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The Influence of E-commerce for Third-party Logistics

Typical demands for 3PL services and the adaptation by 3PL

Paper within International Logistics and Supply Chain Management

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Abstract

Problem The use of e-commerce has become increasingly popular, largely due to its benefits help firms to improve the competitiveness and the integration. However, not all of the firms using e-commerce are successful. Many new promising e-commerce companies are now struggling with economic survival, even have failed, often due to neglecting the role of logistics. This is because using e-commerce requires them to review and design a new logistical approach in order to deal with the customers' demands. To build entirely new logistical functions for e-commerce, it seems to be difficult since not all of firms have an ability to solve this matter. Using 3PL services, thus, seems to be the best option for e-commerce. It leads to the need of 3PL firms to change the services in order to adapt to e-commerce. But the previous studies have not paid much attention on this issue, so it should be explored.

Purpose The purpose of this thesis is to investigate services and adaption of 3PL provider to e-commerce customers. It consists of two parts. Firstly, we investigate the typical services provided for e-commerce customers from 3PL providers and how these differ to regular customers. Secondly, how 3PL providers adapt to the presence of e-commerce customers will be clarified.

Method This thesis employs an exploratory study with a mixed method. Data are collected through survey questionnaires and semi-structured interviews by phone with seven 3PL firms in Sweden. The findings then have been analyzed by using the theoretical framework.

Conclusion Firstly, we conclude that the services 3PL providers typically offer for e-commerce customers are warehousing, packaging, transportation, labeling, product return and inventory management. The 3PL providers have made some changes in their services in order to adapt to e-commerce customers. For example, different 3PL providers have different distribution channels to serve e-commerce customers. Secondly, our findings support the conclusion that there are five specific challenges 3PL providers face with e-commerce customers. These challenges are product return handling, forecasting, warehousing, distribution, and integrated IT system. Finally, the degree of adaptation of 3PL providers to e-commerce customers is dependent on the current type of 3PL providers for regular customers.

Table of Contents

1	Introduction.....	1
1.1	Background.....	1
1.2	Problem statement.....	3
1.3	Purpose.....	4
1.4	Thesis structure.....	5
1.5	Definitions and acronyms	6
2	Theoretical Framework.....	7
2.1	E-commerce	7
2.1.1	The concept of e-commerce	7
2.1.2	E-commerce versus traditional business	8
2.1.3	The emerging market structure of e-commerce.....	8
2.2	Third-party logistics (3PL).....	9
2.2.1	The concept of 3PL provider	9
2.2.2	Categorization of 3PL functions	10
2.2.3	The classification of 3PL	11
2.3	The interconnection between e-commerce and 3PL	13
2.3.1	The changes in supply chain with e-commerce.....	13
2.3.2	Difference distribution channel for e-commerce	15
2.3.3	Typical 3PL services provide for e-commerce customers	15
2.4	Theoretical emphasis.....	16
3	Method	19
3.1	Research approaches	19
3.2	Choice of method and research strategy.....	19
3.3	Literature study.....	20
3.4	The mixed method	21
3.4.1	Quantitative method.....	21
3.4.1.1	Survey questionnaire	21
3.4.2	Qualitative method.....	22
3.4.2.1	Interview	22
3.5	Selecting sample	23
3.6	Response.....	23
3.7	Collection of data.....	24
3.8	Analysis procedure.....	25
3.9	Trustworthiness	25
4	Empirical Findings.....	27
4.1	Aditro	27
4.1.1	Regular customers.....	27
4.1.2	E-commerce customers.....	27
4.2	Bring Warehousing AB	28
4.2.1	Regular customers.....	29
4.2.2	E-commerce customers.....	29
4.3	PostNord Logistik 3PL AB	31
4.3.1	Regular customers.....	31
4.3.2	E-commerce customers.....	31
4.4	Scandinavian Supply Chain AB.....	32
4.4.1	Regular customers.....	33
4.4.2	E-commerce customers.....	33
4.5	Transab Jönköping	34

4.5.1	Regular customer	34
4.5.1	E-commerce customer	35
4.6	XX Company	36
4.6.1	Regular customer	36
4.6.2	E-commerce customer	36
4.7	YY Company	37
4.7.1	Regular customer	37
4.8	Summary of 3PL services	38
5	Analysis	39
5.1	What services do 3PL providers typically offer for e-commerce customers?.....	39
5.1.1	Typical services provided for e-commerce customers	39
5.1.1	The changes in services of 3PL for e-commerce customers.....	40
5.2	What specific challenges do 3PL providers face with e-commerce customers compared to regular customers?	42
5.3	How does 3PL provider adapt to e-commerce customers?	43
5.3.1	Classification of 3PL provider for regular customer	43
5.3.2	The adaptation of 3PL provider to e-commerce customers.....	44
6	Conclusion, reflection and suggestions for further studies.....	47
6.1	Conclusion	47
6.2	Reflection	49
6.3	Suggestions for further studies.....	49
	References	50
	Appendices	54
	Appendix 1: List of 3PL companies in Sweden (Intelligen Logistik, 2012)	54
	Appendix 2: Structured interview question	55
	Appendix 3: Semi-structured interview general question.....	59
 Figures		
	Figure 2.1 Categorization of logistics functions (Adapted from Vaidyanathan, 2005, p.91).....	10
	Figure 2.2 Classification of Logistics service provider (Adapted from Delfmann et al., 2002, p.207)	11
	Figure 2.3 Classification of 3PL (Adapted from Hertz & Alfredsson, 2003, p.141)	12
	Figure 2.4 The involvement of LSP and e-commerce in SC.....	13
	Figure 2.5 Degree of dis-intermediation (Adapted from Delfmann et al. 2002, p. 212)	14
	Figure 3.1 Research strategy of this thesis (adapted from Saunders et al., 2003).	20
	Figure 4.1 The frequency offering of Aditro's services	28
	Figure 4.2 The frequency offering of Bring's services	30
	Figure 4.3 The frequency offering of PostNord's services	32
	Figure 4.4 The frequency offering of Scandinavian's services	34
	Figure 4.5 The frequency offering of Transab's services	35
	Figure 4.6 The frequency offering of XX Company's services.....	36
	Figure 4.7 The frequency offering of YY Company's services.....	37
	Figure 4.8 Frequency of 3PL services providing for regular customer	38
	Figure 4.9 Frequency of 3PL services providing for e-commerce customer	38
	Figure 5.1 The typical 3PL services providing for e-commerce customers	39
	Figure 5.2 The involvement of 3PL providers and e-commerce customers	41
	Figure 5.3 Classification of 3PL providers for regular customers	43

Tables

Table 2.1 The summary of theoretical framework17
Table 3.1 Interview responses24

1 Introduction

In this chapter, the context of e-commerce in its current circumstance as well as a brief definition of third party logistics (3PL) will be provided in order to give readers an overall view. Then, the problem statement along with the purpose, the thesis's structure as well as the definitions of some academic terms will also be presented.

1.1 Background

Nowadays, the strong development of e-commerce influences widely to many different industries, in business' operations as well as in the success of enterprises. So, using e-commerce as well as increasing the number of e-commerce customers in 3PL marketplace is popular. 3PL providers are actively confronting the ever changing market environments in their respective industries; however, the attention for the direct or indirect implication of e-commerce is still minor (Delfmann, Albers & Gehring, 2002). Therefore, it creates an opportunity for researchers to investigate on this field.

The appearance of e-commerce is highly recognized in terms of customer-related activities such as order receiving, sales and marketing, which is called 'front-end' of the e-commerce process. Besides, the processing and shipment of ordered goods including management and movement to fulfill the customers' needs refers to 'back-end' of the e-commerce process. The movement of goods is one of the activities performed by 3PL companies (Hesse, 2002). Due to the continual development of e-commerce, the increase of demand is inevitable, which has led firms to review current e-commerce structures and launch a new logistics approach (Cho, Ozment & Sink, 2008). In other words, e-commerce offers opportunities to implement new distribution networks because the efficiency of this distribution network contributes to the success of firm in the e-commerce market (Hovelaque, Soler & Hafsa, 2006). From this issue, e-commerce also creates opportunities for 3PL providers to get involved in the business.

According to Berglund, Laarhoven, Sharman and Wandel (1999), 3PL includes activities performed by a logistics service provider on behalf of a shipper and consisting of at least management and execution of transportation and warehousing. Other value added activities such as inventory management, information management, as well as tracking and tracing may include in the range of 3PL services. The relationship between 3PL providers and shipper is formalized by a contract. In this contract, it contains information such as activities provided and the length of the co-operation between shipper and provider to be at least one year. The aim of the contract is to distinguish 3PL from the traditional 'arm's length' sourcing of transportation and/or warehousing providers.

The result in 2012 Third-party Logistics study (Langley, 2012) showed that 3PL providers continue contributing in strategic and operational value to many shippers across the global. Armstrong and Associates (cited in Langley, 2012) indicated that the global 3PL revenues for 2010 was \$541.6 billion, increased by 6.8% from 2009. In the Europe

region, 3PL revenues also accounted \$165.1 billion in 2010. There were approximately 57% of European shippers used 3PL services.

Besides 3PL, the concept of “electronic commerce” or “electronic business” is no longer strange to users since it has a significant impact to social life and firms. A clear proof is that e-commerce has gradually replaced a part of traditional business models and also leads to new practices rising quickly (Azumah, Koh & Maguire, 2004). Its appearance has become an important tool helping suppliers, distributors, manufacturers and retailers in many business’ activities. Broadly speaking, e-commerce has a robust impact on the development of e-economy in the society.

According to Chaffey (2002), e-commerce is defined as exchanging information between an organization and its external stakeholders by using all mediated electronic such as computer networks, telephone or other means. This includes the “process of buying, selling, or exchanging products, services, or information’s via computer networks” (Turban, King, David, McKey & Lee, 2010, p.760). In other words, it is a way of using means of internet-based technology in order to share business information, sustain business relationships, and perform business transactions (Riggins & Rhee, 1998).

The continual development and adoption of internet has complimented the development of e-commerce. It has been emerging as a vigorous medium for conducting smoothly transactions between customers and firms (B2C), and among firms (B2B) in a virtual marketplace. The growth of internet is known as a phenomenon leading to the corresponding growth of e-commerce (Cho et al., 2008). Thus, according to Brooksher (1999), Copacino (1997), and Karpinski (1999), e-commerce together with other new marketing channels such as online marketing created by the Internet has a great and profound influence on the way firms conducting their business as well as how they provide logistical support activities.

In fact, the development of e-commerce was demonstrated clearly by significant figures. The size of global e-commerce in B2B and B2C was reached \$132 billion in 2000. The trend of using e-commerce was continued increasingly, which led to the fact that the growth of the global volume of e-commerce was \$1,965 billion in 2005 (Colin, 2001). The percentage of users purchasing online in America was increased by 2% from 54% to 56% in 1999 and 2000 respectively. Moreover, the revenue in e-commerce in America in 2000 reached \$28 billion compared with \$17.3 billion in 1999. The use of e-commerce is not just growing in America; Europe is also seeing it develop. The use of e-commerce in B2C throughout European countries was estimated to account \$22 billion and continue increasing to \$64 billion in 2003 (Colin, 2001).

As mentioned above, the influence of e-commerce on the development of firms is substantial. One of the significant impacts of e-commerce on the firms is to require them a new logistics approach. This is because in the e-commerce market, the success of firm depends partly on the efficiency of distribution network. E-commerce creates opportunities for 3PL providers to get involved. Thus, there is an interaction between them. It can

be explained the continual growth of e-commerce leads to the significant increase in usage of 3PL. Besides, 3PL helps e-commerce to facilitate its logistical operations.

1.2 Problem statement

The use of e-commerce has become increasingly popular, largely due to its benefits help firms to improve the competitiveness and the integration (Ngai & Wat, 2003). However, not all of companies using e-commerce are successful. Delfmann et al. (2002) pointed out that many new promising e-commerce companies are now struggling with economic survival, even have failed, often due to neglecting the role of logistics.

The influencing role e-commerce plays in the development of a firm is growing. According to Murillo (2001), the success of e-commerce basically depends on the contribution of complementary assets such as logistic capability, services, computers and the internet. For those companies, when launching to e-commerce, the increase in customers' demands is inevitable. It means that the firms have to deal with common problems such as the increase in order size, daily order volume and the increase in shipments. With those matters, how to control goods as well as how to deliver at customers' doorstep in the good time manner seems to be complicated tasks (Cho et al., 2008).

Therefore, using e-commerce requires firms to review and design a new logistical approach in order to deal with the customers' demands. This is a primary challenge for an e-commerce firm as the efficiency of distribution networks is the main factor deciding the success of firm in the e-commerce market. To handle online business, having a completely new distribution infrastructure is often necessary. However, building an entirely new channel for e-commerce seems to be difficult since not all of firms have an ability to solve this matter. Using 3PL services, hence, will be the best option for firms because it helps them to reduce an investment cost and achieve its advantages. It also creates opportunities for 3PL to get involved (Deckmyn, 1999; Scheraga, 1999; Kroll, 1999). In other words, the continual growth of e-commerce will lead to the increasing demand in logistic capability and outsourcing (Cho et al., 2008). From this issue, there is a chance for us to conduct research in order to find out the challenges for 3PL firms when dealing with e-commerce customers.

In 2008, Marasco also shows that there are many prior studies which investigated mostly in the potential of information technologies and e-commerce application for 3PL providers in order to reduce costs, increase productivity and improve customer service. However, the influence of e-commerce and related information and communication technology (ICT) is not widely considered. He suggested that the issues of e-commerce implication for 3PL need to be fully investigated; so there are numerous opportunities for further investigations.

To sum up, we once again emphasize the problem statement of this thesis. The development of e-commerce has created new opportunities as well as challenges for 3PL providers; however, the previous studies have not paid much attention on the interaction

between e-commerce and 3PL. Therefore, the typical services of 3PL firm and its challenges for e-commerce customers should be explored.

1.3 Purpose

The rapid growth of e-commerce and the importance of 3PL providers helping e-commerce firms to overcome their neglect of logistics part are apparent. However, there is still a lack of research on this topic.

Therefore, the purpose of this thesis is to investigate services and adaption of 3PL provider to e-commerce customers. It consists of two parts. Firstly, we investigate the typical services provided for e-commerce from 3PL providers and how these differ to regular customers. Secondly, how 3PL providers adapt to the presence of e-commerce customers will be clarified.

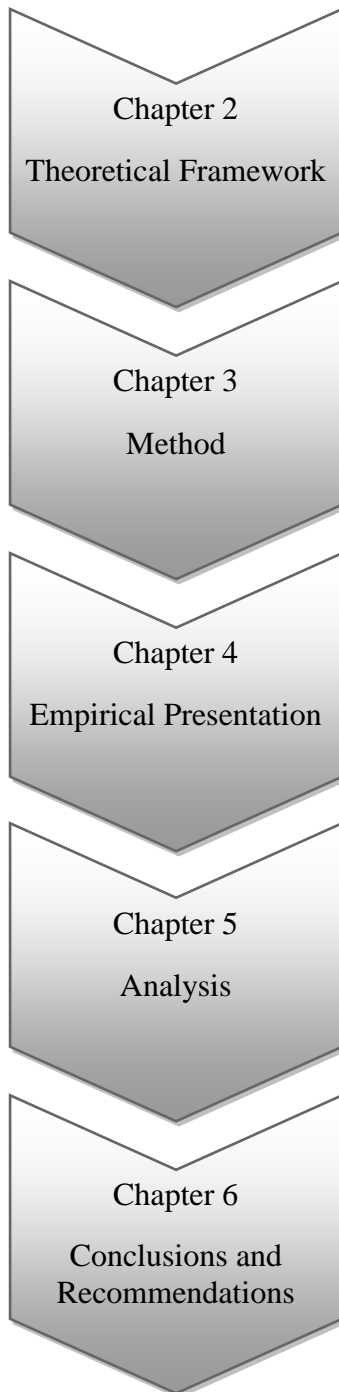
The purpose refers to the following research questions:

1. *What services do 3PL providers typically offer for e-commerce customers?*
2. *What specific challenges do 3PL providers face with e-commerce customers compared to regular customers?*
3. *How does the 3PL provider adapt to e-commerce customers?*

These research questions are derived after clearly defining the problem. They are formed to facilitate greatly the purpose of study. The answers to these questions would help the 3PL firms practically deal with an emergence of e-commerce customers in the market. In addition, for the further study, it can rely upon our findings to conduct other studies regarding 3PL and e-commerce issues.

1.4 Thesis structure

The thesis continues with following chapters:



This chapter firstly explains e-commerce and the emerging market structure of e-commerce. Then the 3PL concept, its functional framework as well as the classification of 3PL are presented. Following, the interconnection between e-commerce and 3PL, especially the term electronic marketplace and dis-intermediation is given. In the last section, the theoretical emphasis is clearly stated.

This chapter denotes the choice of method. The mix method is chosen in this thesis. Then the survey questionnaire, interview techniques, data collection with analysis procedure will be described. The chapter ends with a discussion on the trustworthiness.

This chapter presents the empirical materials. The material consists of the presentation of seven 3PL firms. This part will end with the summary of these services offering by 3PL firms for both regular and e-commerce customers.

This chapter presents the analysis and interpretation by combining the empirical presentations and the framework of theories. It is divided logically into three sections to address three research questions.

This chapter concludes the findings. Besides, the reflection of this study is presented. Finally, the suggestion for further studies is also given.

1.5 Definitions and acronyms

Definitions

Dis-intermediation is the process by which the logistical stream can be shortened leading to better responsiveness and cost reduction in the supply chain.

E-commerce is a way of using means of internet-based technology in order to share business information, sustain business relationship, and perform business transactions (Riggins & Rhee, 1998).

E-commerce customer in this thesis refers to companies selling physical goods over the internet to consumers. They might develop from physical store to online store, or just start up with an online store.

Regular customer term refers to firms operating only physical store such as retailers or wholesalers.

Third-party logistics (3PL) refers to an external organization which performs all or a part of company's logistics functions.

Acronyms

3PL	Third-Party Logistics
4PL	Fourth-Party Logistics
B2A	Business to Administration
B2B	Business to Business
B2C	Business to Consumer
C2A	Consumer to Administration
C2C	Consumer to Consumer
EDI	Electronic Data Interchange
ERP	Enterprise Resource Planning
EWS	Extended Warehouse System
ICT	Information and Communication Technology
IT	Information Technology
LSP	Logistics Service Provider
RFID	Radio Frequency Identification
RFQ	Request For Quote
SC	Supply Chain
SCM	Supply Chain Management
SLA	Service Level Agreement
WMS	Warehouse Management System

2 Theoretical Framework

This chapter builds on e-commerce and 3PL issues. It is divided into four components; firstly, giving e-commerce's concept; secondly, providing the definition of 3PL; then, presenting the interconnection between e-commerce and 3PL in marketplace, and lastly emphasizing theories used.

