shows that about 46 percent of 3PL users in New Zealand use 3PL providers to perform both domestic and international operations. The other 23 percent use such services for international operations only and 31 percent of users only use 3PL services domestically.

Table 5.4: The purpose of 3PL services used by geographical coverage

The purpose 3PL Service Used	No.	Percentage
Pure International	11	23%
Pure Domestic	15	31%
Both	22	46%
Total	48	100%

This survey showed that the respondents in New Zealand mainly used both domestic and international operations, similar to the study in USA, Western Europe, Singapore and Malaysia. These countries have used 3PL services for both domestic and international purpose (Lieb & Bentz, 2004; Millen, et al., 1997; Sohail, et al., 2006; Sohail & Sohail, 2003). New Zealand is a country where businesses tend to be more orientated towards importing and exporting goods and services. More specifically, many respondents of this survey have identified themselves as 3PL users while using outsourced logistics services in multiple geographies such as Australia, Asia, Western Europe, and North America. This was the same as the study in America (Lieb & Bentz, 2005). The results had shown that 69 percent of the respondents used 3PL services in Australia, followed by 63 percent in Asia (excluding China), 44 percent in China, same percent (41%) in both Western Europe and North America. Further coverage is shown in Table 5.3.

Figure 5.3: Use of 3PL services outside New Zealand



Notes: N=32 for each geographical region, with 1 missing value.

Furthermore, the size of a company may have an important impact on the purpose of the usage of 3PL. The size of a company can be represented in terms of their turnover. Bagchi and Mitra (2008) revealed that there was a significant association between turnovers and the degree of globalization in their research. Therefore, the investigation undertaken was to see if the company's size impacts on the purposes of usage of 3PL service, which are categorized by international purpose and domestic purpose here. Table 5.5 produces a cross tabulation results between them.

Table 5.5: Cross tabulation between turnover and the purpose of 3PL Service

Group of Turnover in 2008(in millions)	3PL Service used for	
	Pure International and Both	Pure Domestic
0-25	16(49%)	5(33%)
>25	17(51%)	10(67%)
Total	33 (100%)	15 (100%)
Notes: $\chi^2=0.962$ , $df=1$ , $p_{two-sided}=0.327$		

For this cross tabulation, a looser criterion was applied for defining a smaller company (with less than 25 millions). The results in table 5.5 show an almost similar percentage using 3PL service for both small and large companies (49% and 51% respectively) relatively to international purpose, whereas the difference is more than doubled for domestic purpose. Moreover, Pearson Chi-square is not significant ( $p>0.1$ ,  $\chi^2=0.962$ ). Therefore, the results reveal that there is no association between company's turnover and the purpose of using 3PL services in this study.

### 5.5.3 Length of experience in using 3PL services

Of those respondents who are currently outsourcing logistics activities, 71 percent of them indicated that their firms have been using 3PL for more than 3 years. Only 4 percent of respondents presented that have been using 3PL services less than one year. This indicates a significant amount of experience with 3PL services in New Zealand companies. It is also similar to the study done in Australia with 66 percent of the users outsourced logistics for more than 3 years (Sohal, et al, 2002), in both USA and

Singapore with 84 percent of users outsourced logistics services for more than 3 years (Lieb & Bentz, 2005; Sohail, et al., 2006). Table 5.6 also shows how the length of experience with 3PL services was spread in the category of annual turnover. Interestingly, only 2 small size companies with annual turnover between 0-10 \$millions have been experienced with 3PL for less than 1 year. Moreover, 75 percent of respondents with annual turnover more than 100 \$millions have been experience with 3PL services for more than 3 years. These may due to the larger companies with longer company history and more experiences.

Table 5.6: Length of experience with 3PL services and Annual Turnover

Annual Turnover in 2008 (\$millions)	The Length of Using 3PL(s)				Total
	< 1year	1-3 years	4-5 years	>5 years	
0-5	1(9%)	4(36%)	0(0%)	6(55%)	11(100%)
6-10	1(25%)	0(0%)	2(50%)	1(25%)	4(100%)
11-15	0(0%)	0(0%)	0(0%)	2(100%)	2(100%)
16-25	0(0%)	1(25%)	0(0%)	3(75%)	4(100%)
26-100	0(0%)	2(29%)	0(0%)	5(71%)	7(100%)
100+	0(0%)	5(25%)	5(25%)	10(50%)	20(100%)
<b>Total</b>	<b>2 (4%)</b>	<b>12 (25%)</b>	<b>7 (15%)</b>	<b>27 (56%)</b>	<b>48 (100%)</b>

Chi-square test is performed to test whether the size of a company in terms of turnover has an impact on the length of using a 3PL. However, a large number of frequencies are less than 5 due to a small sample size. Therefore, the assumption of Chi-square's test is violated which can create problems on reliable results (Field, 2005, p.686). Therefore, companies that have turnover less than 25 millions in 2008 are combined as small size company, whereas the others are formed as the large company. The results can be seen on table 5.7. It shows that Pearson Chi-square is not significant ( $\chi^2=0.314$ ,  $df=1$ ,  $p_{two-tailed} > 0.1$ ). The results indicate that there is no association between company size and the length of experience with 3PL.

Table 5.7: Cross Tabulation for the Length of use of 3PL and Annual Turnover

Annual Turnover in 2008 (\$millions)	The Length of Using 3PL(s)	
	0-3 years	>3 years
0-25	7(50%)	14(41%)
>25	7(50%)	20(59%)
Total	14 (100%)	34 (100%)
Notes: $\chi^2=0.314$ , $df=1$ , $p_{two-tailed}=0.575$		

#### 5.5.4 Percentage of total logistics budget allocated to 3PL providers

Table 5.8 shows the survey results about the percentage of total logistics budget allocated to 3PL providers by five categories. About 39 percent of respondents allocated more than 40 percent of their current annual logistics budgets to 3PL providers and the remainder of the firms allocated less than 40 percent of their logistics budget. This is quite similar to the survey findings of Australian firms, which indicated that 24 percent of the firms allocated more than half of their total logistics budget to contract providers and 61 percent of the firms allocated less than 30 percent of their logistics budget (Sohal, et al, 2002). European (Wilding & Juriado, 2004) and Singaporean firms (Sohail, et al., 2006) were in similar positions. However, other countries than New Zealand have reported allocating a lower percentage of budgets to 3PL services.

Table 5.8: Percentage of total logistics budget allocated to 3PL providers

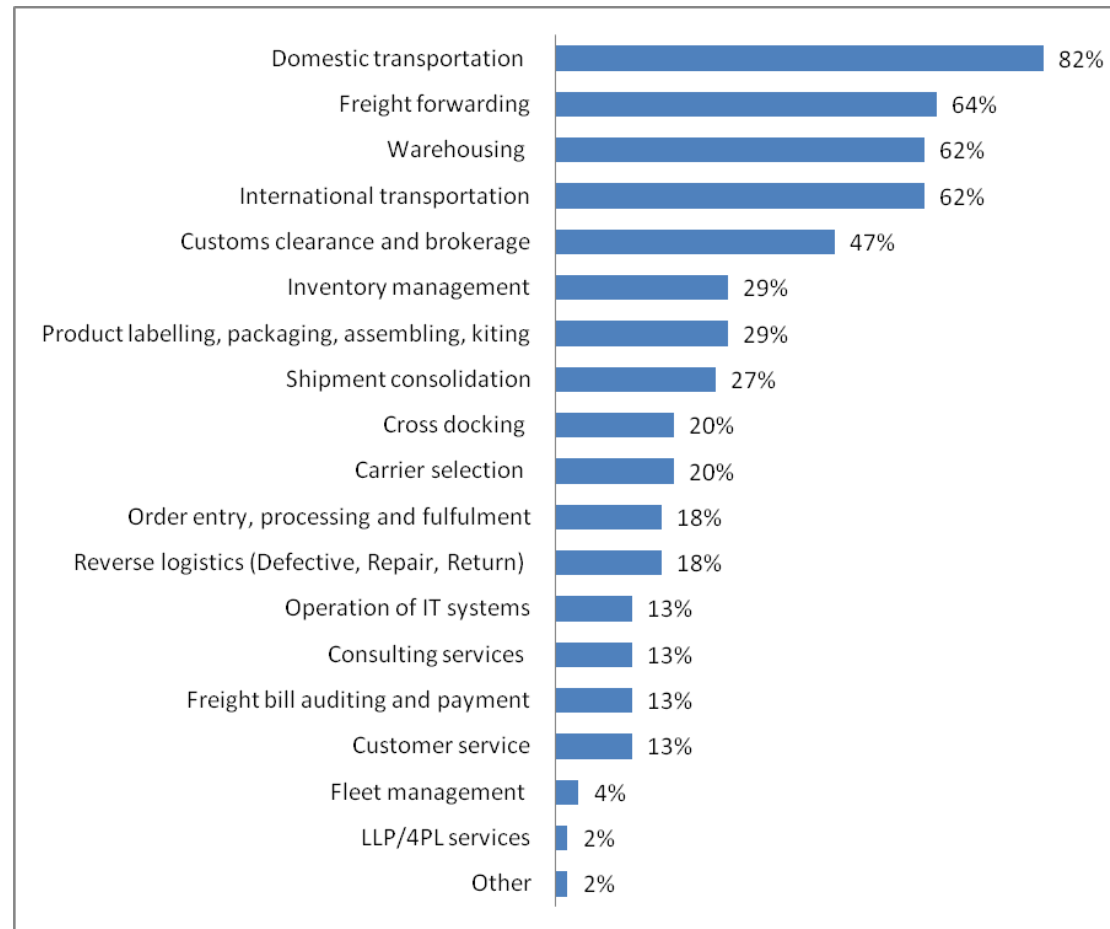
Percentage of Total Logistics		
Budget Allocation	No.	Percentage
0-19%	14	29%
20-39%	15	32%
40-59%	11	23%
60-79%	4	8%
80-100%	4	8%
Total	48	100%