2.1 E-commerce

2.1.1 The concept of e-commerce

The new virtual form of business has been introduced to replace part of traditional business model, which is called e-commerce business (Azumah et al., 2004). It has become an important tool for many business activities as well as opens a new marketplace for other parties such as suppliers, manufacturers, distributors and retailers. From many companies, using e-commerce becomes a priority since it helps to improve their competitiveness globally by enabling a connection with their trading partners (Ngai & Wat, 2003).

E-commerce is known as exchanging information between an organization and its external stakeholders by using computer networks, telephone or other means (Chaffey, 2002). In fact, it is the combination between economic activity and electronic connections, which means that any forms of economic transactions will be conducted through electronic connections (Wigand, 1997). According to Delfmann et al. (2002), economic activity can be known as economic transactions such as agreement, exchange or inspection. It happens through five phases, namely initiation, agreement, exchange, inspection/control and adjustment/services. However, just the first two phases which are initiation and agreement have to be carried out in order to allow e-commerce to be applied. The second essential element of e-commerce is the electronic connections, which consists of a wide range from phone lines or telegraphic wires to make the linkage of communication (Delfmann et al., 2002).

The term "e-commerce" is not a universally accepted definition since in different context; the definition will be adjusted to match with a circumstance (Ngai & Wat, 2003). However, in a simple and general way, e-commerce from a communication perspective is understood as the transmission of information, products or services using computer networks or telephones (Kalakota & Whinston, 1997). In the same viewpoint, Riggins and Rhee (1998) also express their understanding about e-commerce that is a way of using means of internet-based to share information, perform business transaction as well as get a business.

Besides, the concept of e-commerce could be understood on other perspectives given by Kalakota and Whinston (1997). Firstly, from a business process perspective, e-commerce is defined as using the application of technology in order to facilitate the workflow and automate the business transactions. However, e-commerce is different in a service perspective. It is used as a tool to reach the desire of firms, consumers as well

as management with the purpose of reducing services cost but still improving and increasing the quality of goods and speed of service delivery. Finally, in the viewpoint of online firms, e-commerce provides the capability of buying and selling products and information through the Internet and other online services.

2.1.2 E-commerce versus traditional business

When compared with the traditional business, e-commerce differs in various ways. The basic difference between them is the shift of transactions. E-commerce conducts the transaction in a digital form processed by computers. However, it does not mean that all transactions over the platform of e-commerce are digital goods. One of the examples is to distribute physical goods, which of course still need the use of traditional logistic channels despite of transactions conducted over the platform of e-commerce.

In addition, the second difference is the nature of products. Beside the physical goods, the development of digital goods, for example digital music and digital books are significant. The digital goods can be totally transacted over the internet without a physical distribution. Furthermore, the e-commerce business is highly interactive and accessible 24/7 and anywhere with a computer being connected to the Internet network. While physical goods are fulfilled by e-commerce providers to delivery directly to home, workplace, and drop point or agreement places.

2.1.3 The emerging market structure of e-commerce

In order to understand the interconnection between e-commerce and logistics, we need to draw the market structure of e-commerce in general.

According to Delfmann et al. (2002), e-commerce can be identified in nearly every possible economic relationship. They point out five general types of e-commerce, namely business to business (B2B), business to consumer (B2C), consumer to consumer (C2C), business to administration (B2A) and consumer to administration (C2A). However, regarding the purpose of our investigation, we focus on B2B and B2C exchange. The relationship between 3PL providers and e-commerce customers is considered as B2B, and the relationship between e-commerce customers and 3PL provider with consumers is B2C business.

Hultkrantz and Lumsden (2011) stated that at present, e-commerce is pursued to a fairly high degree between companies (B2B), and is slightly developed between companies and the end consumers. The B2C e-commerce business is expected to grow rapidly though, consequently leads to several changes for actors in the logistics area.

Based on these types of transaction, the business models of e-commerce can be identified into three basic classes which are *portal*, *market maker* and *service provider* (Mahadevan, 2000). The single model or multiple models will be implied depending on the aim of company's business.

The first model is called *portal*, which is known as a simplest platform providing information and searching services for customers. Therefore, it is usually used by companies in order to market their products or services, to publish and share the information of products or services. The revenue streams mainly come from advertisements and provision fees. Secondly, *market maker* is a higher platform structure than *portal*. It offers not only the services like *portal*, but also enables economic transactions with its mechanism for secure and trustworthy conduct of business transactions. The income of this model can be provision fee for every transaction on the marketplaces. The final model mentioned here is *a product or service provider*. They are known as companies dealing directly with the matter of selling goods to customers through the Internet. Regarding the type of goods, the delivery of physical goods will demand some kinds of logistics activities.

For firms using e-commerce model, its success depends partly on the role of logistics. Due to the demand of creating different logistical tasks in the e-commerce business, the logistic system of traditional business is not sufficient to manage the new challenges. Companies have to find new logistical solutions to cope with the e-commerce business. In the pure e-commerce players' scenarios, the logistics as well as marketing will be focused. On the other hand, offline players have to seek for solution to re-engineer logistics structure when participating in e-commerce (Delfmann et al., 2002). Therefore, it creates a great opportunity for logistics service providers in e-commerce.

After reviewing general concepts of e-commerce, in this thesis's context, we want to refer that e-commerce is small, medium or large companies selling physical goods over the Internet to the consumers. They might develop from physical store to online store, or just start up with an online store. Those e-commerce firms might have their own logistical function but need to outsource some logistical parts for example warehousing, delivery or transportation. On the other hand, they might not have a logistics function and need help from 3PL to handle efficiently their logistics function. There are some reasons why this definition is chosen. Firstly, with three types of e-commerce firms stated above, we want to refer the e-commerce firm as the *product/services provider* selling physical goods to the consumers. In addition, this definition is highly related to the e-commerce customers of 3PL firms in our study.

In the next section, the concept of 3PL will be presented.

2.2 Third-party logistics (3PL)

2.2.1 The concept of 3PL provider

According to Marsaco (2008), the literature on 3PL still lacks of a single consistent definition of the concept. Given a broad definition, Coyle, Bardi and Langley (1996) defined that 3PL involves an external organization which performs all or a part of company's logistics functions.

Lieb (1992, p.29) defines 3PL as “the use of external companies to perform logistics functions that have traditionally been performed within an organization”. According to Laarhoven, Berglund and Peters (2000), 3PL is a set of activities carried out by a logistics service provider based on the contract with a shipper to perform at least management and execution of transportation and warehousing.

In addition, Bask (2001) views that 3PL is made by a set of dynamic relationships between seller, buyers and logistics service providers in the supply chain. This viewpoint provides a clear distinguish between 3PL and 3PL providers or logistics services providers. Delfmann et al. (2002) point out that the term logistics service providers, 3PL firms or contract logistics firms have been used interchangeably by various authors to denote external suppliers that perform all or a part of a company’s logistics functions.

2.2.2 Categorization of 3PL functions

Generally, 3PL provider regards logistical services as its core activities. The logistics services offered are based on the range of its logistics’ function. According to Vaidyanathan (2005), 3PL services can be offered relatively limited or consisted of a comprehensive set of logistics functions. The logistics functions are distributed into four categories including warehousing, transportation, customer services and inventory/ logistics management (Figure 2.1).

This categorization will be used to understand the 3PL services and help to form the question regarding the services of 3PL for both e-commerce and regular customers.

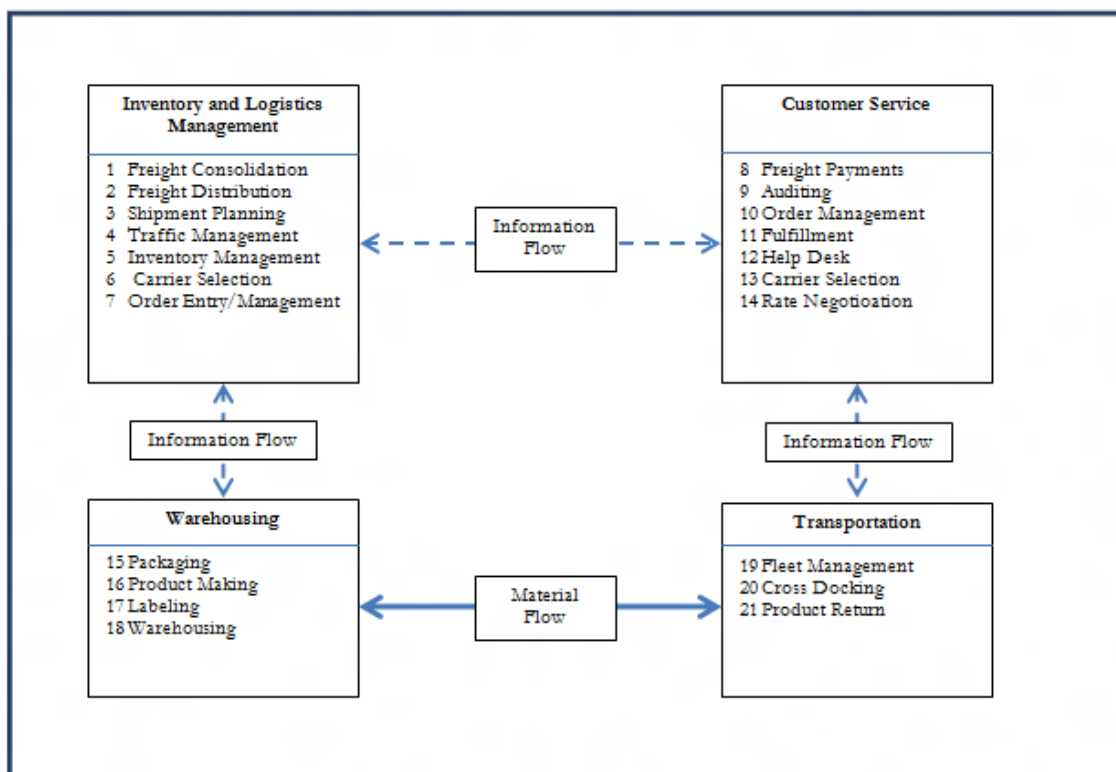


Figure 2.1 Categorization of logistics functions (Adapted from Vaidyanathan, 2005, p.91)

2.2.3 The classification of 3PL

These functions and types of services can be grouped regarding the degree of customization. Niebuer (1996) (cited in Delfmann et al., 2002) divides LSPs into three major groups which are *standardizing LSPs*, *bundling LSPs* and *customizing LSPs* (Figure 2.2).

The standardizing LSPs offer a service to customers based on their standard functions. These companies are highly specialized in their activities. They optimize their whole logistics system regards their requirements and considerations. On the other hand, in the second group, bundling LSPs performs extra activities related to a core logistics activity demanded by customers. However, these bundles are still identical for all customers with non-customization to individual customers. Finally, in the third group, customizing LSPs involves customization or configuration of their logistics system for the need of single specific customer's need. These LSPs are relatively integrated and coordinated with customers. The customers are offered with the effective and efficiency logistics functions as well as comprehensive services.

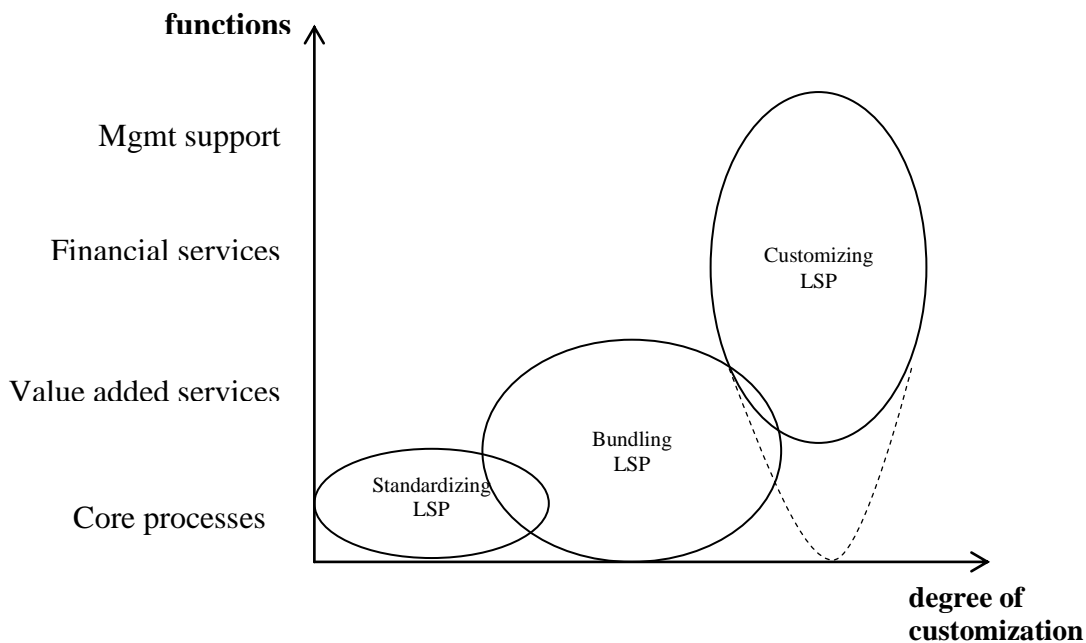


Figure 2.2 Classification of Logistics service provider
(Adapted from Delfmann et al., 2002, p.207)

This model provided by Delfmann (2002) (Figure 2.2) helps to understand the general concept of customization in 3PL firms.

With the interest of this thesis on 3PL providers, we will employ the model provided by Hertz and Alfredsson (2003). The aim of this model is to provide a specific classification of 3PL based on their general ability to solve problem and their ability to adapt to individual customer. The 3PL is classified into four parts, namely *standard 3PL provider*, *service providers*, *customer adapter* and *customer developer*. This model is used to

design the question to describe the 3PL companies' services as well as the ability of problem solving and adaptation of 3PL to both e-commerce and regular customers. In the analysis, we use this model to show the difference between e-commerce and regular customers.

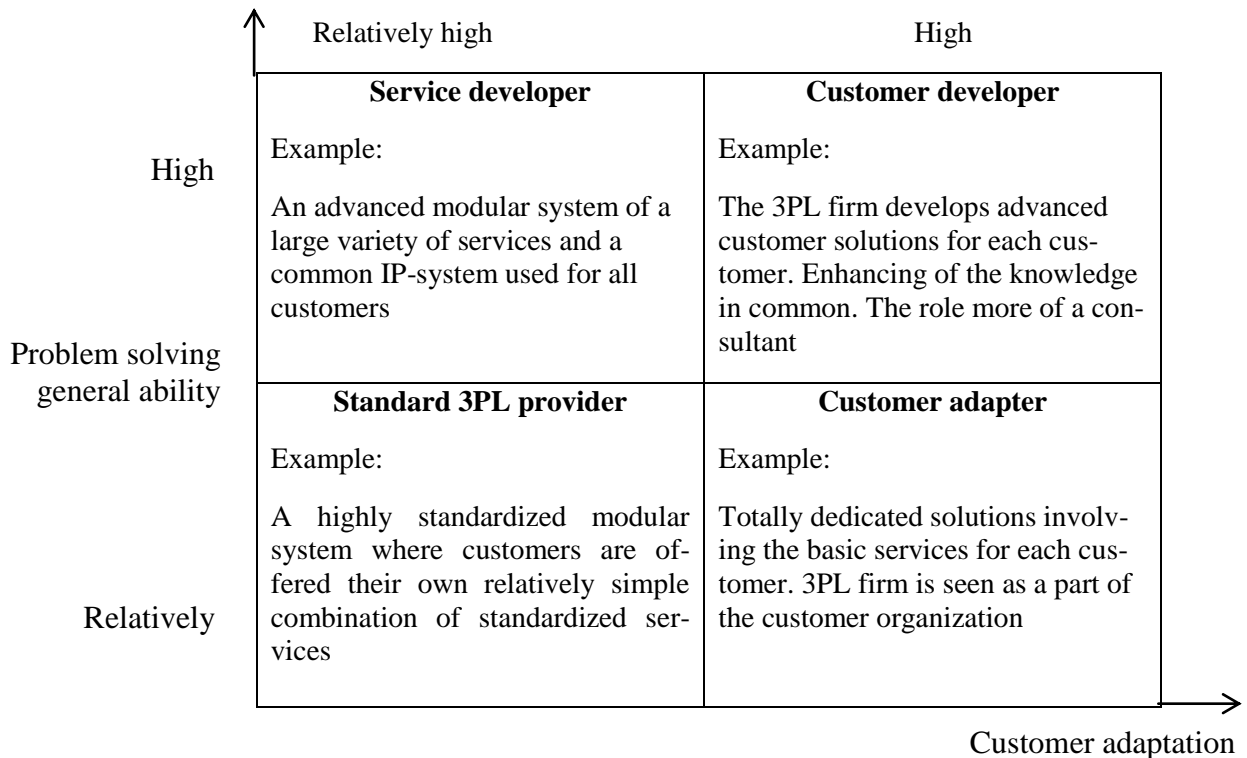


Figure 2.3 Classification of 3PL (Adapted from Hertz & Alfredsson, 2003, p.141)

The role as a *standard 3PL provider* is to supply the standardized services for customers such as warehousing, distribution, pick and pack. The existing functions offering to current customers may not change when having new demands of potential customers.

As the *service developer*, advance value-added services package will be offered for customers by 3PL. It means that a set of services consisting of more standardized activities or extra activities related to a core standardized activity may be provided to different kind of customers depending on customer's requirement and demand. The focus of this type is to create more economies of scope and scale for customers.

The *customer adapter* could be known as 3PL handling logistics activities of firms. In other words, 3PL will take over customer's existing activities such as warehouse or distribution and make an improvement on efficiency of controlling. However, as a *customer adapter*, 3PL do not get much involved in making development of services.

As the *customer developer*, it is the most advanced and difficult form for 3PL because their role is more of a consultant. Within this state, it requires a high integration between 3PL and customers regarding the configuration of the logistical operation. The

customer developer provides a range of skills such as the know-how, methods, knowledge development as well as the design of the supply chain. This type is close to fourth party logistic where risks and rewards will be shared equally with their customers.

2.3 The interconnection between e-commerce and 3PL

2.3.1 The changes in supply chain with e-commerce

The supply chain is defined as a set of three or more entities such as raw material and component producers, product assemblers, wholesalers, retailer and transportation companies which directly involve in the upstream and downstream flows of product, services, finances or information (Mentzer, DeWitt, Keebler, Min, Nix, Smith & Zacharia, 2001). As the definition, the LSPs or 3PL provider is a member of supply chain. The 3PL provider may involve in performing the logistics activities between any two of the companies in the supply chain. Nowadays, with the emergence of e-commerce, Delfmann et al. (2002) show the involvement of LSP and e-commerce in the generic supply chain in figure 2.4.

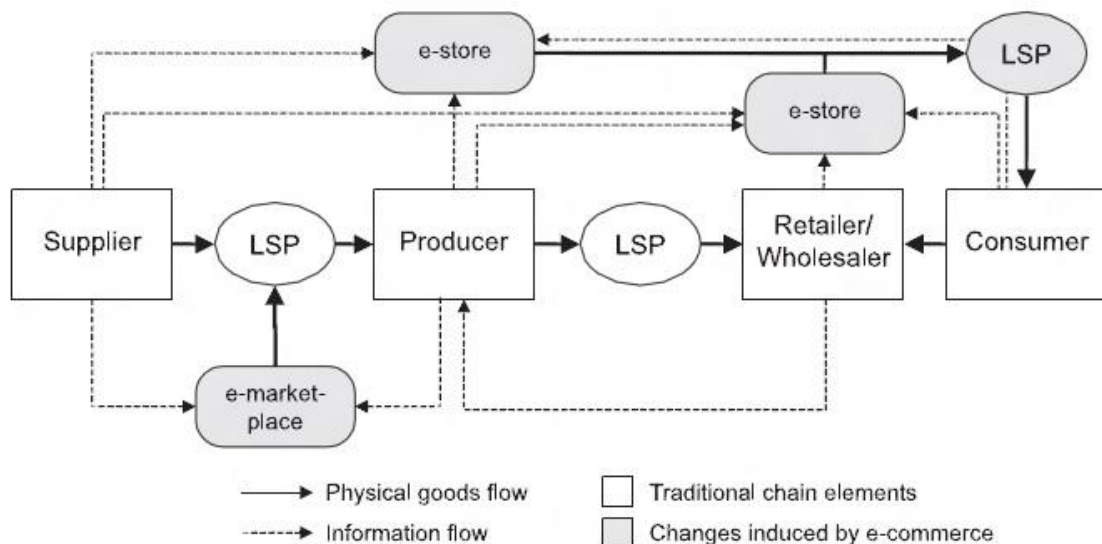


Figure 2.4 The involvement of LSP and e-commerce in SC

(Adapted from Delfmann et al. 2002, p.211)

The emergence of *electronic marketplaces* in the upstream (B2B sector) and the possible *dis-intermediation* of downstream (B2C) are the main factors in the change of supply chain (Delfmann et al., 2002).

The author Mahadevan (2000) has a similar view. His model consists of three streams which are value stream, revenue stream, and logistical stream. The *dis-intermediation*, *info-mediation*, and *meta-mediation* are three distinctive logistical streams exist in e-commerce. In other word, the *info-mediation* and *meta-mediation* may refer to *electronic marketplace* in the viewpoint of Delfmann et al. (2002).

Electronic marketplace in the upstream

In the classic supply chain, the shared information and transaction between the supplier-producer and producer-retailer were characterized as stable network due to the limited number of partners interconnected via electronic data interchange (EDI). However, with a modern information technology such as the Internet and related protocols, it can reduce the cost of establishing electronic market systems and lowering transaction cost. The high connectivity of the Internet enhances the sharing information, availability of partner information, and lower search costs. Similarly, the *info-mediation* refers to the number of sources and suppliers of information as well as the amount of information which is much higher than a single information seeker (Mahadevan, 2000). Moreover, the *meta-mediation* relates to a process facilitating transactions with additional services required. It adds value to the buyers, sellers and the intermediary by lowering the costs of vendor search, information search, product comparison, and workflow.

Dis-intermediation in the downstream

Dis-intermediation is the process by which the logistical stream can be shortened leading to better responsiveness and cost reduction in the supply chain. In the other words, the internet is able to shrink the supply chain by a process of dis-intermediation. In e-commerce, the consumers order the products via an online store. It will lead to the skip of retailer stage if producers offer their goods directly to the consumers. This is one example of dis-intermediation phenomenon incurred by e-commerce. Besides, there are many different forms of the supply chain disintermediation (Figure 2.5).

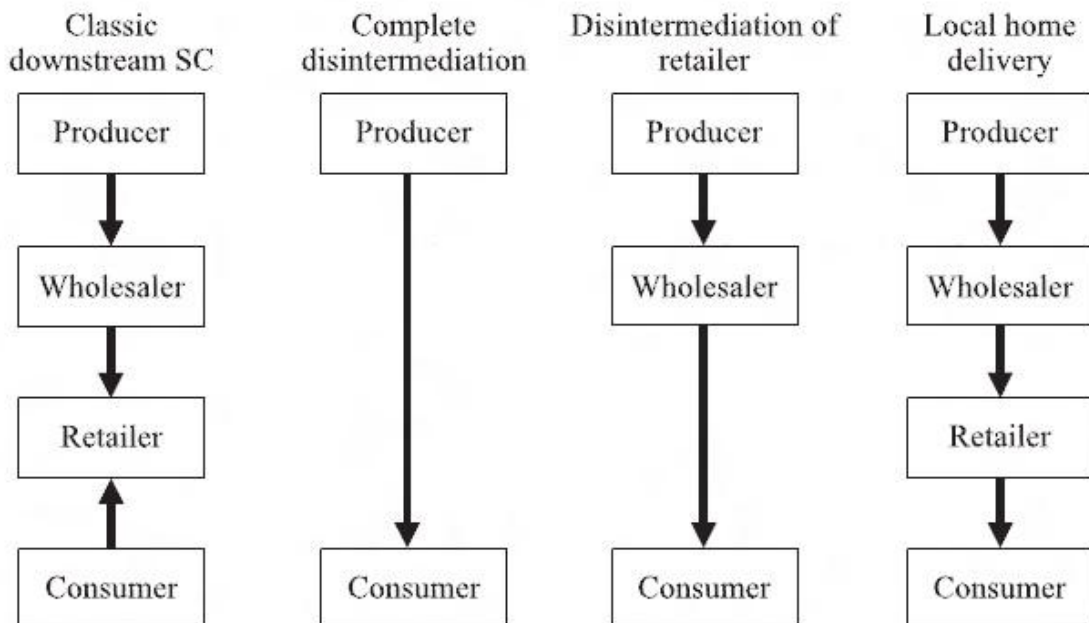


Figure 2.5 Degree of dis-intermediation (Adapted from Delfmann et al. 2002, p. 212)

However, the LSPs need to reconsider the strategic changes in their operation to cope with changes in the supply chain. In fact, when entering to the electronic marketplaces, reconsidering the duration of relationships, the geographical dispersion of customers and vendors, the type of goods traded in e-marketplaces as well as the type of contract is necessary (Delfmann et al., 2002). On the other hand, to deal with the dis-intermediation, LSPs should pay attention on the degree of dis-intermediation of existing supply chain and the change in the structure of shipments (Delfmann et al., 2002).

2.3.2 Difference distribution channel for e-commerce

Compared to traditional customers, the distribution channel for e-commerce needs to have some adjustments. According to Hultkrantz and Lumsden (2001), the distribution channel reconfigured to meet customers' needs. Firstly, retailers are removed from channel and the logistics providers distribute goods from a local warehouse to the consumers, such as home delivery. The other channel is directly from the national warehouse to a postal service and to the consumers. This distribution channel even eliminates the local warehouses. Other distribution channels which may apply for e-commerce is that goods are distributed from the national distribution center or producing company to the consumers. The structural change of distribution channel consequences changes the activities of logistics providers.

Hultkrantz and Lumsden (2001) suggest that the logistic providers need to consider the point of delivery and time of delivery in the e-commerce business. According to their survey, the percentages of consumers preferring to receive goods at home, post office, workplace and drop-off point are 90 %, 60%, 50% and 30% respectively. Regarding time of delivery, the consumers want goods to be delivered on weekdays between 18-20, as well as on Saturday and Sunday rather than any other time.

2.3.3 Typical 3PL services provide for e-commerce customers

Khurana (2012) lists a numerous 3PL services providing for e-commerce customers such as SCM, warehousing, consolidating service and order fulfillment.

SCM of the 3PL service may include managing the supply chain of e-commerce business. With the change in the structure of supply chain and dis-intermediation, SCM would take care of e-commerce inbound and outbound activities.

Warehousing is another typical service used by e-commerce customers. As we mention above, e-commerce' goods may be in form of physical goods which need to be stored at some locations. So, 3PL can perform warehousing and other added values services for e-commerce customers. E-commerce can be less investment in space and achieve cost efficient.

Consolidation service is also known as freight consolidation or cargo consolidation. The difference between the traditional and e-commerce good flows is the size, load and volume of shipment. E-commerce firms may need to send small goods to the same loca-

tion, and 3PL performs consolidation of goods to deliver several small packages as one large package.

The order fulfillment is not just about making sure that goods reach the consumers. Its process also makes sure to deliver right goods, on time, and in good condition. 3PL providers can be a good service to perform order fulfillment for e-commerce customers.

In addition, Khurana (2012) also states some reasons why e-commerce customers should choose 3PL. The crucial reason is to achieve the flexibility and scalability. The e-commerce customers often start with small scale business operation; therefore, the logistics function in the operation may not be necessary to put heavy investment. 3PL provider is a common alternative to outsource the logistics part and 3PL services give the flexibility and scalability to e-commerce customers.

The other reason is to improve the efficiency and specialization of e-commerce customers. E-commerce customers' core activity is to sell goods over the Internet to the consumers. So, e-commerce companies focus on their specialized function to be efficient. The other activities such as logistics activities may be outsourced to 3PL providers.

2.4 Theoretical emphasis

With the presentation of theories above, we once again emphasize why these specific theories have been chosen (Table 2.1).

The first section of the theoretical framework presents the concept of e-commerce with the emerging market structure of e-commerce in general. Based on these theories, we aim to understand the e-commerce business and the difference between e-commerce and traditional business.

The second section presents the term of 3PL and the definition of 3PL providers, or logistics services providers. This theory focuses on the categorization of 3PL function which helps us to analyze 3PL services providing for e-commerce customers, and answer the research question 1.

Furthermore, the classification of logistics services providers by Niebuer (1996) based on their functions and degree of customization is given. The model is adapted from Delfmann et al. (2002) (Figure 2.2). However, a specific classification model (Figure 2.3) of 3PL providers provided by Hertz and Alfredsson (2003) is used in detail. This specific model helps to classify 3PL providers in our investigation. Secondly, we will apply to see whether 3PL provider stand in the same category or move to different category when dealing with e-commerce customers.

Finally, the theory regarding the interconnection between e-commerce and 3PL is presented. It shows the involvement of e-commerce in the generic supply chain. The main factors in the change of supply chain such as *electronic marketplace and disintermediation* are reviewed. This theory gives the overall understanding of relationship

between e-commerce and 3PL providers. Then it helps us to apply in a specific case of 3PL providers in order to answer the research question 3.

The previous study has not provided specific changes and influences of e-commerce for 3PL; therefore this investigation will use the general theories regarding 3PL and e-commerce.

Table 2.1 The summary of theoretical framework

Theory	Summary	Aim to use
The concept of e-commerce	E-commerce is known as exchanging information between an organization and its external stakeholders by using all mediated electronic such as computer networks, telephone or other means.	Provide general understand of e-commerce to compared with traditional business
Categorization of 3PL functions	According to Vaidyanathan (2005), the logistics functions are divided into four categories including warehousing, transportation, customer services and inventory/ logistics management (Figure 2.1)	Understand the 3PL services. Help to form the question regarding to the services of 3PL for both e-commerce customers and regular customers
The classification of 3PL	Niebuer (1996) divides LSPs into three major groups which are <i>standardizing LSPs</i> , <i>bundling LSPs</i> and <i>customizing LSPs</i> (Figure 2.2)	Help to understand the general concept of customization in 3PL firms.
	Hertz and Alfredsson (2003) build a model which is to provide a specific classification of 3PL based on their general ability to solve problem and their ability to adapt to individual customers. The 3PL is classified into four parts, namely <i>standard 3PL provider</i> , <i>service providers</i> , <i>customer adapter</i> and <i>customer developer</i> (Figure 2.3)	Classify the 3PL provider for regular customer Analyze the adaptation of 3PL provider to e-commerce customer.

The interconnection between e-commerce and 3PL	Delfmann et al. (2002) show the involvement of LSP and e-commerce in the generic supply chain. The main factors in the change of supply chain such as <i>electronic marketplace and dis intermediation</i> .	Help to draw a specific map including distribution channel and point of delivery to see the practical involvement of 3PL firms and e-commerce in the supply chain.
	Hultkrantz and Lumsden (2011) suggest the difference distribution channel, point of delivery and time of delivery when dealing with e-commerce.	
	Khurana (2012) lists the typical services that 3PL firms provide for e-commerce customers such as supply chain management (SCM), warehousing, consolidation service and order fulfillment.	With this example, we will list the typical services of 3PL firms for e-commerce based on our findings

3 Method

In this chapter, the research approaches and choice of method are stated. The mixed model research is taken into account. Then the collection of data is shown up. Finally, this chapter will end with the trustworthiness.

3.1 Research approaches

According to Saunders, Lewis and Thornhill (2003), there are two types of research approaches, namely deductive and inductive approach. The deductive approach refers to a case when a researcher develops a theory and hypothesis, then designs a research strategy to test the hypothesis. While the inductive approach relates to a case in which a researcher collect data and develop theory based on a result of data analysis. In this thesis, we choose the inductive approach due to a reason. There is the lack of previous studies and theories related to our specific topic, which makes a difficulty in developing the theory and testing the hypothesis.

In addition, our study is conducted as an exploratory study. The exploratory study is defined as “a valuable means of finding out what is happening, to seek new insights, to ask questions and to assess phenomena in a new light” (Saunders et al., 2003, p.133). So, it is suitable for *what* question, where in our study we want to explore the typical services provided by 3PL firms for e-commerce customers. We also investigate the challenges 3PL firms face when dealing with e-commerce customers, and find out how 3PL providers adapt to e-commerce customers.

3.2 Choice of method and research strategy

In this thesis, the empirical materials will be collected through a usage of both quantitative and qualitative method which refers to a mixed method. According to Saunders et al. (2003), the mixed method uses both qualitative and quantitative data collection techniques as well as analysis procedures to answer research questions. It is subdivided into two types, namely a mixed method research and a mixed-model research.

The mixed method research is defined as using quantitative and qualitative data collection technique either at the same time or one after the other but not combining together. *The mixed-model research* combines quantitative and qualitative data collection techniques and analysis procedures at other phases of the research (Saunders et al., 2003). Furthermore, using the *mixed-model research*, the researcher may take the quantitative data and qualities it, or take the qualitative data and quantities it, which can be analyzed qualitatively or quantitatively. Within this thesis, we choose *the mixed-model research*. This is because we can fully get neither the rich qualitative data nor quantitative data. Therefore, the *mixed-model research* provides us better flexibilities to answer the research questions with either quantitative or qualitative analysis depending on our data collection.

Our research strategy focuses on employing techniques such as survey questionnaire and semi-structure interview. Firstly, we use the survey questionnaire with the purpose of gathering quickly data from respondents. Then the semi-structured interview will be employed to gain a deep understanding of 3PL firms. The aim of the semi-structure interview helps back up the data collection from the survey questionnaire; also collect the qualitative data for qualitative analysis procedure. The research strategy is summarized in figure 3.1.

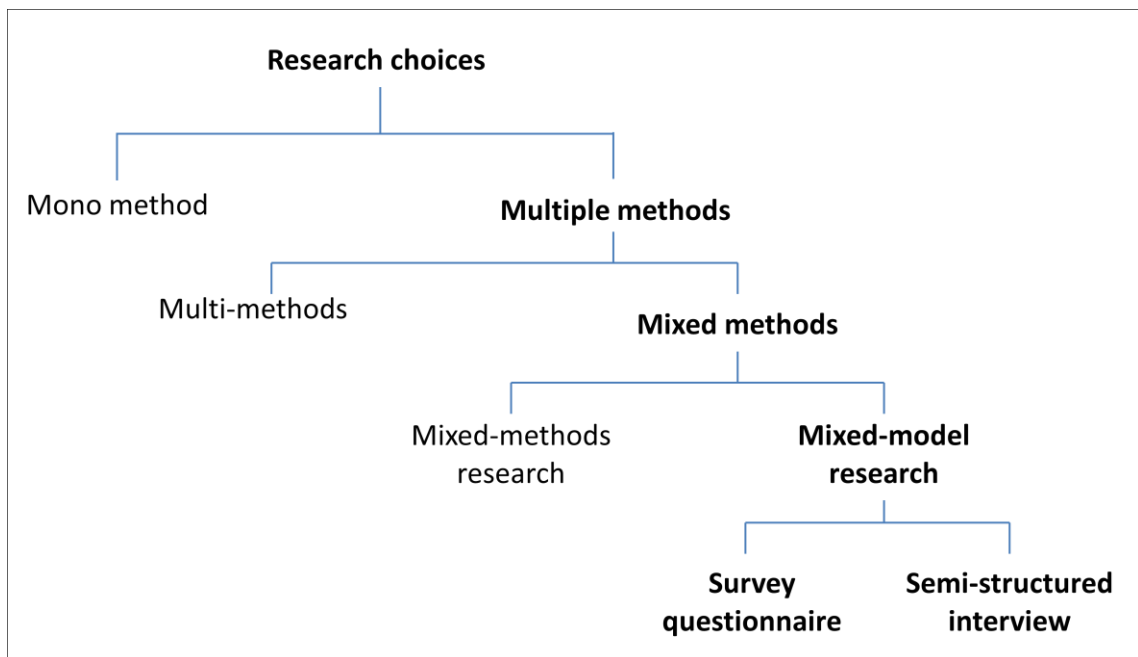


Figure 3.1 Research strategy of this thesis (adapted from Saunders et al., 2003).