### **5.5.5 3PL services used, trends and satisfaction level**

The activities listed in Figure 5.4 show the outsourcing trends in New Zealand with respect to the logistics services most outsourced. They are ranked from most frequently outsourced to least. Companies are using a wide range of 3PL and the typical user buys multiple logistics services from their provider(s). Of the respondents to these questions, the most frequently outsourced logistics services were domestic transportation (82%), freight forwarding (64%), warehousing (62%), international transportation (62%), and customs clearance and brokerage (47%). Those most outsourced logistics activities in the US, Western Europe, Asia Pacific, and Latin America were also domestic transportation (83%), international transportation (70%), warehousing (69%), customs clearances and brokerage(67%), and freight forwarding (51%) (Cap Gemini, 2007). In New Zealand, it seems freight forwarding was more popular than in other countries around the world; international transportation was a little bit lower.

However, less than 30 percent of the respondents outsourced other logistics activities in New Zealand. Despite the extensive movement of many 3PL providers into non-traditional services during the past few years (Cap Gemini, 2007), very few respondents reported using their 3PL providers for LLP/4PL services, customer service, consulting service etc. This perhaps indicates that a few primary logistics services are popular and more sophisticated and integrative services have yet to gain widespread acceptance in New Zealand 3PL industry.

Figure 5.4: Most frequently used 3PL services (percentage of responding users)



Notes: N=45 for each 3PL service, with 3 missing value.

In the follow-up question, respondents were asked to indicate the level of their satisfaction with the 3PL services (1 = very dissatisfied; 5 = very satisfied). The response of using 3PL services and the level of satisfaction is presented in table 5.9. These figures are in general relatively even and the average rate of satisfaction is 3.64 with maximum 4.14 and minimum 2.89. The result of the surveys demonstrated that respondents were overall satisfied with their 3PL service providers. The service which the respondents were most satisfied with was international transportation which scored 4.14 with a relatively small standard deviation of 0.448. The 3PL service with the lowest satisfaction level was reverse logistics (2.89 with standard deviation 1.364). It can imply the potential need for this area. The satisfaction level for domestic transportation (3.86 with standard deviation 0.585) and warehousing (3.71 with standard deviation 0.60) were relatively low compared with other frequently used 3PL services such as international transportation, freight forwarding, customs clearance



and brokerage. Furthermore, the levels of satisfaction with customer service, shipment consolidation, order entry, processing and fulfillments, inventory management are less than 3.72 with a relative small standard deviation. There might be improvements that can be made in these aspects as well.

Table 5.9: The satisfaction level of outsourced logistics services

Type of 3PL Services	N	Mean	Std. Deviation
International transportation	28	4.14	0.448
Freight Forwarding	29	4.07	0.799
Other	1	4.00	N/A
Customs clearance and brokerage	21	4.00	1.049
Product Labelling, Packaging, Assembling, Kiting	13	4.00	0.000
Domestic Transportation	37	3.86	0.585
Carrier Selection	9	3.78	0.667
Cross Docking	9	3.78	0.441
Warehousing	28	3.71	0.600
Consulting services	6	3.67	1.033
Freight bill auditing and payment	6	3.67	1.033
Customer service	6	3.67	0.516
Shipment consolidation	12	3.67	0.778
Order entry, processing and fulfilment	8	3.50	0.535
Inventory management	13	3.38	0.768
Operation of IT systems	6	3.33	1.033
LLP/4PL services	1	3.00	N/A
Fleet management	2	3.00	0.000
Reverse logistics(Defective, Repair, Return)	9	2.89	1.364

Notes: Each respondent rated nineteen types of 3PL service based on a 5 point scale, where 1=very dissatisfied; 2= dissatisfied; 3=Neither; 4=satisfied; 5= Very satisfied.

Furthermore, it is interesting to investigate the relationship of whether the length of employing 3PL services has any impact on the number of services used. An ANOVA was conducted at first. However, it is difficult to have enough respondents for each group on the length of using a 3PL due to a small sample and this is designated to have four groups. Thus, an independent T-test was conducted instead of the initial proposed ANOVA. Companies which used a 3PL service for equal or less than three years are considered as a short-term group. Other companies employing a 3PL service for equal or greater than 4 years are formed as a long-term group. The results of T-tests are shown on table 5.10.

Table 5.10: Independent samples T-test for Mean of Number of 3PL Service used on the length of using 3PL(s)

	Length of Using 3PL(s) In groups	N	Mean	Std. Deviation	Levene's Test for Equality of Variances		t value (df.)	Independent Samples p-value (2-tailed)
					F	Sig.		
Mean of the number of 3PL Service used	<=3 year	12	4.0	1.76	1.171	.285	-1.815	.077
	>3 year	33	5.9	3.47			(43)	

From this table, it is observed that Levene's test for equality of variances is not significant (p value >0.05). With equal variances on each group, the two tailed T-test results are slightly significant ( $t=-1.815$ , p value <0.1). It indicates that within a subgroup analysis, there is a significant difference on the number of 3PL services used by users with different length experience with a 3PL provider. In this research, the reason for application of a p-value at 0.1 as the criteria for significant finding is the small sample of this research. The small sample was mainly caused by limited funding and time. Also, target samples are companies rather than individuals. In addition, Field (2005, p.31) pointed out in his study that choosing a lower significant level of accepting an effect will also increase the probability to reject the genuine effect. Therefore, it cannot be stated that choosing a lower significant value as the cutting point is better than choosing a higher significant value.

Moreover, an ANOVA has been used to test whether there are differences among the number of 3PL services used and the different level of logistics budget allocation to a 3PL company. Because of the small sample size, four groups of budget allocations have been combined into 3 groups: low-budget users (1-39%), medium-budget users (40%-59%) and high dedicators (over 60%). The ANOVA statistic results are shown in table 5.11.

Table 5.11: ANOVA for Number of 3PL Services used

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	47.328	2	23.664	2.463	.097
Within Groups	403.472	42	9.606		
Notes: Levene's Test for Homogeneity of variance results's p-value is .337, with F=1.117					

In order to meet the assumption of an ANOVA test, a test of Homogeneity of variance is also conducted. The results with an insignificant p value (p value >.05) shows that each group is homogeneous in their variance. From table 5.11 the ANOVA statistic with a slightly significant value (F=2.46, p value <.1) indicates that there are differences on the number of 3PL services used across different logistics budget allocation groups. In order to investigate where the difference lay between groups, a Turkey test is also conducted (see table 5.12).

Table 5.12: Multiple Comparisons for Number of 3PL Services used by Turkey HSD

Logistics Budget Group Comparison	Mean		Sig.
	Difference	Std. Error	
Low Budget Vs Medium Budget	-.806	1.19	.777
Medium Budget Vs High Budget	-.1.94	1.51	.408
Low Budget Vs High Budget	-2.75	1.25	.081
Notes: Low Budget =0-39%; Medium Budget = 40%-59%; High Budget =60%-100%			

Table 5.12 shows that a significant difference exists only between low budget-allocated company and high dedicator (p value<.1). The non-significant results were detected between low and medium groups and medium and high groups, probably due to the small number of respondents in this research. The mean of the number of 3PL services used among the three groups indicates a trend that companies that allocate higher logistics budget to 3PL providers tend to buy multiple logistics services.