3.3 Literature study

To gain knowledge of research area and form a thesis topic, we have reviewed existing published literatures within a field of SCM and logistics. With the intention of doing research in 3PL, we firstly review two articles presenting 3PL. So, we can form an idea for a specific topic and find a research gap as well as recommendation for a future research within 3PL. The two articles are *Third-party logistics: a literature review* by Marasco, published in 2008 in *International Journal of Production Economics*, and *Third party logistics: a literature review and research agenda* by Selviaridis and Spring, published in 2007 in *The International Journal of Logistics Management*.

When shaping the topic of “the influence of e-commerce for 3PL”, we deeply review literature published in several journals and books. They are accessible through Jönköping University library to Google scholar, Scopus, Business Source Premier, ABI/Inform, Web of Science and Jönköping University library database. The advantage of this database is to provide numerous full text articles and books from well-known journals.

The topic of 3PL and related issues are covered by many different authors. However, scholars focus mainly on the application of e-commerce for 3PL. For example, the authors such as Evangelista and Sweeney (2006), Koh and Tan (2005), Lai et al. (2005), Lynagh et al. (2001) and Piplani et al. (2004) pay attention on the potential application of e-commerce and IT for 3PL. So, there are limited literatures focused on the interconnection between e-commerce and 3PL firms, especially the specific challenges for 3PL and the services of 3PL provided for e-commerce.

3.4 The mixed method

The mixed method is chosen in our study, referring both quantitative and qualitative method. In this section, we will go through both methods and techniques.

3.4.1 Quantitative method

To distinguish between qualitative and quantitative method, Thomas (2003) views quantitative method as focusing on measurements and amounts of characteristics displayed by people or events involved in a research. The measurements and characteristics could be more or less, larger or smaller, often or seldom, not at all or very much. The data collection from the quantitative method is quantitative data that can be used to statistical analysis. Similarly, Saunders et al. (2003) defined that quantitative is generally used as a synonym for any data collection technique, for instant a survey questionnaire, or data analysis procedure such as graphs or statistics. With the quantitative approach, it relies mostly on self-response questionnaires which contains in a structured format. We use the survey questionnaire technique with the aim of easily gathering data from respondents.

3.4.1.1 Survey questionnaire

According to William and Barry (2007, p.186), “*the survey is defined as a method of collecting primary data based on communication with a representative sample of individuals*”. Answers of the survey attempt to describe what is happening or to learn a reason for a particular marketing activity. Based on these functions, we decide to use the survey as the main technique for the quantitative method.

Within this thesis, the self-administered questionnaire will be conducted. It is designed with organized flow to enable a self-administration from the respondent to complete questions over the Internet. The survey includes twenty four questions, which is divided into five parts. Part 1 is to help to get information of the respondent. Coming to part 2, it is to gather general information of company. Part 3 includes questions regarding regular customers, and part 4 contains questions for e-commerce customers. Finally, in part 5, there are questions for the comparison between regular and e-commerce customers. The detail of survey questionnaire refers to appendix 2.

The pilot test for the survey is conducted through the first time sending the survey to a small group of respondents. Based on the answers of survey and feedbacks from the respondents, we can realize errors in the questions. For example, if the respondent does

not understand the question, they send us an e-mail, then we clarify it. After that, we revise the questions and send to the rest of sample.

3.4.2 Qualitative method

Qualitative method is explained as an interpretive and naturalistic approach to its subject (Denzin & Lincoln, 1994). Thomas (2003) simplifies that the qualitative method involves describing kinds of characteristics of people, and events without comparing events in terms of measurements or amount. Its focus is mainly on discovering true inner meanings as well as new insight; hence, it is widely used in practice.

The aim of the thesis is to investigate the typical services and adaptation of 3PL providers to e-commerce customers. Moreover, our research questions include *what* and *how* questions. Therefore, the qualitative method is used to bring a bird-eye view of the current situation, and to help us understand deeply the relationship between e-commerce customers and 3PL providers.

There are several techniques to conduct empirical data in the qualitative method, for example focus group interviews, depth interviews, conversations, semi-structured interviews and observations. Each technique has both advantages and disadvantages. So, depending on the purpose of researchers, it will be chosen and conducted differently in a specific context. Within this thesis, we choose to use the semi-structured interview to support for the survey questionnaire.

3.4.2.1 Interview

Today, interview is becoming more popular and a mean of generating information (Silverman, 2004). According to Saunders et al. (2003), the interview is known as a purposeful discussion between two or people with the use of helping researchers to gather valid and reliable data which are relevant to their research questions. There are several ways to perform the interview such as through a telephone, the Internet or meetings. The interviews can be different in their structure. They may be formalized and structured by using standardized questions for respondents; or can be conducted informally and unstructured. Based on the nature of interviews, they are classified into three different types which are structured interview, semi-structured interview and in depth interview (Yin, 1994 and Saunders et al., 2003).

In our thesis, the semi-structured interview is chosen. A list of open-ended questions will be prepared. The respondents express their interests about the topic and can receive additional questions from interviewer to explore for the main object (Saunders et al., 2003). The advantage of this type is that the research can address more on specific issues. In addition, cost advantage is also a plus for this interview. Finally, results can be interpreted easily. On the other hand, the only disadvantage is a lack of flexibility when list of questions are prepared.

The semi-structured interview is conducted through the telephone with all respondents. The questions for this interview are prepared based on the objective of research. They

are slightly revised for each 3PL firm regarding the responses of the survey. The questions of semi-structured interview are listed in appendix 3.

3.5 Selecting sample

According to Saunders et al. (2003), there are two kinds of sampling types, which are probability sample and non-probability sample. With the probability samples, the probability is usually equal for all cases which are known and selected from the population. It is possible to answer the research questions and objectives that are required to estimate statistically the characteristic of the population from the sample (Saunders et al, 2003). On the other hand, with the non-probability samples, the probability of each case being selected from the population is unknown. This technique is impossible to answer research questions and objectives that are required the statistical inferences. However, the non-probability sample is commonly used in the qualitative research.

Based on the research strategy, the non-probability sampling will be used in this thesis and the judgmental technique within the non-probability sampling type is chosen. The judgmental technique refers to the selecting cases or responses which depend on the judgmental of researcher in order to be the best way to gather necessary information (Saunders et al, 2003).

The population of 3PL firms in Sweden is identified around 135 firms (Intelligent Logistik, 2012). We obtain a list of 135 3PL companies with a specific top of ten largest 3PL firms in Sweden including Aditro Logistics, Bring Warehousing, Damco, DB Schenker Logistik, DFDS Logistics, DHL Supply Chain, DSV Solutions, Frode Laursen, PostNord Logistik and Postpac (Intelligent Logistik, 2012). We use the judgmental sampling technique to choose the best possible firms for our study.

Firstly, we attempt to select the respondents from the list of ten largest 3PL firms and find a possible contact person who can provide us information. In addition, some requirements are set up in order to collect data easily from 3PL list, such as clear information about the contact person in the company, respondents communicating in English, and 3PL firms having e-commerce customers.

3.6 Response

Survey questionnaire

The survey questionnaire is activated on the Internet from 15th October, 2012. It is sent to the sample of forty 3PL firms that we have the detailed contact. However, the response rate for the survey questionnaire is relatively low, which is only twelve respondents. Among twelve respondents, there are five uncompleted surveys due to some different reasons for example language barrier, wrong contact person, or unwillingness to answer. Therefore, we set some extra requirements and prepare questions for the semi-structured interview to clarify the content of the questionnaire results.

Semi-structured interview

The semi-structured interview is conducted by phone with respondents in four 3PL companies, namely PostNord Logistik, Aditro Logistics, Transab and Bring Warehousing AB. There are two companies that we did not get an agreement to continue with the interview. The table below is the summary of interview from the respondents.

Table 3.1 Interview responses

Company	Respondent	Position	Date of semi-structured interview	Duration (minutes)
PostNord Logistik	Anders Larsson	Head of Sale	25 th October, 2012	15
Aditro Logistics	Fredrik Nygren	Business (Sale/Marketing)	26 th October, 2012	20
Transab Jönköping	Urban Petersson	Manager 3PL	8 th November, 2012	15
Bing Warehousing AB	Mattias Danielsson	Site Manager	12 th November, 2012	20

3.7 Collection of data

Data play an important role for the result of study. The data collected by using quantitative and qualitative method are called quantitative and qualitative data respectively. According to Saunders et al. (2003), the qualitative data are known as non-numerical data and have not been quantified. They are associated with concepts and can be categorized by their richness and fullness based on opportunity to explore a subject (Saunders et al., 2003). To collect results, researchers need to extract meanings from unstructured responses, make an interpretation, and then convert them into useful information to analyze. We collect the qualitative data by using the semi-structured interviews. The interviews are recored in order to easily revise and extract to word transcripts.

On the other hand, the quantitative data are based on meanings derived from numbers. The collection results are viewed in numerical and standardized data. The analysis of quantitative data is generally conducted through the use of diagrams and statistics (Saunders et al., 2003). In this thesis, the quantitative data are collected through the survey questionnaires. We use the Qualtrics online survey tool supported by Jönköping University in order to create the survey and record the responses. Then Microsoft Excel is used to generate the bar charts.

Primary data and secondary data are two general types of empirical data collection. With the primary data, they are gathered for direct purposes of an undertaken research. The primary data come from those activities such as interviews, surveys, conferences and observations (Saunders et al., 2003). Within this thesis, we use the primary data gathered from both survey and semi-structures interview with 3PL firms; and of course, they are also a crucial material for the analysis.

In contrast, the secondary data are collected through different sources that were initially contributed to previous researchers rather than the one that is being conducted (Saun-

ders et al., 2003). The advantage of secondary data is their availability which is always faster and less expensive than the primary data. In our study, the secondary data are easily obtained from the website of 3PL firms, which is used to have an understanding about 3PL firms.

3.8 Analysis procedure

Our data collection contain of both quantitative and qualitative data. Regarding the quantitative analysis procedure, the number of observations is too low to make a statistical analysis such as testing hypothesis. Therefore, we decide to use a bar chart in order to describe the frequency use of 3PL services. The bar chart is appropriate to explain an individual variable. In this case, the variable is an individual 3PL provider. The bar chart shows seven scales of the frequency use of 3PL services, which is ranged from 0 (never) to 6 (daily). We use the average technique to summarize and compare between these variables. These variables are the frequency use of 3PL services of both regular and e-commerce customers. By assigning the value for the frequency scale such as 0 for *never* and 6 for *daily*, we calculate the average value. Based on this, we draw the bar chart for the comparison.

In addition, the quantitative data is qualified to support qualitative data for our qualitative analysis procedure. The research questions in our study are derived from the theoretical framework. Therefore, we use the theoretical framework to organize and direct data analysis. The analysis helps to answer our research questions and fulfill the purpose. Furthermore, based on the data collection, we may explore them to develop a specific theory regarding our issue.

3.9 Trustworthiness

Trustworthiness is an essential requirement for both quantitative and qualitative study. It can be expressed through two common terms which are validity and reliability. These two terms are often used for the quantitative research; on the other hand, the qualitative research uses four criteria such as credibility, transferability, dependability and conformability (Lincoln & Guba, 1985). In fact, there is still a debate for a relevant term of validity and reliability using for qualitative research (Bryman, 2001). They can be also used to express the trustworthiness of both qualitative and quantitative research. So, we use these two terms validity and reliability to express our study's trustworthiness.

Reliability

Reliability refers as an indicator of measure's internal consistency (William & Barry, 2007). Consistency is the crucial element to understand the reliability. In addition, Kird and Miller (1986) viewed the reliability as a degree to which the data collection is independent of accidental circumstance of the research. For the reliability of interview, we must also consider the bias issues. Saunders et al. (2003) point out there is various types of bias need to be considered for interview technique.

The first bias relates to interviewer who conducts the interview and interacts with respondents. It is referred to comment, tone, or non-verbal behavior of the interviewer. In order to reduce this bias, we prepare carefully questions for the interview, the way of asking questions, and a structure of interview process. Firstly, we send the survey which can be completed over the Internet to the respondents. Then, for the semi-structured interview, we together involve in the phone interview and help each other to reduce the bias during the interview.

Other bias is concerned to the interviewee, which is called a response bias. This is where the interviewee is not willing to answer questions or discuss a topic because the information is sensitive or the interviewee is not empowered to give information. To avoid this bias, we strive to get a right contact person who access to company's information to answer questions, avoid sensitive questions, and promise to keep confidential information for respondents. In the survey, we have a question to ask for the permission of using the information under the name of company. There are two firms allowing us use their information without publishing their name in the thesis. Therefore, we mark the company with XX Company and YY Company.

In addition, unsuitable time for the interviewee may cause the bias. To avoid this bias, we allow a generous amount of time to fill in the survey. They can complete in their convenient time. The following semi-structured interview by phone is also conducted by scheduling and agreement with interviewees. To reduce the possible biases, we increase the validity of interview data collection.

Validity

Saunders et al. (2003) simplify that the validity is concerned with whether the findings are really about what they appear to be about. We strive to maximize the validity of the data in both survey questionnaire and semi-structured interview. To gather the valid data, the researcher must concern to gain access to the participants' knowledge and experience and enable to infer the meaning that participant intended from participants' language used. Two members have to carefully conduct the interviews, be able to understand and classify the meaning of respondent and the discussed topic. The data collected from the survey are carefully reviewed and necessarily clarified in the semi-structure interview with the respondents.

Furthermore, the intention of research strategy is to use the quantitative method. We have sent out the survey to approximately forty 3PL firms from the list (Appendix 1); however only seven firms completed it. There is lack of number of respondents from the sample, which leads to no reliability to follow the quantitative analysis procedure. Therefore, we finally set extra requirements to conduct the semi-structured interview with respondents. With the reasonable number of semi-structured interviews and responses from the survey, we can increase the validity of data collection to reach conclusion.

4 Empirical Findings

In this chapter, seven 3PL firms will be presented through the following structure. The general information about the companies will be given, followed by a review of their regular and ecommerce customers. This part will end with the summary of these services offering by 3PL for both regular and e-commerce customers.

4.1 Aditro

Aditro has been part of the 3PL industry since the 1970's with the core business focused on offering an effective 3PL. Through continuous development, they have become an industry leader, which is demonstrated by their modern logistical centers in Nordic countries. Aditro has gained expertise in many different segments such as fast moving consumer goods, retail trade, e-commerce, fashion, consumer electronics, and media. Their warehouse space is estimated about 150,000 square meters (sqm) including terminals located in Jönköping and Borås in Sweden, Kopstad in Norway, and Turku in Finland (Aditro, 2012).

4.1.1 Regular customers

The regular customers that Aditro has until now are approximately thirty. For regular customers, the process from beginning until signing a contract with the company takes normally six months. Firstly, Aditro look into the demand of customers about services and volumes, and then they continue on documents such as service level agreement (SLA) to complete the contract for customers. When being asked to describe the best option for the company's service, F. Nygren (Personal communication, 2012-10-23) chose the option as company working together with customer's organization to improve the logistics efficiency for customers.

In addition, the services required by regular customers occur on a daily bases, depending on the demand of customers including warehousing, packaging, product making, labeling, transportation, cross docking, product return, fleet management, freight consolidation, shipment planning, traffic management, inventory management, carrier selection, customer service, freight payment, order management, fulfillment and help desk. Auditing is conducted also by the company however this is service offered less than once a month (Figure 4.1).

4.1.2 E-commerce customers

Coming to e-commerce customers, F. Nygren (Personal communication, 2012-10-26) emphasized that Aditro do not really distinguish between e-commerce and regular customers. He said *"For Aditro, there were no new demands of e-commerce in services"* (Personal communication, 2012-10-26). The reason maybe is that they have a setup and operation plan since 1990s, beginning with phone orders. However, when looking to the development of e-commerce, he still recognized that *"Generally the demand of e-commerce customers is increasing in the market"* (Personal communication, 2012-10-

26). Aditro currently has fifteen e-commerce customers. For those e-commerce customers, the process from beginning until signing the contract with the company takes normally six months. The services provided for e-commerce customers are the same as regular customers (F. Nygren, personal communication, 2012-10-23).

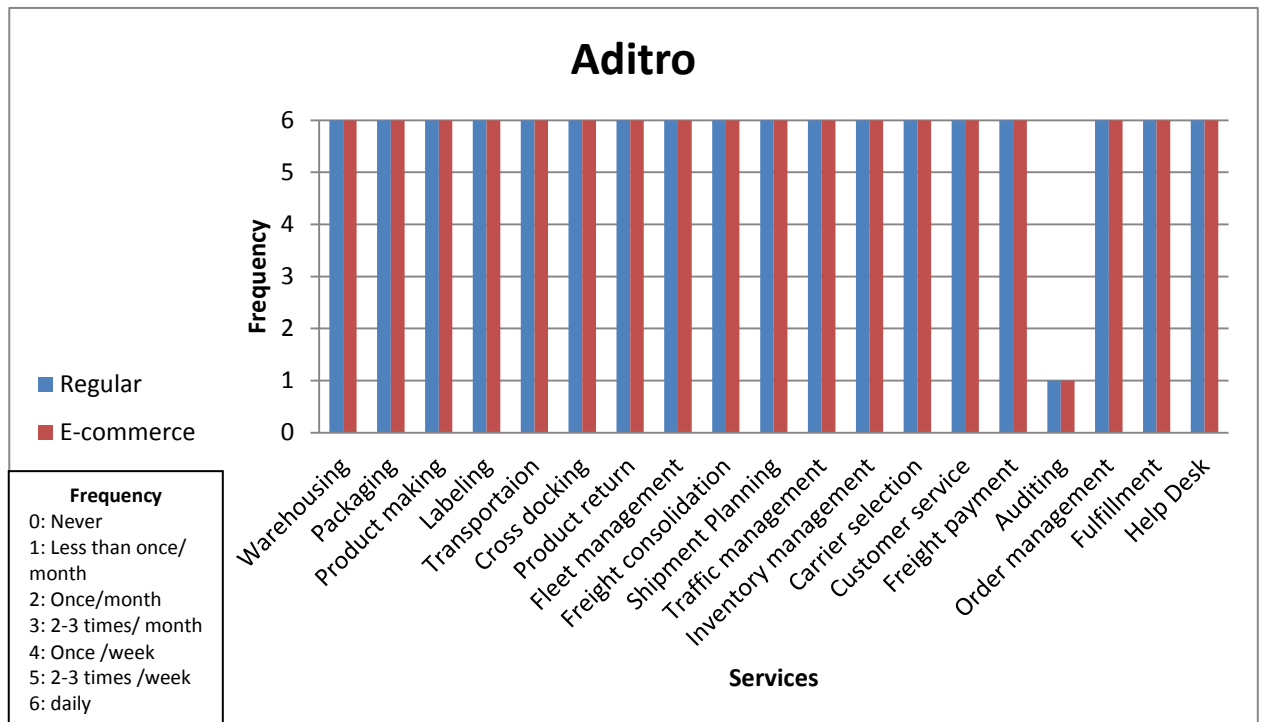


Figure 4.1 The frequency offering of Aditro’s services

Aditro have several distribution channels for e-commerce customers such as distributing direct from customer warehouse to the consumers, from their local warehouse or national warehouse to the consumers. The delivery points are really flexible including consumer’s home, post office and consumer’s work place. Aditro are able to deliver goods with a suitable time for the consumers such as contacting them to arrange time before delivery, delivering weekdays between 18-20, or even Saturday and Sunday (F. Nygren, personal communication, 2012-10-23). In addition, F. Nygren (Personal communication, 2012-10-26) also mentioned that “*Aditro works with other logistics company such as forward companies in order to handle distribution for the e-commerce customers*”. Therefore, it may be a reason that they can provide flexibly in delivery time as well as a delivery point for their e-commerce customers. The IT system that the company currently employs to support for both regular and e-commerce customers are Enterprise Resource Planning (ERP), Warehouse Management System (WMS), Radio Frequency Identification (RFID), Bar Code and Transportation Management system.