### 5.5.6 Number of 3PL providers used

The number of logistics service providers currently used was established by asking respondents to indicate how many providers they currently employed. Of the respondents to this question, 60 percent indicated that they used between two and five different logistics service providers, 15 percent used only one, and 25 percent used 6 or more providers.

Therefore, 85 percent of respondents employed the services of more than one 3PL provider. This was similar to most of the countries mentioned in the literature, such as USA (Lieb & Bentz, 2005), Australia (Sohal, et al., 2002) and Singapore (Sohail et al., 2006). Furthermore, the majority of the respondents use between two and five logistics service providers. This is probably because the 3PL users want to have a close relationship with their logistics providers. However, this result differs from the result of Malaysian companies, which do not rely on one or two logistics providers but employ various logistics providers to enhance their services (Sohail & Sohal, 2003).

Table 5.13 provides an analysis of the size of the firm based on annual turnover with the number of 3PL providers used. The most frequent users are companies with an annual turnover of more than \$100 million; approximately 84 percent of them employ more than one 3PL service provider. There has been a trend of hiring more than one logistics provider for large global companies, in some instances this is due to the necessary geographic coverage, future expansion, and the need to ensure competition, flexibility, optimum costs and service (Song, Maher, Nicholson, & Gurney, 2000). Moreover, 82 percent of the users with annual turnover between 0-5 million employ two to five service providers. There has been another trend by companies to outsource to as few providers as possible in the US and UK, thus concentrating on a smaller numbers of two to five more reliable providers (Waters, 2003).

Table 5.13: Number of 3PL Providers divided into different ranges of annual turnover

Annual Turnover in 2008 (\$millions)	Number of different 3PL Provider			
	1	2-5	>=6	Total
0-5	1(9 %)	9(82 %)	1(9 %)	11(100 %)
6-10	1(25 %)	2(50 %)	1(25 %)	4(100 %)
11-15	0(0 %)	1(50 %)	1(50 %)	2(100 %)
16-25	0(0 %)	2(50 %)	2(50 %)	4(100 %)
26-100	2(29 %)	5(71 %)	0(0 %)	7(100 %)
100+	3(16 %)	9(47 %)	7(37 %)	19(100 %)
Total	No. 7(15 %)	28(60 %)	12(25 %)	47(100 %)

Notes: N=47, with 1 missing value.

According to the above findings, an independent t-test was employed to test the mean numbers of 3PL providers used with groups of turnover. The initial design was to divide companies into six groups by turnover. This is mainly because the majority of New Zealand's companies are small companies (Liesch & Wilson, 2005). However, it is difficult to carry out an ANOVA test across turnover groups due to a very small sample being allocated to each group. Therefore, companies with a turnover of less than 10 millions in 2008 are grouped together, whereas the others (more than 10 millions) are formed as another group. Then an independent t-test was performed. The results are shown in table 5.14.

Table 5.14: Independent Samples T-test for Mean of Number of 3PL Provider used on groups of Turnover

	Turnover groups (in millions)	N	Mean	Std. Deviation	Levene's Test for Equality of Variances		t value (df.)	Independent Samples p-value (2- tailed)
					F	Sig.		
Mean of the number of 3PL Provider used	0-10	15	3.07	2.43	.420	.520	-1.303	.199
	>10	32	4.03	2.33			(45)	

Notes: the figures shown in turnover groups represent millions.  $r=.191$

From the table, it shows that, on average, small companies (turnover less than 10 millions) use a lesser number of 3PL providers than large companies (turnover more than 10 millions). The similarity of standard deviation of the two groups (2.43 vs. 2.33) shows that the average of the two groups is more comparable with each other. However, the results of p value ( $p$  – value  $> 0.1$  with  $t = -1.303$ ) from the t-test indicate that there are no significant differences for the number of 3PL providers used, no matter if the company is small or large in terms of turnover. However, it reflects a small size of effect ( $r = 0.191$ ). The results imply that a large company may not use more providers because they may want to have a closer relationship with a small number of 3PL providers. It also reflects that they do not have the need to outsource logistics so much because they may have adequate resources and skills by themselves. In the USA and UK it has also been found that larger companies often seek to use a smaller number of providers, so that they can maintain control and closely monitor their outsourcing (Waters, 2003).

### 5.5.7 Length of third party contracts

Table 5.15 shows that 69 percent of the respondents had signed contracts with their 3PL service providers. From the results of contract durations long - term relationships are most common, in 82 percent of all cases the average duration of the contracts used is one to three years. There were similar results in the USA (Lieb & Bentz, 2005), Australia (Sohal, et al., 2002) and Western Europe (Wilding & Juriado, 2004). Malaysian and Singaporean companies however tend to have longer relationships with more than 5 years contract duration (Sohail, et al., 2006). Further considerations are in Table 5.15.

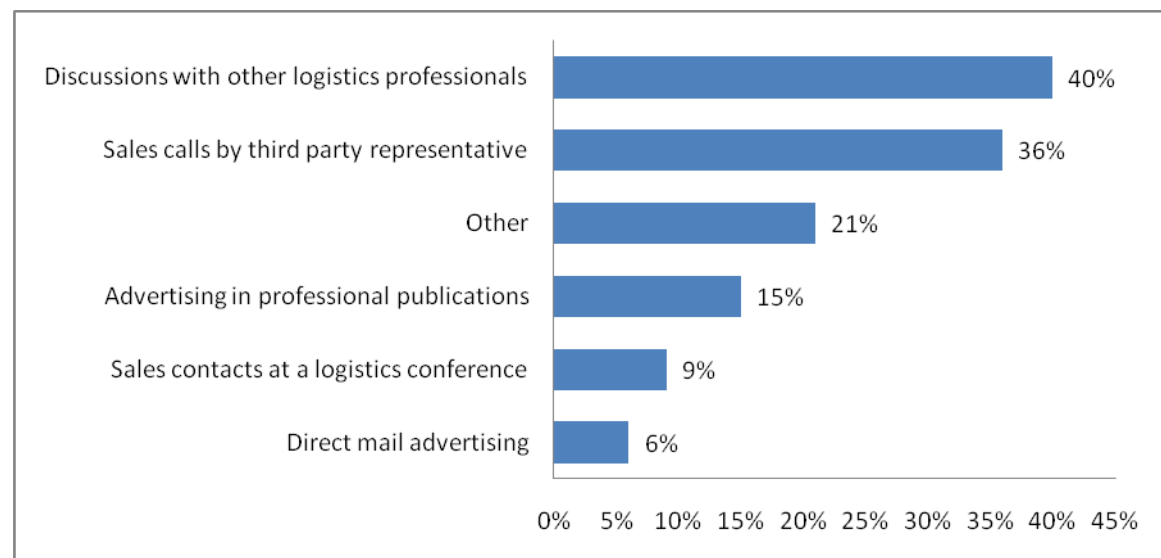
Table 5.15: Whether have contracts with 3PL and the length of 3PL contracts

	Whether Have Contracts with 3PL Provider			
	Yes		No	
	No.	%age	No.	%age
<b>Length of Contracts</b>	<b>33</b>	<b>69 %</b>	<b>15</b>	<b>31 %</b>
<1 year	3	9 %	N/A	N/A
1-3 years	27	82 %	N/A	N/A
4-5 years	2	6 %	N/A	N/A
>5 years	1	3 %	N/A	N/A

### 5.5.8 Information sources used for finding 3PL service providers

3PL users become aware of their logistics services provider(s) in a variety of ways. They use various methods to discover the appropriate third party logistics service companies to meet their needs. Figure 5.5 shows that the most common ways were discussions with other logistics professionals (40 percent) and sales calls by representatives (36 percent). 21 percent of respondents mentioned other and added sources such as: local knowledge, previous experience, personal contact, partnership with a key freight center, response to request for tender or registration of interest and the logistics outsourcing decisions made before the employment of logistics managers. Similar findings are also reported from Australia, USA, Western Europe, Singapore and Saudi Arabia (Millen et al., 1997; Bhatnagar et al., 1999; Lieb & Randell, 1999; Sohail & Al-Abdali, 2005).

Figure 5.5: Most frequently cited ways those using 3PL services became aware of such services



Notes: N=47 for each information source, with 1 missing value.

## 5.6 Critical success factors of selecting and evaluating 3PL providers

The key success factors used when selecting logistics service providers were established by asking respondents to indicate the extent to which the factors listed

were important to the company when selecting a service provider and also to rate the provider performance with these key success factors. The list of 14 key success factors was compiled from literature review.