4.2 Bring Warehousing AB

In 1957, the company was established under the name of Wajens AS. In 2000, it was bought by Norway Post and officially shifted to a new name and a new logo with Posten

Norge with the major brand Bring Logistics Solutions. In 2010, the company changed name to Bring Warehousing AB, which is known as a specialist in optimal storage for most types of products whether it is high volume, bulk storage or simple pallets. They offer not only warehousing services; but also with increased value-added services for customers (Bring, 2012).

4.2.1 Regular customers

With Bring Warehousing AB, currently they have twelve regular customers. According to M. Danielsson (Personal communication, 2012-11-12), the process at the beginning until signing the contract with customers are normally from three to six months. M. Danielsson (Personal communication, 2012-11-12) explains further that operations generally start before the signing of contracts. This allows for a trail period for the customer. Then, some adjustments will be made in order to tally with customers; and finally the contract will be signed. The option “Our company also works together with the customer’s organization to improve the logistics efficiency for customers” was chosen by M. Danielsson in the survey (Personal communication, 2012-11-12) to describe the company’s service for regular customers.

Among various services for regular customers, warehousing, packaging, labeling, transportation, cross docking, product return, traffic management and customer service are operated daily by Bring Warehousing AB. Fleet management, carrier selection, fulfillment and help desk service are offered once a week. Beside services offered daily and once a week, there are some services just offered two to three times a month or even less than once a month (Figure 4.2). According to the result of survey, M. Danielsson (Personal communication, 2012-11-12) stated that services such as product making, freight consolidation, inventory management and freight payment are implemented two to three times a month, while auditing is the only service offered less than once a month for regular customers.

4.2.2 E-commerce customers

The first e-commerce customer that Bring Warehousing AB signed was in August, 2008. Until now the number of e-commerce customers increased to four customers. According to M. Danielsson (Personal communication, 2012-11-12), he stated that “*The development of e-commerce leads not only to more demands in the market for 3PL firms, but also to a higher demand on home delivery*”. For every e-commerce customer, the normal processing time of signing the contract takes approximately three to six months. There are those steps needed to follow such as request for quote (RFQ), additional questions, then visiting, meetings, final price discussions, final offering, letter of intent, and then agreement.

Like regular customers, there are also some services that the firm offers daily for e-commerce customers such as warehousing, packaging, labeling, transportation, cross-docking, product return, shipment planning, traffic management, and customer services.

For freight consolidation, carrier selection, fulfillment, fleet management, inventory management, freight payment and help desk, those are services offered only two to three times a week or once a week for e-commerce customers. Product making and order management services occur seldom once a month. Finally, auditing is only service rarely offered by Bring Warehousing AB, which is less than once a month. (Figure 4.2)

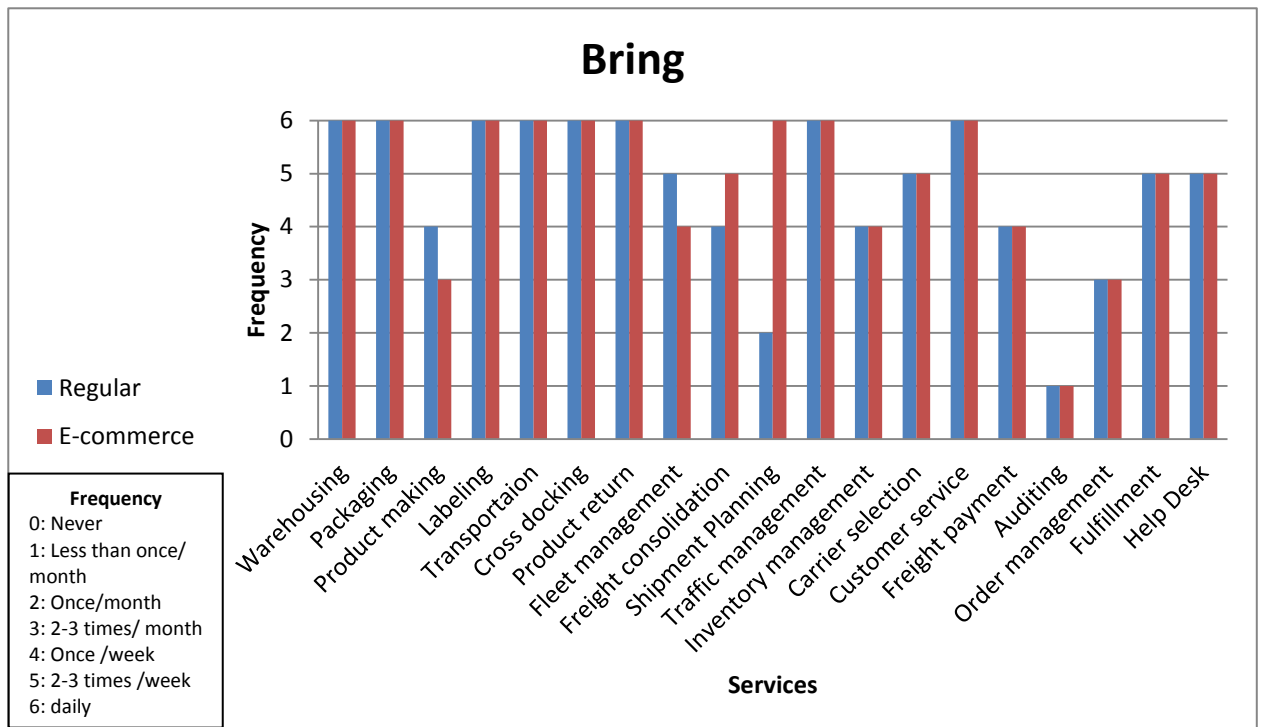


Figure 4.2 The frequency offering of Bring’s services

There are three different ways handling the distribution by Bring Warehousing AB. The firm distributes directly from customer’s warehouse to consumers, from firm’s local warehouse or firm’s national warehouse to the consumers. M. Danielsson (Personal communication, 2012-11-12) pointed out “*My company only handles warehousing and has a co-operation with other companies such as Swedish Posten in order to take care of distribution*”. The delivery points that the firm uses for e-commerce customers are such as delivering to consumer’s home, consumer’s work place, post office, or using local drop-points near consumers. They also offer different ways for their customers to receive orders. For example, time can be arranged before delivery, or orders will be delivered to the customers on working hours, or on weekdays between 18 and 20.

The other issue that M. Danielsson (Personal communication, 2012-11-12) mentioned was the order management of the firm. It is depending on the customer’s demand and sometimes processing of orders can be done during all days. However, the process can be batched in volume to deliver to the consumers. The firm receives orders from e-commerce customers through the website. It means that the website is established among customers and firm to easily place orders, and then by using EDI system, the

firm gets all customers' orders. In addition, Bring Warehousing also implements the same IT system for both regular and e-commerce customers to support for their operations such as Nyce Logic and Centiro.

4.3 PostNord Logistik 3PL AB

PostNord Logistik 3PL AB has been rebranded to Green Cargo Logistics since it integrated to PostNord from June 1st, 2012. It is one of the three largest 3PL companies in Sweden. 3PL service of PostNord Logistik is spread through many different segments such as alcoholic beverages, building supplies and home improvement, books and media, fast moving consumer goods, tires, electronics, fashion, sports and leisure, customs service, and finally WMS system. The total warehouse area is estimated 255,000 sqm which is spreading widely in Sweden such as Stockholm, Gothenburg, Norrköping, Helsingborg and including Copenhagen, Denmark (PostNord Logistik, 2012).

4.3.1 Regular customers

With PostNord Logistik, there are fifty regular customers. According to A. Larsson (Personal communication, 2012-11-25), the process of signing the contract is relatively long, often between six to eighteen months. This is often a slightly more complex process due to the internal discussions within the customer's organization. In the survey, the option "Our company works together with customers' organization to improve the logistics efficiency for the customers" was chosen by A. Larsson (Personal communication, 2012-11-25) to describe the company's services for regular customers.

Most of services are offered daily for regular customers such as warehousing, packaging, product making, labeling, transportation, cross docking, product return, fleet management, freight consolidation, shipment planning, traffic management, inventory management, carrier selection, customer service, freight payment, order management, fulfillment and help desk. Auditing is not readily available, however is provided two or three times per a week. (Figure 4.3)

4.3.2 E-commerce customers

The first e-commerce customer that the company signed was in Oct, 2008. With the continual development of company, the total e-commerce customers that they reach until now are increased significantly to ten. According to A. Larsson (Personal communication, 2012-10-25), he stated that "*The development of e-commerce is the strongest trend in the market for logistics firm and this trend will be continued to increase over the next year*". There are two directions for the development of e-commerce. The first direction is the establishment of new companies in the B2C segment; and the second track is the existing firms shifting from retailer to e-commerce.

The process of signing the contract with e-commerce customers was typically short (A. Larsson, personal communication, 2012-10-25). It was taken approximately six months when customers submitted RFQ because e-commerce customers tend to be smaller and

faster in decision making. With e-commerce customers, the daily services that the firm offers for them are warehousing, packing, product making, labeling, transportation, product return, inventory management, carrier selection, and fulfillment. Other activities such as help desk, order management, shipment planning as well as cross-docking are happened two to three times a week depending on their demand. Finally, those services including fleet management, freight consolidation, traffic management, customer service and auditing are offered once a week for e-commerce customers by the firm (Figure 4.3).

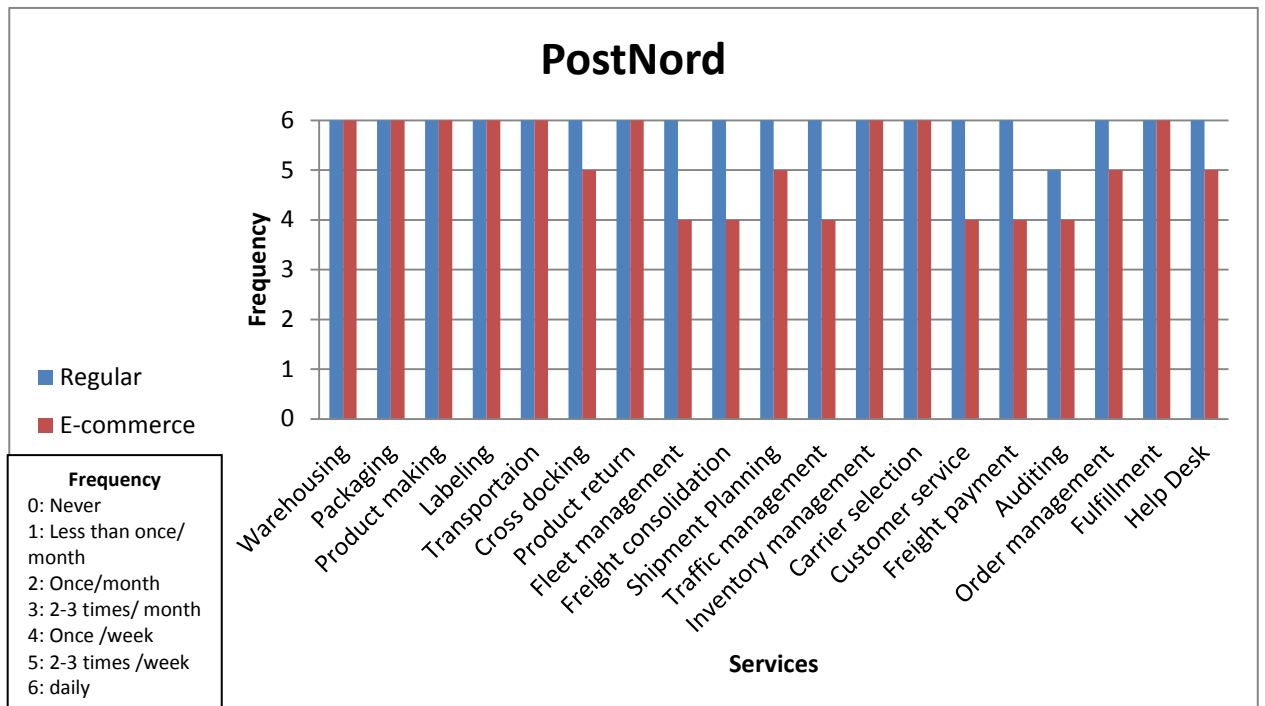


Figure 4.3 The frequency offering of PostNord’s services

The type of distribution channel is to distribute direct from their national warehouse to the consumers by using the local drop point near the consumers. Due to the wide coverage of firm, A. Larsson (Personal communication, 2012-10-25) mentioned that “*the company can handle all shipments and does not require forming any partnerships to support for them*”. Therefore, there are no difficulties for the company to distribute to the consumers. In addition, the firm also offers two ways for their consumers to receive orders. Firstly, the consumers can be contacted by the firm to arrange time before delivery. Secondly, the orders can be received during weekdays between 18 and 20. For both e-commerce and regular customers, the company uses the same IT system, namely WMS (A. Larsson, personal communication, 2012-10-25).

4.4 Scandinavian Supply Chain AB

Scandinavian Supply Chain AB was established in January, 2007. With collaboration with their customers, the company has been able to develop 3PL and 4PL logistic solutions in order to offer the best package for their customers. The turnover that firm

reached was 134 million SEK in 2011. The logistic center of Scandinavian Supply Chain AB is located in Växjö. They have a warehouse area of 53,800 sqm divided into different zones including warm warehouse area, refrigerated warehouse and frozen area (Scandinavian SC AB, 2012).

4.4.1 Regular customers

The Scandinavian Supply Chain serves approximately thirty regular customers. The option “our company offers standard services and value-add service to make a bundle of services for customers” was chosen by the firm to describe the company’s services for regular customers. J. Alexandersson (Personal communication, 2012-10-23) stated that the process when regular customers have an initial contact with company until signing the contract typically takes about two to four months.

J. Alexandersson (Personal communication, 2012-10-23) indicated that most of the services are provided daily for customers. However, there are some services which are utilized two to three times a week including carrier selection, customer service and freight payment. While those services such as auditing, order management, fulfillment and help desk are never offered for customers by Scandinavian SC. (Figure 4.4)

4.4.2 E-commerce customers

Since October 2009, Scandinavian Supply Chain has begun to serve e-commerce customers. Recently, the number of e-commerce customers has increased to three. J. Alexandersson (Personal communication, 2012-10-23) stated that the process for e-commerce customers signing the contract only takes one to three months. The company provides warehousing, packing and product making, labeling, transportation, freight consolidation, product return, and inventory management, which are used daily by e-commerce customers (Figure 4.4). The specific requirements that the company receives from e-commerce customers are small shipment and parcel.

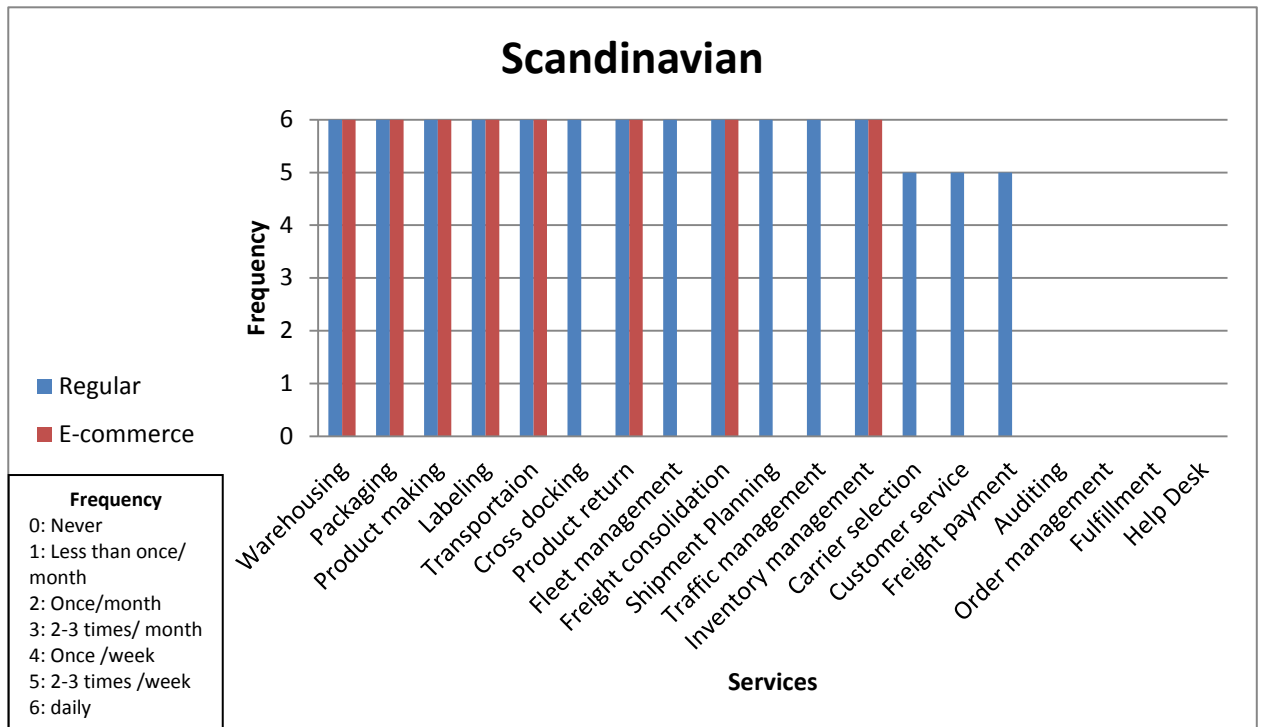


Figure 4.4 The frequency offering of Scandinavian’s services

The Scandinavian Supply Chain distributes goods from its national warehouse to consumers’ home or post office when handling service for e-commerce customers. The time of delivery is arranged by contacting consumers before delivery. Come to the question of IT infrastructure, J. Alexandersson (Personal communication, 2012-10-23) stated that company uses the same IT infrastructure known as warehouse management system (WMS) for both regular and e-commerce customers (J. Alexandersson, personal communication, 2012-10-23).

4.5 Transab Jönköping

With over forty years continual development, Transab now is a full partner in the transportation and construction. The company consists of four divisions which are logistics, building and construction, construction, and recycling. In the logistics area, the company operates in four units including combined transport, tanker transport, bulk transport and finally distribution and warehousing. They combine a logistics center in Jönköping and Nässjö in order to offer flexible solutions for their customers in transport as well as in warehousing and logistics. With Transab, they offer a variety of customized solutions for transportation, distribution, warehousing, 3PL and other services (Transab, 2012).

4.5.1 Regular customers

Transab Jönköping is currently providing services for four regular customers. The services are offered daily for regular customers including warehousing, packaging, labeling, transportation, inventory management, order management and fulfillment. While product making, product return and shipment planning are run two or three times a

week. There are some services provided with less frequency, namely cross docking, freight consolidation, carrier selection, freight payment and auditing (Figure 4.5). U. Petersson (Personal communication, 2012-11-8) chose the option where their company offers standard services and value-added services creating a bundle of services for regular customers, in order to describe their services for regular customers. Furthermore, the process of signing a contract with regular customers usually takes approximately three months including one to two weeks for RFQ, one month for company's response, one month for negotiation and setup routines, and finally one month for implementation.

4.5.2 E-commerce customers

Since November 2011, Transab Jönköping has been working with one e-commerce customer. The daily services for e-commerce customers are the same as for regular customers except for labeling services and carrier selection services (Figure 4.5). They cooperate with UPS to handle part of their distribution to end-consumers (U. Petersson, personal communication, 2012-11-18). Their distribution channel is direct from Transab Jönköping's local warehouse to end-consumers' home or to their work place. The time is flexible for the consumers by arranging time before delivery, but within business hours. They are using Extend Warehouse System (EWS) for supporting services to every customer. Transab Jönköping can receive order directly in system when the consumers place orders from the Internet. In spite of continuously receiving orders, the company can hold orders if they want to efficiently operate.

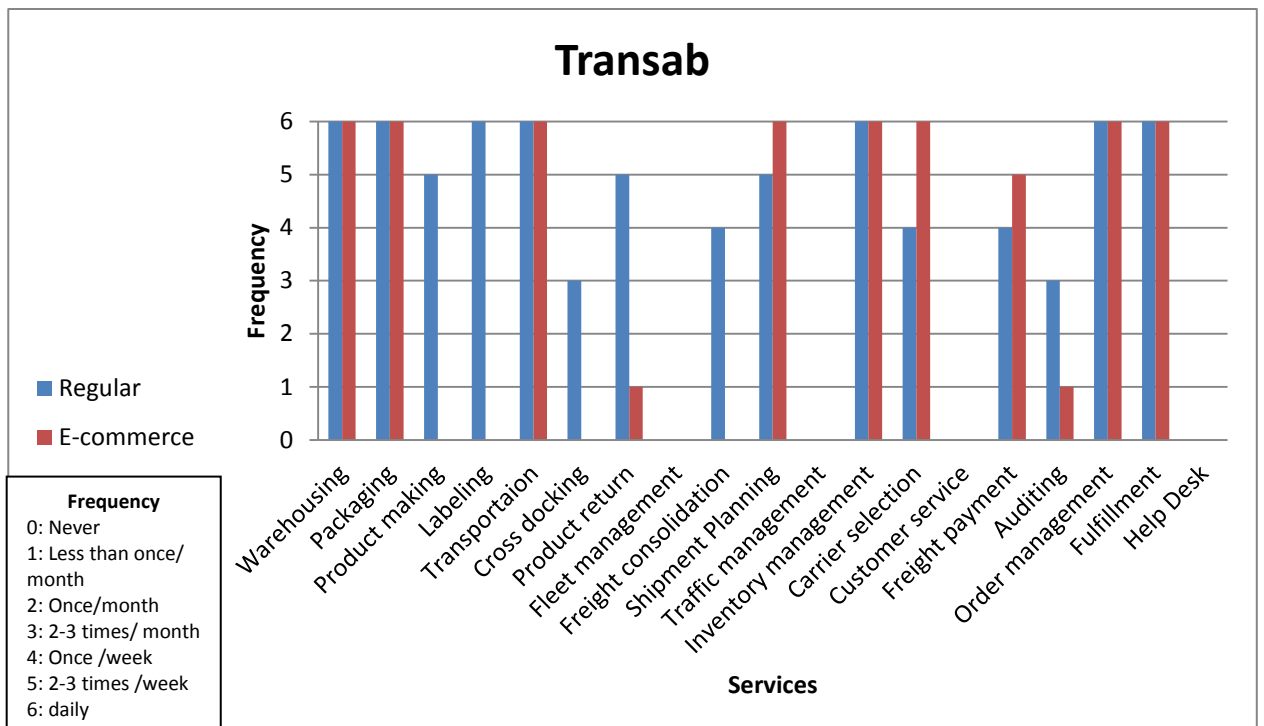


Figure 4.5 The frequency offering of Transab's services

4.6 XX Company

Due to the company's request, the name as well as the information will not be provided.

4.6.1 Regular customers

The number of regular customers that XX Company has is thirty. The firm works together with customer's organization in order to improve the logistics efficiency for their customers. For regular customers, the process from the beginning to the final step of signing a contract is approximately six months.

Like other 3PL's firms, XX Company also has these services that are daily offered for regular customers such as warehousing, packaging, labeling, transportation, cross-docking, etc. However, there are some services never offered for customers including product making, fleet management, traffic management, carrier selection, freight payment, auditing as well as fulfillment (Figure 4.6).

4.6.2 E-commerce customers

Coming to e-commerce customers, XX Company has got five. Like their regular customers, the process from beginning to signing the contract takes around six months. However, the services which are offered daily form e-commerce customers are only eleven services. Besides, product making, fleet management, shipment planning, traffic management, carrier selection, freight management, auditing and fulfillment are never offered for their e-commerce customers (Figure 4.6).

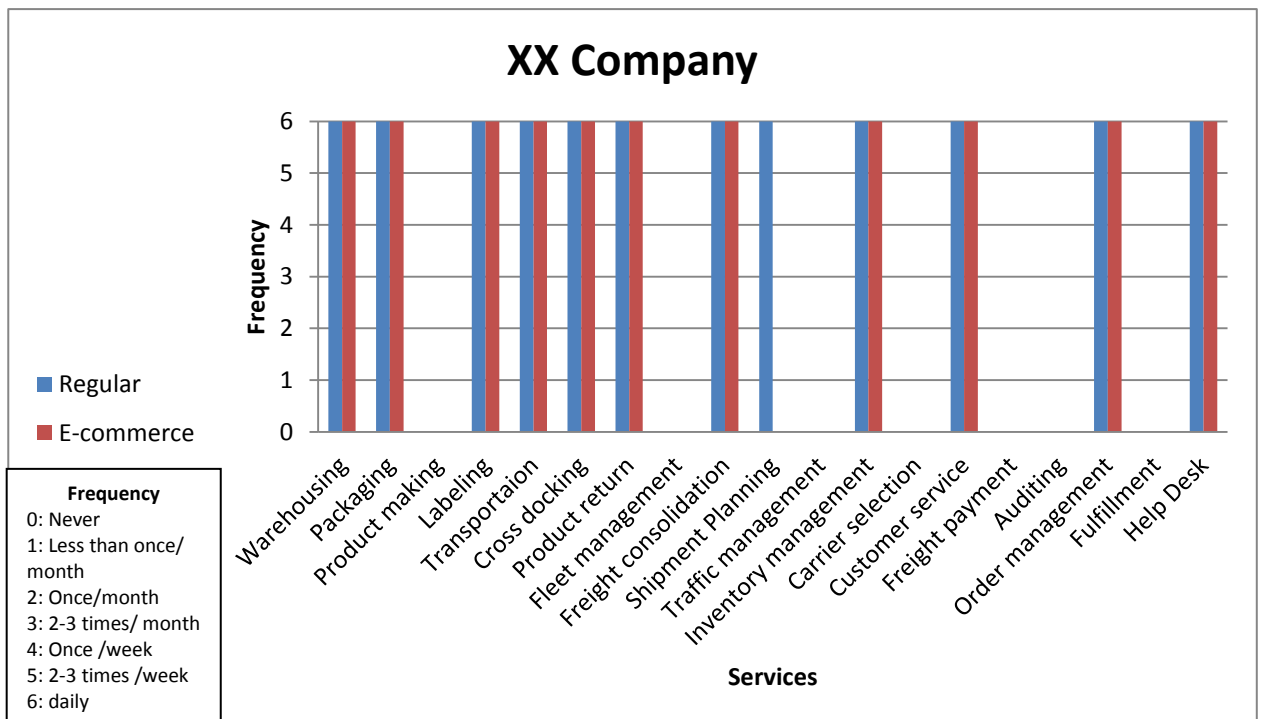


Figure 4.6 The frequency offering of XX Company's services

For XX Company, there are two ways to distribute goods to their customers. The first way is to distribute directly from a local warehouse to consumers; and the second way is to distribute from their national warehouse to the consumers. The firm chooses local drop-points near consumers in order for their consumers to easily pick up orders. In addition, because of using the local drop-point, the time of delivery to consumers will depend mostly on their drop points where their customers can pick up orders. The IT system used for e-commerce is WMS. There is no difference compared to regular customers since they apply the same IT system for regular ones.

4.7 YY Company

Due to the company's request, the name and the information will not be provided.

4.7.1 Regular customers

The company only has regular customers. They work together with the customer's organization to improve the logistics efficiency for their customers. Like other logistics firms, there are some services that they offer daily for their customers such as warehousing, packaging, transportation, traffic management, inventory management, order management as well as help desk. Besides, product making, labeling, shipment planning and fulfillment are offered two to three times a week. There are three services that the company offers once a week, namely product return, fleet management and freight consolidation. In addition, carrier selection, customer service and freight management are services provided by YY Company two to three times a month. Cross docking is offered less than once a month; and finally auditing is never provided for their customers.

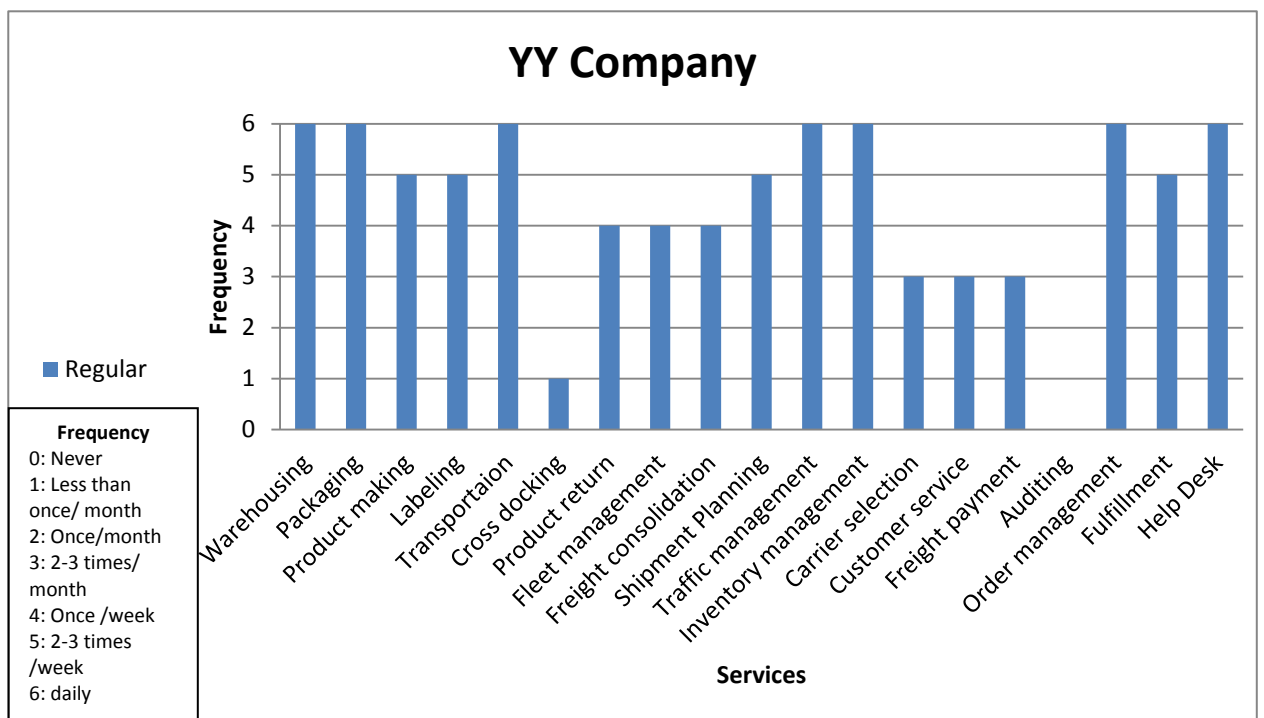


Figure 4.7 The frequency offering of YY Company's services

4.8 Summary of 3PL services

The charts below are the summary of 3PL services of six 3PL firms having both regular and e-commerce customers. It is based on the frequency of six cases. The average range is divided into seven frequent measures. There are two charts: one using for 3PL services providing for regular customers (Figure 4.8) and one using for services offering to e-commerce customers (Figure 4.9). The charts show the frequency on the average of six 3PL firms' 3PL services providing. For example, figure 4.8 shows that warehousing services is provided daily by all of six 3PL firms.

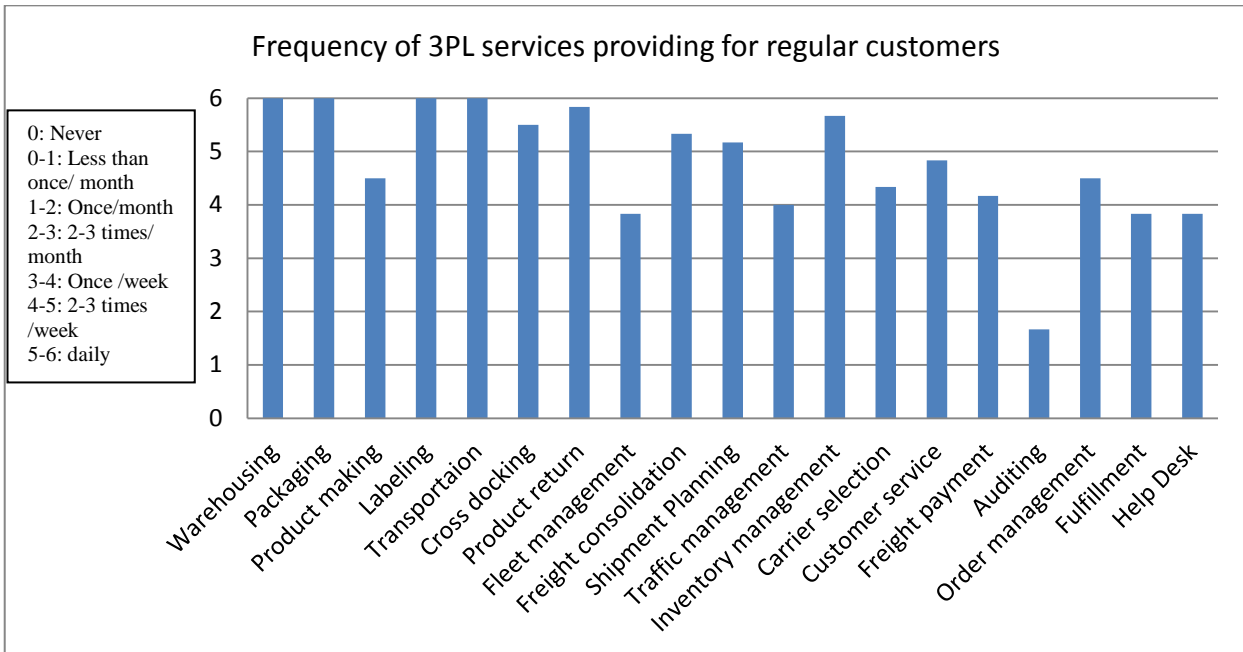


Figure 4.8 Frequency of 3PL services providing for regular customer

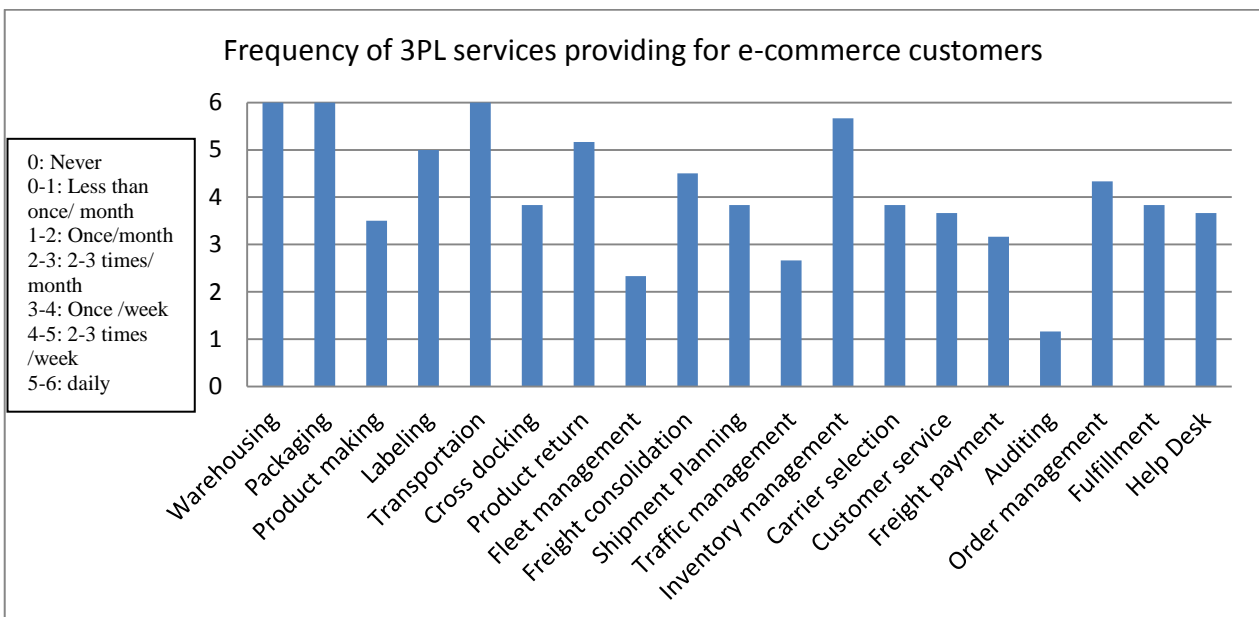


Figure 4.9 Frequency of 3PL services providing for e-commerce customer

5 Analysis

Combining the findings from the theoretical and empirical study, this chapter aims to fulfill the purpose of thesis as well as answer the research questions. The analysis will be based on the results of surveys and the responses of semi-structured interviews from six 3PL firms.