Table 5.16 shows the means for both the factor importance and the company rating for selection and evaluation of a 3PL. Each respondent was asked to rate fourteen types of factors for both importance and company performance based on a 5 point scale. The factor importance ranges from 1 (very unimportant) to 5 (very important). Likewise, for company rating the ranges are also from 1 (very low) to 5 (very high). The average rating of the factor importance is 3.99 with maximum 4.63 and minimum 3.24 and company rating is 3.68 with maximum 4.00 and minimum 3.31. It is obvious that all means in this table are more than three. Therefore, the result of the survey demonstrated that respondents believe these factors are important and they are satisfied with their providers' performance in general.

Table 5.16: Factor importance vs. company rating (mean)

Factors for Evaluation and Selection of a 3PL	Factor Importance (N=46)		Company Rating (N=45)	
	Std.			
	Mean	Deviation	Mean	Std. Deviation
Breadth of service offerings	3.89	0.674	3.67	0.853
Price	4.37	0.645	3.84	0.878
Quality of logistics services	4.46	0.721	3.80	0.842
Flexibility to meet unanticipated customer needs	4.26	0.773	3.73	0.720
Financial stability	4.00	0.843	3.58	0.583
Length and depth of 3PL relationships	3.70	0.662	3.69	0.633
Experience as a 3PL provider	4.00	0.760	3.89	0.745
Investment in quality assets	3.72	0.688	3.51	0.661
Investment in information systems	4.15	0.729	3.67	0.640
Skilled logistics professionals	4.15	0.788	3.76	0.830
The size of logistics provider	3.24	0.736	3.31	0.668
Company reputation	3.78	0.758	3.62	0.777
Focus on specific industries	3.57	0.910	3.40	0.780
The speed of delivery	4.63	0.645	4.00	0.905

Note: N=46 for importance rating, with 2 missing value; N=45 for company rating, with 3 missing value.

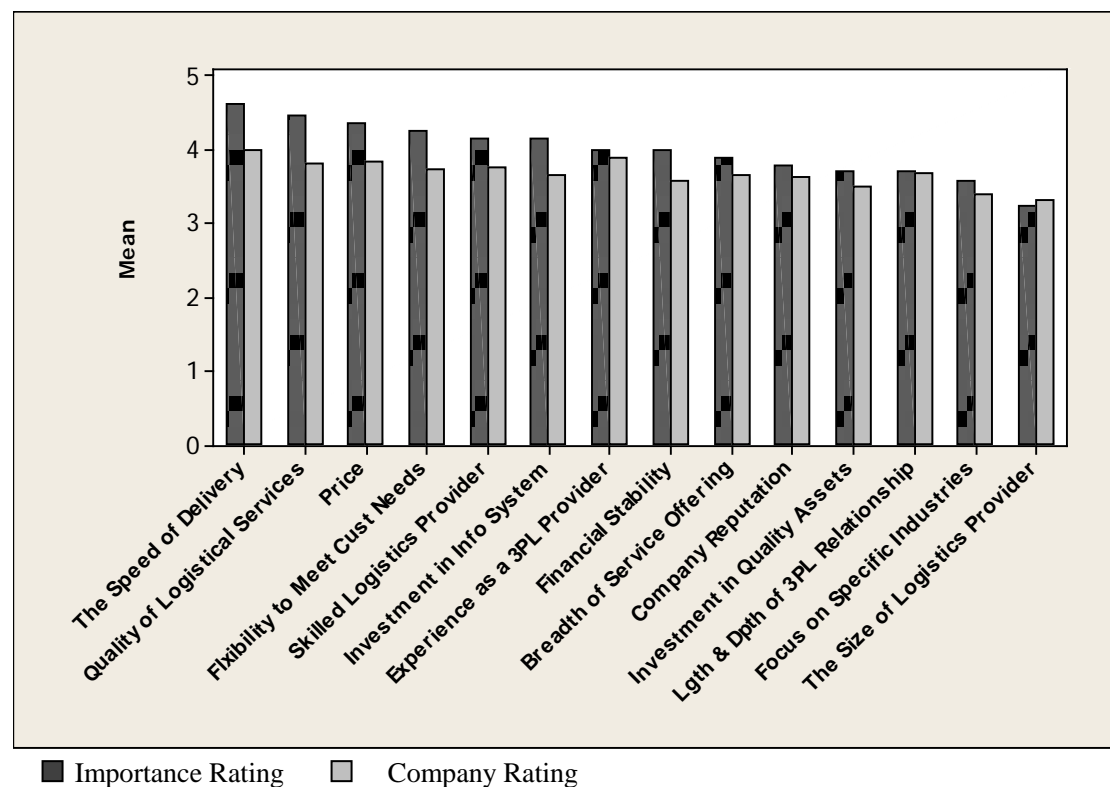
It is noticeable that the service speed of delivery has the highest mean in the factor importance and has the lowest standard deviation when compared to the rest of the factors (mean = 4.63, standard deviation = 0.645). This result indicates that



respondents place more consideration on the speed of delivery. It also reflects the respondent's concern on the transportation function of 3PL service over other 3PL services such as price and quality of logistics services in New Zealand.

It is also clear to see the trend and ranking from the bar charts (figure 5.6 ) which rank the mean from the highest to the lowest for importance factor. Quality of logistical services (mean = 4.46, standard deviation = 0.721) and price (mean = 4.37, standard deviation = 0.645) are ranked as the second and the third important factors with relatively low standard deviation. A number of studies have revealed the importance of price and quality as well (La Londe & Maltz, 1992; McGinnis et al., 1995; So, et al., 2002; Sohail & Sohal, 2003). Thereafter the important factors are flexibility to meet unanticipated customer needs, investment in information systems, skilled logistics professionals, the size of logistics providers and company reputation according to the average rating. They are comparable mainly because these factors are similar in terms of their standard deviation on importance rating.

Figure 5.6: Gaps and trends between factor importance vs. company rating (mean)



Note: N=46 for importance rating, with 2 missing values; N=45 for company rating, with 3 missing values.

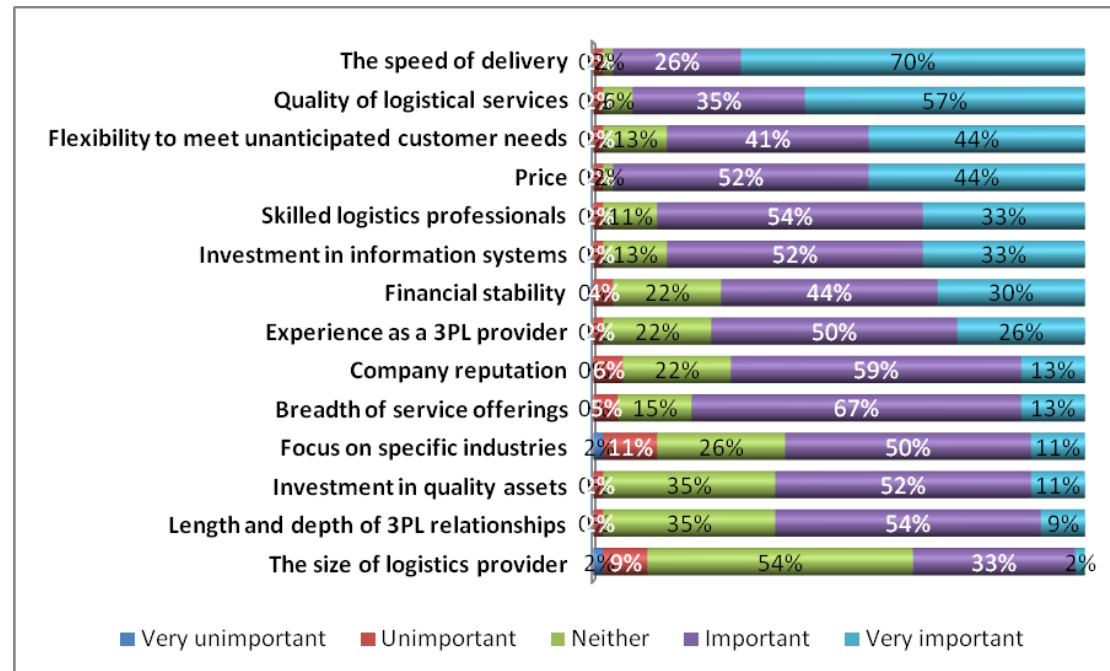
Similar rankings are observed on the average of company performance ratings. Speed of delivery (mean = 4.00, standard deviation = 0.905), price (mean = 3.84, standard deviation = 0.878) and quality of logistics services (mean = 3.80, standard deviation = 0.842) all have a relative high rating for the 3PL providers. The results imply that 3PL providers have performed well in capturing the order of importance concerning these factors for users.

Therefore, the knowledge of the ranking of the factor importance is vital because it can direct 3PL provider's future investments and management strategies. For example, resources are always limited to some extent, therefore it is critical to make decisions in the right direction according to these key success factors, so that the benefits of using 3PL services can be well presented.

Figure 5.6 shows the trends and gaps between the factors importance and company rating.

It is apparent that in general the factor importance is higher than company rating, except for the size of logistics providers and length and depth of 3PL relationships. For further details about their mean and standard deviation see table 5.16. This trend reveals that the respondents are either too ambitious in respect to the factor importance, or too critical of their 3PL service providers, or both. Also, this may imply the areas that need to be improved by 3PL providers if negative gaps occur. Furthermore, only one factor, the size of logistics providers was found to have a positive gap, which is not much difference by their mean 3.24 and 3.31 respectively.

Figure 5.7: Importance of factors when evaluating 3PL service providers(percentage)



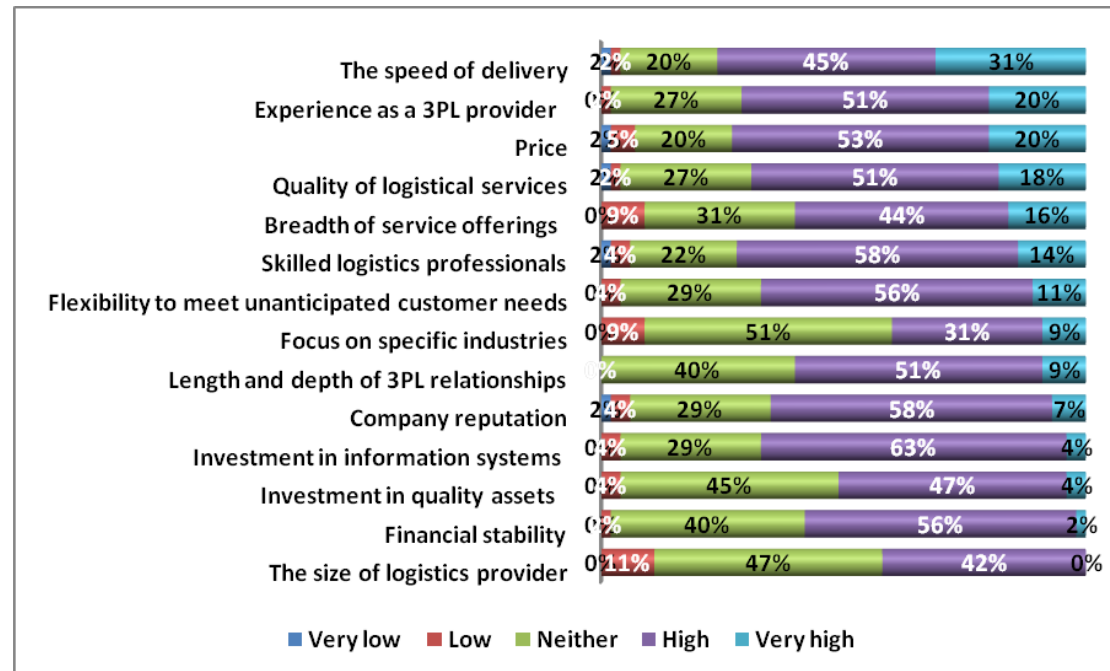
Notes: N=46 for importance rating, with 2 missing value

Figure 5.7 further explores the rating for each factor's importance when evaluating 3PL providers. The graph is designed to show the relevance of importance for each factor by evaluating the rating.

Nearly three-quarters of the respondents (70 %) believed that speed of delivery is a very important factor when selecting a service provider. A higher level of customer satisfaction is achieved by faster speed of delivery.

Most respondents place important and very important ratings on the first ten factors in the graph. The size of logistics providers is neither important nor unimportant.

Figure 5.8: Degree of company rating for their 3PL service providers (percentage)



Notes: N=45 for company rating, with 3 missing values

Figure 5.8 likewise shows individual ratings for each company for the 3PL service providers. Over two thirds of all users indicated that their 3PL service providers' performance were very high and high with regard to the speed of delivery (76 %), experience as a 3PL provider (71 %) and price (73 %). The relative low factors (rated as important by under 50% of the respondents) were focus on specific industries and the size of logistics providers. All in all, it is interesting to note that, in terms of importance, price was less important than speed of delivery and quality of logistics services, which were considered the most important criteria with respect to the selection of a logistics service provider. This is similar to global trends.

## 5.7 Impact of the use of 3PL providers on user firms

Respondents who are users of the services of 3PL providers were asked to rate the impact of outsourcing on their companies. The results to this question are provided in table 5.17 and figure 5.9 by average and percentage respectively. The evaluation was

done on a five-point Likert scale, with a score of 1 indicating a “very low” and a score 5 indicating “very high”.

Table 5.17: Impact of 3PL services on various corporate issues

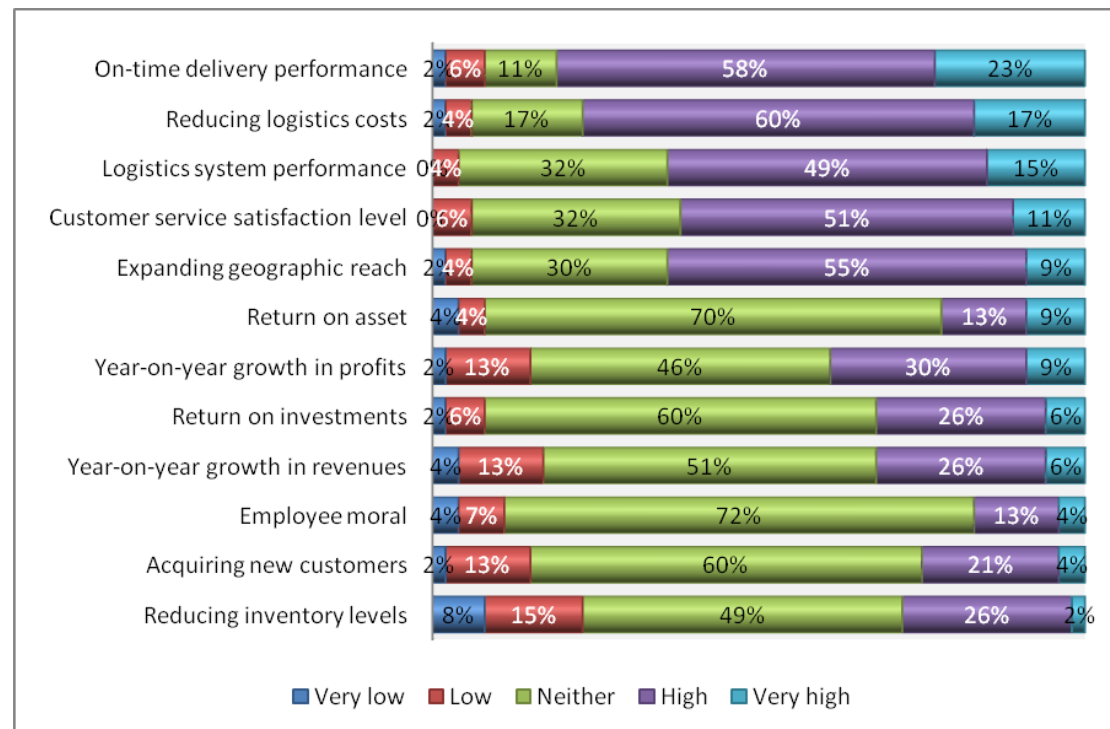
Type of impact on usage of 3PL Service	Average	Std. Deviation
On-time delivery performance	3.94	0.895
Reducing logistics costs	3.85	0.834
Return on asset	3.17	0.816
Logistics system performance	3.74	0.765
Customer service satisfaction level	3.66	0.760
Expanding geographic reach	3.64	0.792
Year-on-year growth in profits	3.30	0.891
Return on investments	3.28	0.772
Year-on-year growth in revenues	3.17	0.892
Acquiring new customers	3.13	0.769
Employee moral	3.06	0.734
Reducing inventory levels	2.98	0.921

Notes: N=47, with 1 missing value.