5.1 What services do 3PL providers typically offer for e-commerce customers?

5.1.1 Typical services provided for e-commerce customers

The investigation of 3PL services is based on the categorization of 3PL function (Vaidyanathan, 2005). We categorize different services in term of the frequency use provided by 3PL providers to e-commerce customers. According to Khurana (2012), the typical 3PL services provided for e-commerce customers includes supply chain management, warehousing, consolidation and order fulfillment. They are also on our findings; however the frequency use of them is different. In addition, there are some different services that 3PL firms offer for e-commerce customers (Figure 4.9). In figure 5.1, the typical services for e-commerce customers are listed based on the average frequency two or three times per week and daily provided (correlative scale 5 to 6).

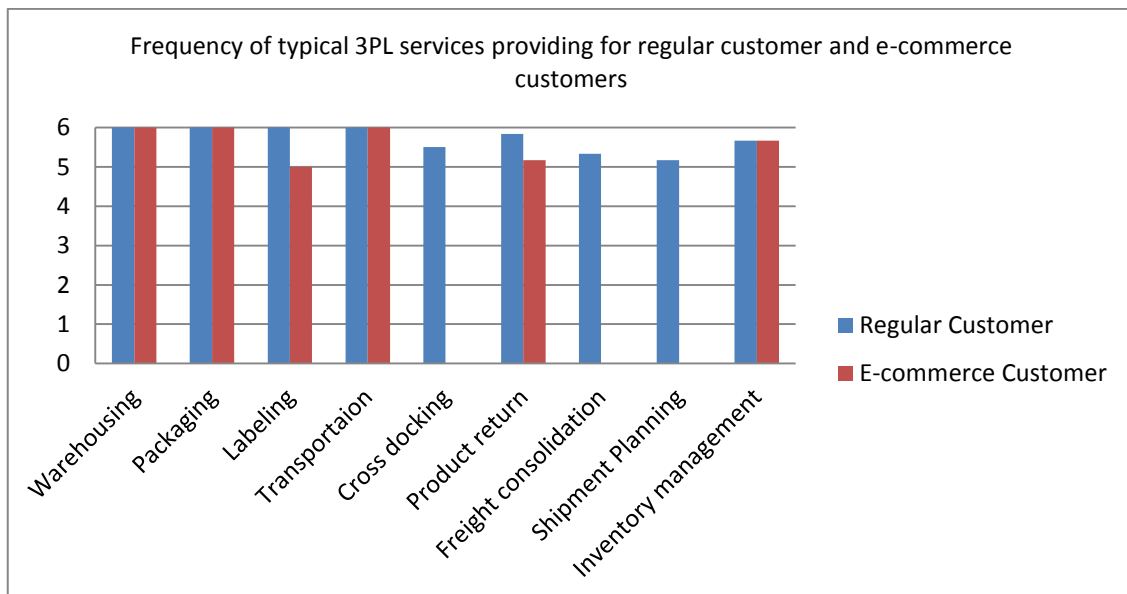


Figure 5.1 The typical 3PL services providing for e-commerce customers

The result shows most of the typical 3PL services provided for e-commerce and regular customers are similar. The chart points out that warehousing, packaging and transportation are daily services offered for e-commerce customers, while labeling, product return and inventory management are provided two or three times per week.

We can see generally, the services which 3PL firms offers for regular customers are also provided for e-commerce customers. However, there still has a difference in the frequency use between regular and e-commerce customers. Therefore, when 3PL providers serve for e-commerce customers, they have to pay attention to these services such as warehousing, packaging, transportation, labeling, product return and inventory management.

5.1.2 The changes in services of 3PL for e-commerce customers

The involvement of 3PL and e-commerce in SC (Delfman et al., 2002) are modified based on our results. The figure 5.2 shows the involvement of e-commerce and 3PL providers in the supply chain. In this figure, we want to emphasize the focal point in the supply chain is 3PL providers. E-commerce customers are small, medium or large firms which purely run the e-commerce business with an online store. Other e-commerce customers may be firms operating with both online and physical store such as retailers and wholesalers.

Concerning the distribution channel, according to Hultkrantz and Lumsden (2011), the different distribution channel may be reconfigured to meet the customers' needs. The study shows that different 3PL providers may have one or more distribution channels in order to serve for e-commerce customers. Depending on the setup of the companies, they have many distribution channels, which also offer different alternatives for e-commerce. Generally, the physical goods may be stored in warehouse of e-commerce customer or 3PL warehouse. The warehouse of 3PL firms includes both national and local warehouse. Therefore, the flows of physical goods include both e-commerce customers' warehouse and 3PL warehouse. For instance, Aditro and Bring have different physical goods flow from their national warehouses, local warehouses and e-commerce customers' warehouses, while PostNord and Scandinavian distribute directly from the national warehouses to the consumers. In addition, Transab Jönköping distributes from their local warehouses to the consumers.

Moreover, depending on the 3PL service setup, delivering goods to the consumers also differs. Most of 3PL providers need to cooperate with other forwarders or transport providers to deliver goods to the consumers. In Transab Jönköping, they have cooperation with UPS to cover the wider range of delivery and not limited to Jönköping area. Bring Warehousing AB relies on Swedish Posten for their delivery. PostNord Logistik has their own capability to deliver to the consumers in Nordic countries.

Regarding the point of delivery, there are four main points of delivery including home, work place, post office and drop point, which are the same as the suggestion of Hultkrantz and Lumsden (2011). However, not all 3PL providers offer all four options for the consumers. This is because they have to depend on the distribution setup and their distribution' partners. Only Bring Warehousing AB in our sample shows they offer four points of delivery. PostNord and XX companies deliver to drop points near the consumers. Transab delivers to the consumer's home and work place, while Scandinavian de-

livers to the consumer's home and post office. The consumers may receive the goods at home, work place, or post office if e-commerce customers work with Aditro Logistics.

In the figure 5.2, another important point that we want to mention is the information flow. The main information flow is from consumers to e-commerce customers and from e-commerce customers to 3PL providers. Other flow may be among 3PL providers, suppliers and partners of 3PL. The consumers place orders on the website of e-commerce customers, and then the information is shared to 3PL providers. Between e-commerce customers and 3PL providers, there are different setups. 3PL providers can immediately receive each consumer's orders from e-commerce. In some cases, e-commerce customers need to consolidate the orders before sending to 3PL providers. The consolidation may take every hour or several times per day. After receiving the orders from e-commerce customers, 3PL providers then hold them until they meet the requirements between two firms in order to make a next process. For example, Transab Jönköping receives order directly in the system when the consumers place orders through the Internet. In spite of continuously processing orders, they can hold them until they reach a certain volume in order to efficiently operate.

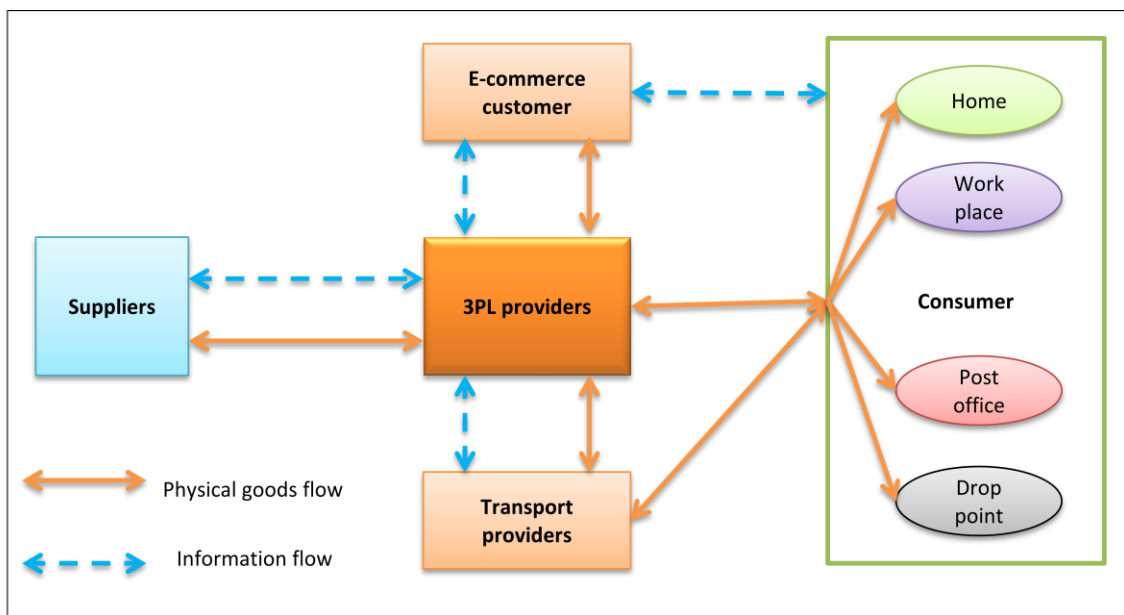


Figure 5.2 The involvement of 3PL providers and e-commerce customers

From this result, the dis-intermediation of downstream (B2C) is occurring in the supply chain. According to Delfmann et al. (2002), the dis-intermediation is the main factor in the change of supply chain. Among that, the wholesaler's and retailer's stages are skipped. In some circumstances, 3PL providers play a similar role as retailers or wholesalers in terms of physical flows, because they offer warehousing services for e-commerce customers. The selling goods activities of retailers or wholesalers to the consumers are replaced by e-commerce firms.

5.2 What specific challenges do 3PL providers face with e-commerce customers compared to regular customers?

From the literature review, there is a theory gap detailing what specific challenges 3PL firms face within their logistical framework. During the time collecting data from six different 3PL firms, we found that the challenges might be different for each company. However, they still have some common major challenges when operating with e-commerce customers. Here are five common ones that we found out, namely product return handling, forecasting, warehouse operation setup, distribution and integrated IT system.

A key piece of our findings involved the product return handling process, which is known as the biggest challenge for almost 3PL firms. With regards to PostNord Logistik, a major challenge in their operational activities was facing the frequency of returned products. Due to the nature of e-commerce business, the degree of returned products is relatively higher than other business, which is accounted in approximately 30% of shipments. Dealing with the complicated returning process was also mentioned by Aditro Logistics. Aditro has a high volume of returns with e-commerce customers. This has led the company to pay more attention to a reverse supply chain. Not only do PostNord Logistik and Aditro face this challenge, it is also a problem of Bring Warehousing AB since the returning process is complex compared to regular customers. U. Petersson (Personal communication, 2012-11-8) from Transab emphasized *“In the e-commerce business, it requires a high rate of return due to the fact that according to Swedish law, customers have a right to return within 14 days purchasing.”*

The second challenge refers to forecasting. Daily orders, small orders, seasonal patterns such as weekend, as well as an unstable demand are these reasons which are difficult to forecast. Matching volume with demand is a challenge for Bring Warehousing forecasting team. The demands of e-commerce customers are hard to forecast, susceptible to fluctuations. Therefore, most of 3PL firms face the difficulty in forecasting planning. F. Nygren (Personal communication, 2012-10-23) highlighted that *“Due to the fluctuating nature of ecommerce customers, it is difficult to match that demand with the correct volume of goods. The ability for the company to forecast and plan is hindered by a lack of key data.”*

In addition, different operation setup in warehousing also creates new challenge for 3PL firms. These orders from e-commerce consumers are relatively small, requiring a different setup for picking and packing that is experienced by PostNord Logistik. With Aditro, a small order is not a problem and dependent on the setup to handle the order. However, warehouses are often inundated with increased traffic from customers ordered during weekends.

Following is the distribution, which is also one of the most common challenges for 3PL providers. When there is an increase in demand for home delivery, the transportation to individual end consumer is also relatively expensive. Therefore, not every 3PL firm has

a strong distribution channel as PostNord to handle the distribution. Some companies have to cooperate with the transport providers to distribute goods to end consumers. For example, Bring Warehousing AB is working with Swedish Posten while Transab Jönköping cooperates with UPS. However, even PostNord has experienced in distribution, more distribution to consumer's home address is also their difficulties when working with e-commerce customers.

Finally, the lack of standard integrated IT systems between e-commerce customers and 3PL provider is a concern for 3PL firms. Most of 3PL providers are equipped with their own IT system such as WMS is widely used. However, IT Systems between firms and customers often cannot be amalgamated, which lead to difficulty in sharing information flow between them. For example, Bring Warehousing AB has identified that numerous e-commerce customers cannot integrate their IT systems with theirs.

From our study, we found out five common ones for 3PL providers. These challenges may be influenced differently in the operation of 3PL firms due to their ability and capability. Therefore, 3PL providers need to constantly review and prepare in order to overcome these five challenges.

5.3 How does 3PL provider adapt to e-commerce customers?

5.3.1 Classification of 3PL provider for regular customer

The authors Hertz and Alfredsson (2003) in a basic diagram show how to classify a 3PL provider. Using this model we evaluated the types of 3PL firms, and then related them back to their customers. The regular customers (B2B) represent those who are selling the goods from a physical store such as a wholesaler or a retailer. These customers represent the users of 3PL providers.

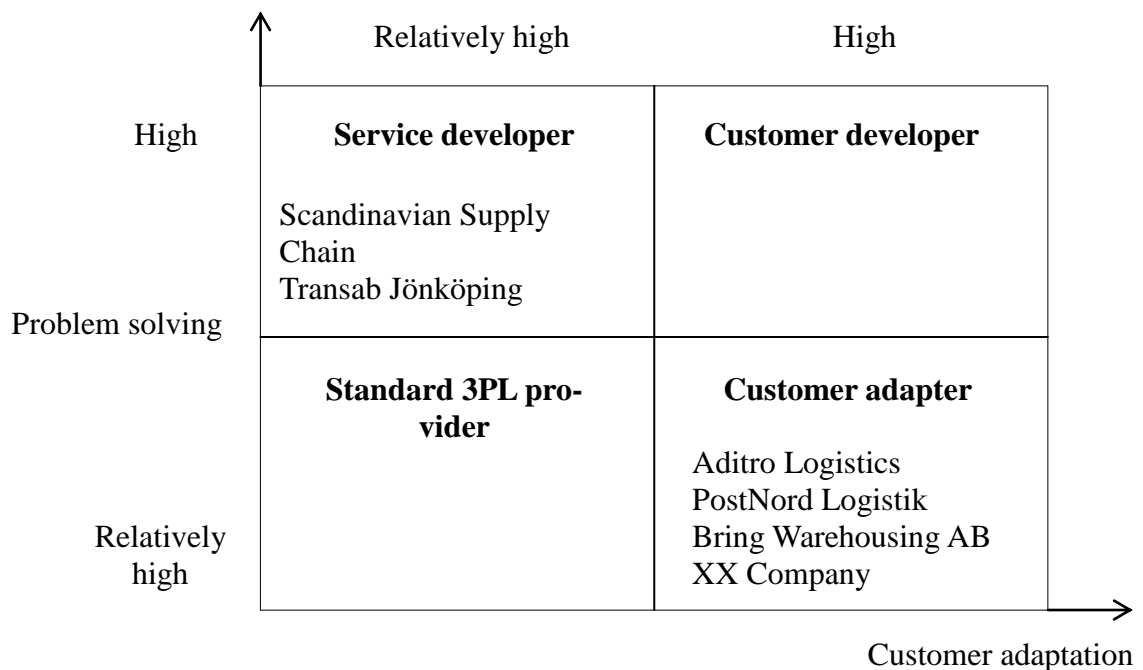


Figure 5.3 Classification of 3PL providers for regular customers

The Scandinavian Supply Chain and Transab Jönköping focus on their core standardized services and advance value-added services package to a different kind of regular customers depending on the customers' requirements and demands. These two 3PL firms are classified as *services developer*, which means that their degree of problem solving ability is high compared to relatively high degree of customer adaptation (Figure 5.3).

Due to the extreme customer adaptation, PostNord Logistik, Aditro Logistics, Bring Warehousing AB and XX Company are identified as *customer adapter*. The *customer adapter* refers to relatively high degree of problem solving ability and high customer's adaptation (Hertz & Alfredsson, 2003). These 3PL companies work closely together with regular customers. In addition, they adjust the core services to the specification of customers in order to improve the logistical efficiency of the operation.

The classification of 3PL providers above is for regular customers. The following section will show how 3PL firms adapt to their e-commerce customers.

5.3.2 The adaptation of 3PL provider to e-commerce customers

When having e-commerce customers, 3PL providers have made some different adaptations. In the case of Scandinavian SC, working with approximately thirty regular customers, there are almost no challenges for them when serving three e-commerce customers. They still keep a high ability of general problem solving to provide the core services and set of value-added services for e-commerce customers as regular customers. However, with e-commerce customers, Scandinavian SC indicates that the degree of adaptation to individual e-commerce customer is slightly lower than regular customer. It is; thus, appropriate to label them as a *service developer*. According to Hertz and Alfredsson (2003), as a *service developer*, 3PL firm offers an advance value-added services package for the customers. This includes a set of services consisting of extra activities that relate to a core standardized activity.

Regarding Scandinavian, their core standard services and value-adding service package offered for regular customers still meet the demand of e-commerce. So, this reduces the need to adapt. Due to less adaptation to the requirements from e-commerce customers, the process from beginning until signing the contract with the customer takes one to three months. On the other hand, the process for regular customers is between two to four months. This is because of the increased considerations and adaptations for regular customers.