Table 5.17 shows the average rating on the impact of usage of 3PL services on the company’s performance in different aspects. Each respondent rated twelve impacts on usage of 3PL service based on a 5 point scale, where 1= very low; 2= low; 3=Neither; 4=high; 5=very high. The average is 3.41 with maximum 3.94 and minimum 2.98. The result of the surveys demonstrates that user firms believe that 3PL have a positive impact on their business. The issue which the respondents considered having the most positive impact on their business was on-time delivery performance which scored 3.94 with a relative small standard deviation of 0.895. The results indicate that 3PL users had good experience with 3PL services to improve their on-time delivery performance. This was followed in the impact ranking by the performance criteria reducing logistics costs and logistics system performance. The issue with the lowest impact of 3PL services was reducing inventory levels, which scored 2.98 but with a relatively large standard deviation of 0.921. It shows that there is a large variance among respondents over this performance criteria. Moreover, this result may imply the potential need for this area to 3PL providers in New Zealand. Furthermore, the impact on year-on-year growth in profit, return on investments, return on asset, year-

on-year growth in revenues, acquiring new customers and employee moral are less than the median of 3.50 with a relative small standard deviation. It might be that improvements can be made in these aspects as well.

Figure 5.9: Impact of 3PL services on various corporate issues (percentage)



Notes: N=47, with 1 missing value.

From figure 5.9 it can be clearly seen that more than 81% of the respondents believe on-time delivery performance had either a high or very high impact by 3PL services. This is also in line with other countries such as Australia (94 percent), Europe (98 percent) and the USA (90 percent) (Millen et al, 1997). Nearly as many (77 percent) gave their highest ranking to reducing logistics costs, 64 percent gave their vote to logistics system performance and expanding geographic reach, and 62 percent of all users reported a high or very high impact on customer service satisfaction.

However, twenty three percent of the respondents reported a low or very low impact on reducing inventory levels. The respondents also reported a low and very low impact on year-on-year growth in revenues (17 percent), year-on-year growth in

profits (15 percent) and acquiring new customers (15 percent). Moreover, 11 percent of the respondents indicated that 3PL services had a negative impact on employee morale.

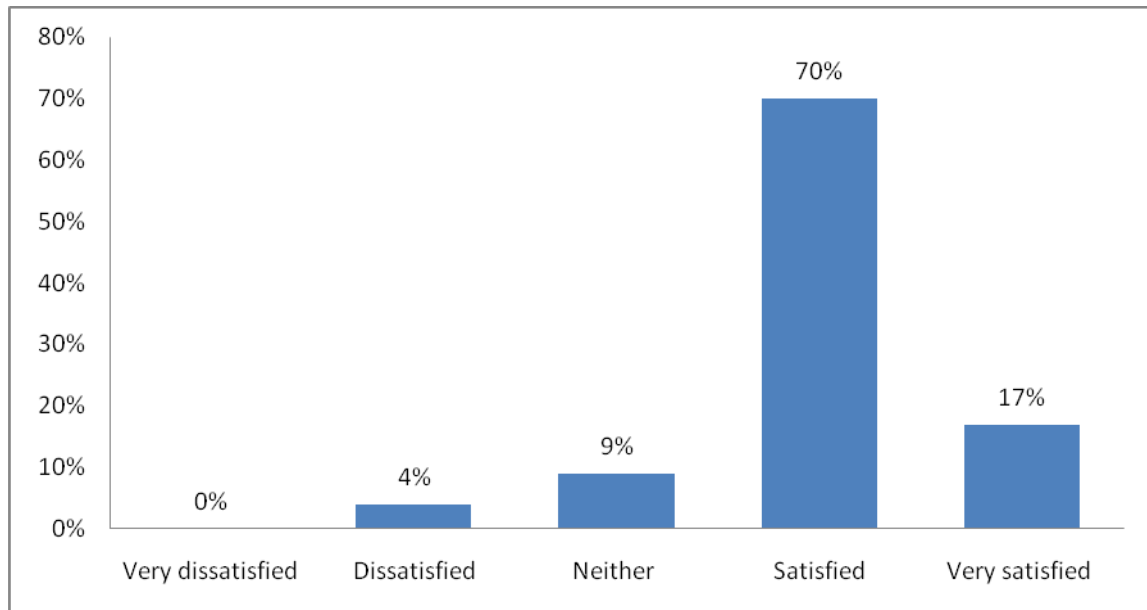
Furthermore, it is obvious from figure 5.9 that a substantial number of respondents typically indicate that the use of 3PL services had no impact in several of the above categories such as employee moral (72 percent), return on asset (70 percent), return on investment, acquiring new customers (60 percent), year-on-year growth in revenue (51 percent), reducing inventory levels (49 percent) and year-on-year growth profit (46 percent). However, respondents do not necessarily expect logistics outsourcing to have benefits everywhere.

Another similarity with the study of Lieb and Bentz (2005) is that relatively few respondents indicated that they believe using 3PL services had a very high impact on the above categories. This may reflect the typical user desire for continuous improvements along each of these dimensions.

## **5.8 Logistics outsourcing plans for the future**

The companies' future plans are discussed in this section regarding the usage of 3PL services, and whether firms will contemplate changes in the level and nature of their involvement with 3PL services providers. Figure 5.10 shows the rating results of overall satisfaction level with current 3PL providers. Of the respondents who are currently using 3PL services, 70 percent indicate they were satisfied with the current 3PL services providers and 17 percent indicate that they are very satisfied. Only 4 percent of users were dissatisfied and no firms indicated that they were very dissatisfied with the 3PL logistics firms. Thus, 87 percent of the respondents indicate that the performance of 3PL providers is high and it had been a positive development for their firm.

Figure 5.10: Overall satisfaction level with current 3PL providers



Notes: N=47, with 1 missing value.

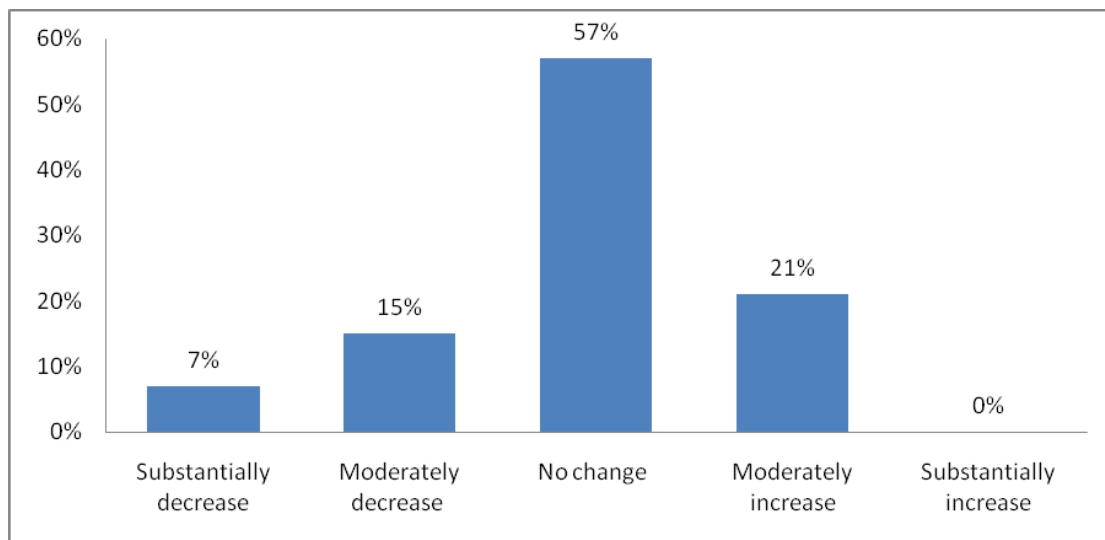
The respondents were also asked whether they would like to have any 3PL services that are currently not available on the market. Most of them (98 percent) indicated that they did not want to have any other services rather than the available ones. Only one respondent indicated “Would rather we provided the service in-house and quality & customer service levels would be higher”. However, the respondent has not given any implication for the potential development in the 3PL industry. All in all, the respondents were satisfied and very satisfied with 3PL service providers in New Zealand. Similarly, over 85 percent of the respondent users were satisfied and very satisfied with the 3PL services the in USA, India and Saudi Arabia (Millen et al, 1997; Sahay et al, 2006; Bhatnagar et al, 1999; Sohail et al, 2005). The percentage numbers in Australia and Malaysia for the satisfied and very satisfied ones were even higher (over 96 %) (Millen et al, 1997; Sohail & Sohal, 2003).

Users were asked how companies would modify their use of 3PL services according to their expectations. For the respondents who are currently using 3PL services, 57 percent of them would not change the use of 3PL services, 21 percent of them suggested moderately increase in the use of the 3PL services and no one would substantially increase. Only 22 percent of them would like to moderately decrease or substantially decrease the use of 3PL services. The bell - shaped picture in figure 5.11



indicates that respondents tend not to change or increase the use of 3PL services. This may result from the overall satisfaction level which is relatively high, as discussed above and because the existing relationships with the current 3PL providers have provided a certain degree of confidence to continue the outsourcing in the future.

Figure 5.11: How respondents would modify their companies' use of 3PL services according to their expectations



Notes: N=47, with 1 missing value.

## **6. Chapter 6–CONCLUSION AND RECOMMENDATION**

### **6.1 Introduction**

This chapter summarizes the research findings, draws conclusions from those findings based on the research objectives, and indicates some of the implications of the findings. Limitations of the study and recommendations for further research in this field are considered.

### **6.2 Conclusions**

Increasing competition and the pressure to cut down the costs of business operations have pressed businesses to outsource logistics functions. The aim of this research is to investigate the use of third party logistics companies from the users' perspective toward the improvement of 3PL in the New Zealand environment. It has been carried out by the following six supporting objectives.

- Objective 1: To investigate the reasons for outsourcing logistics activities and also the reasons for not outsourcing logistics activities in New Zealand companies.
- Objective 2: To investigate the extent of use of third party logistics services in New Zealand and the influence of firm size and different industry on different aspects of 3PL practices.
- Objective 3: To investigate critical success factors and attributes of 3PL service providers which are considered most important for employing, evaluating and selecting 3PL by users of 3PL in New Zealand.
- Objective 4: To establish the impact of usage of 3PL providers on New Zealand companies.
- Objective 5: To evaluate the customer satisfaction level of New Zealand 3PL services.
- Objective 6: To investigate the future plans of current 3PL users in New Zealand.

The conclusions of the current situation of 3PL in New Zealand are presented based on the six research objectives. The broad findings and highlighted aspects of the survey are provided as followings.

### **6.2.1 Objective 1: To investigate the reasons for not outsourcing logistics activities and also the reasons for outsourcing logistics activities in New Zealand companies.**

- The majority of the respondents that do not outsource logistics gave as their reasons the following, ranked from most frequently provided reason to least:
  - Company has adequate skills and resources
  - Loss of control over the logistics function
  - Losing touch with important information
  - Uncertainty in service levels provided

Most survey respondents did not see the lack of shared goals and difficulty in obtaining organizational support as important factors not to undertake outsourcing. In summary, of the factors that result in companies deciding not to outsource their logistics activities, the most significant was that companies indicated that they had adequate in-house expertise and resources. Also, of the respondents selected this reason, about two-third were large companies. This is reasonable because those large companies are usually big enough to have their own logistics departments and resources.

- The majority of respondents that do outsource logistics activities are under pressure to cut costs for logistics and capital investments and focus on core competence. Logistics cost reduction is on the top same as the countries like USA, Australia, Western Europe, Singapore, Saudi Arabia, Malaysia and India (Lieb & Randell, 1994; Millen et al., 1997; Bhatnagar et al., 1999; Sohail & Sohal, 2003; Sohail & Al-Abdali, 2005; Sahay & Mohan, 2006). Other main reasons are improving the customer service and the logistics process. Unlike previous studies, improving customer service is not very high on the list in this survey. Furthermore, there is a clear link between the success of outsourcing and the identification of

these reasons for outsourcing. It seems that large companies tend to recognize more about logistics cost reduction and small companies more experienced with improving customer services.

Moreover, companies no longer outsource only for cost reasons. It is important for companies to understand the many and varied needs and purposes, advantages and disadvantages of outsourcing before making such a decision.

### **6.2.2 Objective 2: To investigate the extent of use of third party logistics services in New Zealand and the influence of firm size and different industries on different aspects of 3PL practices.**

It is apparent from the study that 3PL has been accepted by New Zealand organizations, with more than half of the respondents using 3PL. Most of the current users have been utilizing third party logistics for more than 1 year. The majority of respondents outsource to between two and five providers.

New Zealand is an export and import oriented country, the services utilized are broad in terms of the ranges and the geographical coverage includes both domestic and international services. The study provided evidence that the most frequently used services are domestic transportation, freight forwarding, warehousing, international transportation, and customs clearance and brokerage. In contrast, LLP/4PL services, customer service, consulting service etc. are the least popular services for New Zealand firms.

Furthermore, current users accepted that 3PL allows them to gain many benefits and believe that 3PL has more positive impacts than negative. With a high level of satisfaction, a large number of user firms are likely to maintain and moderately increase the use of 3PL in the near future.

The experience of the firms in this study also provides insights as to how to plan for implementation. Providers should be aware of the potential trend, and develop their capabilities accordingly in terms of these future requirements.

### **6.2.3 Objective 3: To investigate critical success factors and attributes of 3PL service providers are considered most important for employing, evaluating and selecting 3PL by users of 3PL in New Zealand.**

With respect to the factors used when selecting logistics service providers, the majority of respondents indicated that the most important factors were as follows:

- Speed of delivery
- Quality of logistics services
- Price
- Flexibility to meet customer needs
- Skilled logistics provider
- Investment in information system

The least important factors (rated as important by under 65 % of the respondents) were focus on specific industries, investment in quality assets, length and depth of 3PL relationships, and the size of logistics providers.

The high level ratings of providers' performance in New Zealand were as follows:

- The speed of delivery
- Experience as a 3PL provider
- Price
- Quality of logistics services
- Skilled Logistics professionals
- Flexibility to meet unanticipated customer needs

In general, factor importance is higher than company ratings except the size of logistics providers and length and depth of 3PL relationships. This may imply the areas need to be improved by 3PL providers if negative gap occurs. In addition, the knowledge on the ranking of the factor importance is vital because it can direct 3PL provider's future investment and management strategy.

#### **6.2.4 Objective 4: To establish the impact of usage of 3PL providers on New Zealand companies.**

Current users reported a number of benefits from using 3PL. They believe that 3PL has more positive impacts than negative. The most significant impact appears to be that using 3PL enabled the respondents to achieve better delivery and to cut down logistics costs. The user firms also believed that using 3PL improved logistics system performance and customer service satisfaction level, expanded geographic reach and gained year-on-year growth in profits. However, relative few respondents indicated that they believe using 3PL services had a very high impact on these categories. This may reflect the typical user desire for continuous improvements along each of these dimensions.

#### **6.2.5 Objective 5: To evaluate the satisfaction level of New Zealand 3PL services.**

With respect to satisfaction regarding specific logistics activities currently outsourced, respondents indicated that their highest level of satisfaction is with respect to international transportation, freight forwarding, customs clearance and brokerage. The least satisfaction was experienced with reverse logistics, inventory management, operation of IT systems, and fleet management.

With respect to the level of satisfaction achieved with logistics outsourcing overall, the majority of respondents are satisfied with their current 3PL providers. However, only 17% of the respondents were very satisfied with outsourcing. This may indicate some reservations about outsourcing results and satisfaction level.

### **6.2.6 Objective 6: To investigate the future plans of current 3PL users in New Zealand.**

3PL industry has a potential for further development in New Zealand. With a high satisfaction level of the services, a large number of firms are more likely to maintain and moderately increase their usage of 3PL services. Similarly, most users of 3PL services in New Zealand are satisfied with their current 3PL providers and believe that this has led to positive developments within their organization, the same as users in other countries.

All in all, the objectives of the thesis were met. The results showed that there was a relative high level of usage of 3PL services. The respondents have shown their satisfaction with them to the point that they will continue to use the service.

## **6.3 Recommendations**

According to the discussions and conclusions of the study, the following recommendations can be made for both current/potential 3PL users and providers.

### **6.3.1 Recommendations for logistics service users**

- Companies need to realize the important role of logistics. Logistics can assist companies to become more successful and efficient organizations. It enables a company to achieve better cost savings, increase productivity, increase shareholder value and better customer level of satisfaction.
- Companies need to identify their core competencies, non-core activities and the reasons why they outsource logistics services. Companies can identify those logistics activities which are most suitable for outsourcing by understanding its core business and non-core activities.

- Companies need to pay attention to the factors important in their decision making process. Optimal service providers can then be identified to provide the best products and services. Companies should have clear objectives for outsourcing that can be used to establish their own criteria for the selection of 3PL providers.

### **6.3.2 Recommendations for logistics service providers**

- It is important for providers to understand the practices, trends and issues involved in the industry in order to gain the trust of companies.
- The logistics service providers should understand the reasons why companies may or may not require certain logistics outsourcing services.
- The logistics providers should identify the different services employed by either large or small companies. Likewise different services may be of different importance in different industries. Identification of these factors and reasons can assist 3PL providers to target specific markets and provide specific services according to the needs of the users.
- 3PL providers also need to assess the evaluation by companies who required their services. This information can assist the providers to meet the needs of the companies in a more efficient way.
- Providers should have contract agreements and build good relationships with their clients. This is critical because outsourcing companies are increasingly looking to use a smaller number of service providers for easier management.



## **6.4 Limitations**

It is important to identify the limitations of the research and to keep these in mind with regard to the results reflected in this thesis.

Firstly, this research focuses only on the third party logistics services from the users' perspective. This study has not taken into consideration the perspective of 3PL services providers.

Secondly, this study is limited by only assessing current 3PL users. This research did not have the capacity for companies that do not employ 3PL services.

Thirdly, this research study uses a convenience sample. It is prone to the various biases and is not a generalised study. This study therefore is not a representative of the true population due to the limitation of funds and timeframe.

## **6.5 Future research**

There is a need to have more research done to understand the relationships between 3PL users and service providers in New Zealand.

There is also a need for more studies comparing various 3PL users and their providers. Studies should focus on the decision making processes for selecting 3PL providers. Future research could be a comparison between 3PL users and service providers in terms of their expectations and fulfilments simultaneously in New Zealand.

There is also a need to have studies to compare specific services utilised by different industrial groups. A comparison among these diverse industry groups would provide useful insights toward differences and similarities of the services offered.

Future research could also focus on identifying the differences in the significant dependency relationships among the important factors and the performance metrics for the different segments of the 3PL industry.

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## **APPENDICES**

### **APPENDIX A: Cover Letter**

Yue Zhang  
c/o Massey University  
IFNHH / A. Win  
Private Bag 102 904  
North Shore City 0745

10 March, 2009

Dear ,

My name is Yue Zhang. I am studying a Masters degree at Massey University and part of my degree is a research project. I am conducting a survey with the purpose of investigating the current usage of Third Party Logistics services by New Zealand companies.

It will only take a few minutes of your valuable time to answer this simple questionnaire and to return it to me in the prepaid envelope enclosed at your earliest convenience. Your opinion is very important to the success of my research.

Research findings will be only used for the purpose of this study and your response will be maintained as anonymous and confidential. If you wish to receive a copy of the results please supply your details at the end of the questionnaire.

Thank you for your valuable assistance to this research effort. It would be appreciated if responses could be sent no later than 9 April 2009.

Best Regards,

Yue Zhang



## APPENDIX B: Questionnaire

### Third Party Logistics (3PL) Survey

1. *The approximate number employees of your company:*  
☐ 0-5   ☐ 6-10   ☐ 11-15   ☐ 16-20   ☐ 21+
2. *Annual turnover in 2008(\$millions) of your company:*  
☐ 0-5   ☐ 6-10   ☐ 11-15   ☐ 16-25   ☐ 26-100   ☐ 100+
3. *Business category:*   ☐ Automotive   ☐ Retail   ☐ Chemicals/healthcare   ☐ Hi-tech/electronics  
☐ Fashion/textiles   ☐ Food & beverage   ☐ FMCG   ☐ Industrial   ☐ Others \_\_\_\_\_
4. *Do you use 3 PL services currently?*  
☐ Yes (Move to question 6)   ☐ No (Only answer question 5)
5. *What led to the company deciding not to use 3PLs?*  

<input type="checkbox"/> Loss of control over the logistics function	<input type="checkbox"/> Hidden true cost of outsourcing
<input type="checkbox"/> Losing touch with important information	<input type="checkbox"/> Uncertainty in service levels provided
<input type="checkbox"/> Company has adequate skills and resources	<input type="checkbox"/> Lost of customer feedback
<input type="checkbox"/> Difficulty in obtaining organisation support	<input type="checkbox"/> Lack of shared goal
<input type="checkbox"/> Others: _____	
6. *How long has a 3PL been used to provide services to your company?*  
☐ <1year   ☐ 1-3 years   ☐ 4-5 years   ☐ >5 years
7. *What are your major reasons for using 3PL services?*  

<input type="checkbox"/> Focus on core competence	<input type="checkbox"/> Logistics cost reduction	<input type="checkbox"/> Access to emerging technologies
<input type="checkbox"/> Improving customer service	<input type="checkbox"/> Improve the logistics process	<input type="checkbox"/> Reduction in capital investments
<input type="checkbox"/> Productivity improvements	<input type="checkbox"/> Increasing inventory turn	<input type="checkbox"/> Expansion to unfamiliar markets
<input type="checkbox"/> Others: _____ _____		
8. *What is the percentage of the total logistics budget allocated to the 3PL providers?*  
☐ 0-19%   ☐ 20-39%   ☐ 40-59%   ☐ 60-79%   ☐ 80-100%

9. How many different 3PL services providers does your company use? \_\_\_\_\_

(Please answer the following questions with reference to your main 3PL provider only)

10. Are the 3PL services used for international or domestic purpose?

☐ Pure international ☐ Pure domestic ☐ Both

11. For international, in which part(s) of the world do you use 3PL services?

☐ North America ☐ South America ☐ Australia ☐ Western Europe ☐ Eastern Europe ☐ North Europe  
☐ Asia, excluding China ☐ Africa ☐ China ☐ Others: \_\_\_\_\_

12. Are there any contracts made between your company and the 3PL provider?

☐ Yes ☐ No (Move to question 14)

13. How long is the average duration of the contracts?

☐ <1year ☐ 1-3years ☐ 4-5years ☐ >5years

14. Which of the following 3PL services do you use **currently** and will use in the **future**? How do you evaluate them? (1: Very dissatisfied, 2: Dissatisfied, 3: Neither, 4: Satisfied, 5: Very satisfied)

Potential	Current	Satisfaction Evaluation				
		1 Very dissatisfied	2 Dissatisfied	3 Neither	4 Satisfied	5 Very satisfied
<input type="checkbox"/> Domestic transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> International transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Freight forwarding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Carrier selection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Cross docking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Product labelling, packaging, assembling, kiting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Fleet management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Warehousing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Customer service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Reverse logistics (Defective, Repair, Return)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Shipment consolidation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Inventory management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Freight bill auditing and payment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Order entry, processing and fulfilment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Customs clearance and brokerage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Consulting services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Operation of IT systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> LLP/4PL services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. How much importance do you give to the following factors for the evaluation and selection of a 3PL? (1: Very unimportant, 2: Unimportant, 3: Neither, 4: Important, 5: Very Important). Also, how do you rate your 3PL provider with respect to these factors? (1: Very low, 2: Low, 3: Neither High or not Low, 4: High, 5: Very high )

	Factor importance					Company rating				
	1	2	3	4	5	1	2	3	4	5
Breadth of service offerings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Price	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality of logistical services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flexibility to meet unanticipated customer needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial stability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Length and depth of 3PL relationships	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Experience as a 3PL provider	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Investment in quality assets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Investment in information systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Skilled logistics professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The size of logistics provider	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Company reputation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Focus on specific industries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The speed of delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. *Through which information sources did you become aware of the 3PL services?*

- ☐ Direct mail advertising
 ☐ Sales calls by third party representative  
☐ Discussions with other logistics professionals
 ☐ Advertising in professional publications  
☐ Sales contacts at a logistics conference
 ☐ Other\_\_\_\_\_

17. *How do you rate the impact of usage of 3PL services on your company with respect to the following performance criteria?(1: Very low, 2: Low, 3: Neither High or nor Low, 4: High, 5: Very high)*

	1 Very low	2 Low	3Neither	4 High	5 Very High
Year-on-year growth in profits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Year-on-year growth in revenues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reducing inventory levels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reducing logistics costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Return on investments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Return on asset	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customer service satisfaction level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Acquiring new customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
On-time delivery performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expanding geographic reach	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employee moral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Logistics system performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. *Overall how do you rate the level of satisfaction with your current 3PL providers?*

- ☐ Very dissatisfied
 ☐ Dissatisfied
 ☐ Neither
 ☐ Satisfied
 ☐ Very satisfied

19. *Would you like to have any 3PL services that are not available in the market?*

- ☐ No
 ☐ Yes, please specify: \_\_\_\_\_

20. *According to your expectations, how would you modify the use of 3PL services?*

☐Substantially decrease ☐Moderately decrease ☐No change ☐Moderately increase ☐Substantially increase

THANK YOU FOR YOUR TIME!

If you are interested in the survey results, you may leave your name and e-mail address here:

Name: \_\_\_\_\_ Email: \_\_\_\_\_