Therefore, Scandinavian SC decides on less adaptation in order to maintain the high ability of problem solving to e-commerce customers. However, we can see that with a huge experience serving thirty regular customers, Scandinavian SC would be able to expand their e-commerce segment. They may attract more customers by increasing the degree of adaptation to them.

To Transab Jönköping, working with one e-commerce customer in almost one year (from November, 2011 till recent); they feel that the challenge from e-commerce customer is slightly lower than regular customers. Less challenge from e-commerce leads to the fact that they provide services with a higher ability of problem solving and more adaptation to e-commerce customers. With this reason, it can be seen as a potential for Transab to develop more on the e-commerce segment. They can develop the company from *service developer* to *customer developer* when dealing with e-commerce customers. Hertz and Alfredsson (2003) defined a *customer developer* as 3PL firms develop advanced solutions for each customer and its role is more of a consultant. So, to become a *customer developer*, Transab should be more active in e-commerce segment rather than their current stance of being inactive. It means that they can shape a specific strategy for e-commerce customers by reviewing their current services and adapting to e-commerce's demands.

For PostNord Logistik, they have experienced no major difficulties regarding problem solving for its ten e-commerce customers. For example, the problem of wide geographical distribution is solved easily with the large distribution network of PostNord Logistik. They are able to deliver goods from the national warehouses to the consumers in Sweden, and also to other Nordic countries. However, PostNord still meet a challenge, which requires them become more adaptive to e-commerce customers. This is because e-commerce customers' orders tend to be small and various volumes. The firm plans to improve their ability to adapt by building a specific warehouse for handling orders of e-commerce consumers. The warehouse is equipped with a suitable pick and pack setup designed for e-commerce (A. Larsson, personal communication, 2012-11-25). This new warehouse not only helps the company to overcome the challenge through a different operational setup, but also increases the adaptation to e-commerce customers. With this adaptation, PostNord is on the way to overcome the challenge from e-commerce. They have an ability and capability to become a *customer developer* for e-commerce customers. As being the *customer developer*, they can consult e-commerce customers with the advanced solutions to improve the services.

Regarding Aditro Logistics, it is worth a mention that the company has been in the e-commerce market segment for a long time compared to other 3PL firms. The fact is that fifteen e-commerce customers is a large proportion compared to total amount of thirty regular customers. According to F. Nygren (Personal communication, 2012-10-23), the firm does not really distinguish between e-commerce and regular customers. Their operational setup and services has been well prepared and developed for e-commerce customers since 1990. This is strong evidence showing that most of services provided for e-commerce customers are identical to regular customers. As a result, their ability of solving problems and the degree of adaptation to both regular and e-commerce customers are the same. However, Aditro tends to offer a whole package for e-commerce customers due to increasing demands. Therefore, we see Aditro potentially heading towards becoming a fourth party logistics (4PL) firm. Operating as a 4PL provider, Aditro Lo-

gistics becomes a highly advanced problem solver. They can manage and coordinate their own services with other complementary service providers such as website, or financial transaction management to deliver comprehensive solutions.

Coming to Bring Warehousing AB, the ability of solving problems for regular and e-commerce customers is the same, although the challenge when serving four e-commerce customers is higher than with regular customers. The reason creating the challenge is that with the e-commerce customers, the orders can be small and thus, it requires flexibility in the warehousing setup. The difficulty and complexity in distributing goods increase when factors as home delivery are becoming popular. However, these challenges above do not make Bring less adaptation for e-commerce customers. On the contrary, the degree of adaptation to individual e-commerce customer is higher than regular customer. Currently, Bring Warehousing AB clarifies as a *customer adapter* for regular customers. With higher ability to adapt to e-commerce, they can turn into a *customer developer* in the e-commerce segment. Through integrating with their ecommerce customers, the provider gains a better understanding, improving the supply chain.

Generally, 3PL providers are classified into four types as *standard 3PL provider*, *service developer*, *customer adapter* and *customer developer*. The classification is based on the ability of 3PL to general problem solving as well as the degree of adaptation to customers. In our study, there are six 3PL providers. Two of them are identified as *service developers*, and the others are *customer adapters*. Their classification regards to the ability to solving problems and the adaptation to regular customers. When dealing with e-commerce customers, the result shows that as *service developers*, 3PL providers generally focus on offering the core services and a set of added services. They are less willing to adapt to e-commerce. Thus, they still keep a high ability of general problem solving. On the other hand, as *customer adapters*, 3PL providers have higher adaptation. It means that they are more willing to change their services in order to adapt to the demands of e-commerce customers.

6 Conclusion, reflection and suggestions for further studies

This chapter concludes the analysis and emphasizes the accomplishment of thesis purpose through the research questions' answers. In addition, reflection and suggestions for the possible further studies are also stated.

6.1 Conclusion

The development of e-commerce has created new opportunities as well as challenges for 3PL providers. Our study has reached the purpose and answered the research questions. After carefully applying the theoretical framework to analyze the empirical findings, we have some following conclusions as the answers for our research questions.

The first conclusion fulfills the research question one where we strive to find out what services 3PL providers typically offer for e-commerce customers. It is obvious that the services for regular customers are also provided for e-commerce customers. However, the frequency use of services by e-commerce customers compared to regular customers is slightly different. Therefore, we conclude that the services 3PL providers typically offer for e-commerce customers are warehousing, packaging, transportation, labeling, product return and inventory management services. The results show that warehousing, packaging and transportation are daily services using by e-commerce customers, while labeling, product return and inventory management are offered two to three times per week.

Furthermore, the 3PL providers have made some changes in their services to adapt to e-commerce customers. The appearance of e-commerce has created the dis-intermediation in the supply chain. The retailers or wholesalers in the generic supply chain are skipped, which leads to the reconfigured distribution channel for e-commerce customers. The study shows that different 3PL providers have different distribution channels in order to serve e-commerce. However, the distribution channels are commonly configured where the physical goods can flow from either e-commerce customers' warehouse or 3PL provider's national or local warehouses to the consumers' home, workplace, and drop point or post office near the consumers.

Our findings support the conclusion that there are five specific challenges 3PL providers face with e-commerce customers, when compared to regular ones. The research question two is answered through this conclusion. The product return is the major challenge for almost 3PL providers in our study. The return rate even accounts for 30% of shipments. Secondly, forecasting for e-commerce customers also becomes a challenge. Daily orders, small orders, seasonal patterns as well as an unstable demand from individual consumer make it difficult for 3PL providers to forecast. Another challenge 3PL providers have to face are warehousing activities. Most of the 3PL providers had a warehouse operation setup for regular customers. However, the warehouse activities for e-commerce require a different setup such as pick and pack, which are often small orders for individual e-commerce consumer. The demand from e-commerce customers is often a result of weekend or seasonal orders, placing a strain on warehouse operations.

Besides, 3PL providers also face the distribution challenge. Most of them have to cooperate with other transportation companies to deliver goods to the consumers. The cost of delivering goods to the consumers is relatively higher compared with delivering to regular customers. Last but not least, there is a minor challenge for 3PL providers to deal with integrated IT system with e-commerce customers.

For the research question three, we conclude that the degree of adaptation of 3PL providers to e-commerce customers is dependent on the current type of 3PL providers for regular customers such as *service developer* or *customer adapter*. The reason is that most of 3PL providers have served e-commerce customers for the short period of time. In addition, their initial strategy of firms serves regular customers, so their operational setup reflects this. When dealing with e-commerce customers, 3PL providers need to change their operational setup to adapt to e-commerce customers. Through our findings, it shows that as *service developers* for regular customers, 3PL providers focusing on offering their core services and a set of added services still have a high ability of general problem solving. On the other hand, as *customer adapters* for regular customers, 3PL providers have higher adaptation to e-commerce customers. The *customer adapter* 3PL providers would have an ability to become a *customer developer* where they may consult e-commerce customers to improve the services. It can be done by creating these advanced solutions for e-commerce customers rather than efficiently and effectively fulfill the demand of e-commerce customers.

It is worth to a mention that our study is only based on the Swedish market where the 3PL providers and e-commerce have been developed. Moreover, there is a limitation on the sample of 3PL providers. Therefore, it leads to the fact that the results do not cover all circumstances. The employment of general theories for 3PL providers without a specific interconnection between e-commerce and 3PL is also our limitation. However, our results still made a contribution to develop the theoretical framework for 3PL and e-commerce specifically and valuable practical implementation in practice.

For the theoretical contribution, our findings may help to build the theoretical framework for 3PL firms in the e-commerce segment. For example, the involvement of 3PL providers for the e-commerce supply chain, or the change in distribution channel as well as the specific challenges for 3PL providers may be used to build the theory.

When coming to the companies in practice, especially 3PL providers and e-commerce firms, our findings can be referred to the companies' strategies, services, and operational setups. 3PL providers can study the differences and challenges when dealing with e-commerce customers. From that, they differentiate e-commerce segment in their strategy in order to operate efficiently and effectively. Furthermore, the results are worth to review before current 3PL firms planning to expand their services for e-commerce segment, or new 3PL firms planning to operate purely in e-commerce niche.

6.2 Reflection

We realize that our study still has some limitations. The limitation of data collection is an example. This is due to a difficulty in getting contact with 3PL providers. The findings could not be used for the statistical analysis. Moreover, the result may represent a small group of 3PL providers. With the larger data collection, the results may be slightly affected with some new issues.

The method used in this thesis was the most appropriate one. However, the data collection process is unexpected. It would be more reliable if we get help to contact with many companies by Swedish. Small 3PL providers may find difficulty to cooperate in English.

In the case of the limited responses, the best approach would be focusing on one or two 3PL providers as a case study. The case study may be appropriate to get deeply in their operational setup. The result of the case study will be an example for the practical usage.

6.3 Suggestions for further studies

Our study was an investigation of the general e-commerce customer; however, there is no specific type of e-commerce customers. So, we suggest that for a further study, there could be a focus on a specific type of e-commerce customers. Potentially this could concentrate on the clothing industry or others.

In addition, our sample is selected from 3PL companies in Sweden. Of course, the result may be different when applying to other countries. For the further study, it can be conducted in different countries with the different degree of development of 3PL and e-commerce.

Finally, in our findings, we found that the product return is one of the major challenges for 3PL providers. Thus, researchers may deeply focus on the product return or the reverse logistics for e-commerce customers.

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Appendices

Appendix 1: List of 3PL companies in Sweden (Intelligent Logistik, 2012)

8. Intelligent Logistik

Här är listan över svenska TPL-företag

TPL är en verklig snabbväxare i Norden. De senaste åren har branschen växt med 10 procent per år trots konjunktursvängningar.

Tredjepartslogistik är något av logistikens kärnområde och växer snabbt i hela världen. Definitionen av tredjepartslogistik TPL är inte glasklar – minsta gemensamma nämnare är att erbjuda någon form av lagerhantering. Att bara ställa in och ta ut varor ur en terminal är inte TPL-verksamhet.

Cross-docking, plockning och packning är kärnverksamheter i TPL.

Förutom renodlade TPL-företag som t ex Aditro, redovisar få företag sin tredjepartslogistik separat.

De svenska undersökningar som publicerats sedan millennieskiftet uppskattade omsättningen i TPL-företag till ca 4 miljarder SEK.

Omsätter 11 miljarder

Intelligent Logistikts förra undersökning från 2007, den senaste som gjorts i Sverige, uppskattade då omsättningen inom TPL till över 7 miljarder SEK per år. Med tanke på nya aktörer, ökad outsourcing av logistik och handelns tillväxt, uppskattar vi att TPL idag omsätter ca 11 miljarder SEK. Det betyder att tillväxten varit ca 10% per år. Det är därmed

en av de snabbast växande branscherna i Sverige.

I vår nya listning har antalet TPL-företag och företag som har verksamhet inom TPL trots en rad fusioner, ökat från

130 år 2007 till ca 135 år 2012.

Listan nedan omfattar inte alla mindre TPL-företag. Men den är den mest kompletta som hittills publicerats i Sverige.

Vi fördjupar oss vidare i TPL-branschen och dess aktörer i nästa nummer av Intelligent Logistik. ■

AV GÖSTA HULTÉN



Den svenska TPL-branschen omfattar ca 135 företag. Omsättningen ökar med närmare 10% per år.

→ TRE SÄDRAG I SVENSK TREDJEPARTSLOGISTIK

† Av de 10 största TPL-företagen är fyra statligt ägda. De tre största, PostNord ägs av danska och svenska staten, DHL och DB Schenker delägs av tyska staten och Bring ägs av norska staten.

† Alla de stora svenska dagligvarujättarna (ICA, Coop, Axfood, Bergendahlsgruppen och Lidl) sköter i huvudsak själva sin logistik.

† Ser man till huvudkontor och lagercentraler är koncentrationen stark till Stockholm, Göteborg och västra Skåne. Av huvudkontor/Sverigekontor ligger 29 i Stockholm, 20 i Göteborg, 18 i Öresundsregionen, 7 i Norrköping och 5 i Jönköping.

De 10 största TPL-företagen (bokstavsordning)

- Aditro Logistics (Renodlat TPL-företag)
- Bring Warehousing (Norska posten)
- Damco
- DB Schenker Logistik (Renodlat TPL-företag)
- DFDS Logistics
- DHL Supply Chain (Renodlat TPL-företag)
- DSV Solutions
- Frode Laursen
- PostNord Logistik (Svenska och danska Posten)
- Postpac (Renodlat TPL-företag)

→ FÖRETAG SOM ERBJUDER TPL-TJÄNSTER I SVERIGE

Namn, huvudkontor			
3PL, Helsingborg	DHL Exel Supply Chain, Stockholm	Korsilen AB, Borås	Scandinavian Supply Chain, Växjö
AA Logistik, Västerås	Distributionscenter, Hallstavik	Kuehne + Nagel AB, Stockholm	ScanLog Lagerpartners AB, Eskilstuna
A-Service Logistik AB, Norrköping	DSV Solutions, Malmö	Lagena distribution AB, Stockholm	Schenker Logistics, Göteborg
AB Karlehamns Expressbyrå	EB Logistik AB, Oskarshamn	Lagerhotellet i Stockholm AB	Schiandera Logistik AB, Norrköping
AB Sky Transport Sweden, Göteborg	Edström Malmö AB, Simon, Malmö	Lagerservice i Näsejö AB, Näsejö	Servistik AB, Linköping
Aditro Logistics, Göteborg	Ekdahle Åkeri AB, Malmö	LBC Frakt i Värmland AB, Karlstad	Sima Logistic AB, Teckomatorp
Air Logistics AB, Helsingborg	Ekerö Lagret AB, Ekerö	LBC Sweden AB, Tibro	Skianlog AB, Eskilstuna
Akka frakt AB, Malmö	Electra Sweden AB, Uppsala	LBC Värgråda AB, Värgråda	Skooce Åkeri AB, Ängelholm
Allright AB, Ängelholm	Eliganten Logistik AB, Jönköping	Liber distribution AB, Stockholm	Skara Frye
Alltransport, Norrköping	ENS Entertainment Network Scandinavia AB, Borås	Ljungby Logistikcenter	Skubbet AB, Bålsta
ALWEX Transport AB, Växjö	Exacta Logistik AB, Uppsala	Logistikskolans AB, Borås	Smålandlogistik AB, Nybro
ASA Transporter AB, Fresta	Falkenberg Terminal AB, Falkenberg	Logpart AB, Västeråker	Stella Transport AB, Malmö
A-Service Logistik AB, Norrköping	Fraktledjan AB, Mölndale	LTN Logistik AB, Falkenberg	Storex AB, Stockholm
Bax Global, Göteborg	Fraktkompaniet AB, Göteborg	LBC Sweden AB, Tibro	Strömberg Distribution AB, Huddinge
BEST Logistik, Stockholm	Frigoecandia Distribution AB, Helsingborg	Lehmann Nordic Group, Stockholm Arlanda	STS Logistik AB, Stockholm
Blondie Logistics AB, Kungälv	Frode Laursen AB, Åstorp	Malmö LBC AB, Malmö	StåB BBS, Södertälje
BM Transport AB Robert, Ängelholm	Fryboxen i Håboholm AB	Maoerfrakt AB, Borlänge	SNLogistics, Solentuna
Bonver Logistik AB, Lidingsö	Fryhuset Iskuben AB, Lidköping/Södertälje	Mertz Transport AB, Malmö	Syd Frye AB, Mölndale
Bring Warehousing, Jönköping	Rumera Logistik AB, Falun	MTAB Transport & Spedition AB, Bromma	Sörhina Förlag AB Åby, Norrköping
Brunskog Lager AB, Ljungby	GDL Transport AB, Helsingborg	M3 Logistics, Stockholm	Transfergo, Malmö
Budcompaniet AB, Årsta	Geodia Wilson, Göteborg	m4-Gruppen, Eskilstuna	Transab, Jönköping
Business Linc AB, Falkenberg	GeoLogistics AB, Göteborg	Netlogistic Transport Sweden AB, Åhus	UPS Solutions, Stockholm
Börjes Packhus, Nybro	GKF frakt AB, Krikanstad	Norberga Lager&Logistic AB, Älvsjö	Veddeata Distribution AB, Stockholm
Börjes Logistik & Spedition AB, Nybro	Gothenburg shipping logistics AB, Göteborg	Nordic Gateway Distribution AB, Näsejö	VIDA LagerService AB, Norrköping
Cat Logistics Services, Huddinge	Gösta Appellkvista fryseri AB, Simrishamn	Närkefrakt AB, Örebro	Västeråkeri AB, Stockholm
CEVA Logistics Stockholm, Arlanda	Götene Kylvägar	Pan Nordic Logistics AB, Stockholm	Västerås Logistikcenter AB
Cleason Transport AB, Jönköping	Halleberga kombiterminal	Panelphina AB, Mölndale	WeFixLog i Vara AB
CombTrans Groupage Sweden AB, Varberg	Haninge Lagerterminal	PostNord Logistics, Solna	Weststockhuset AB, Göteborg
Dachser Sverige, (Köpenhamn, för Norden)	Hansar Logistik AB, Borås	Postpac AB, Skurup	Xter Logistics Stockholm Årsta, Tumba
Damco, Göteborg	In Time Logistics AB, Göteborg	RNB Logistik AB, Stockholm	Ystad Lagerhotel AB
Dan Cargo AB, Göteborg	Itella, Stockholm	Rosengrens Lager & Distribution AB, Göteborg	Åj Distribution AB, Spånge
DB Schenker, Göteborg	ITS Logistikpartner AB, Åkerslund	Roenlunds Åkeri, Jönköping	Östersunds fryshus & fastigheter AB
DCAB, Skurup	JAB Logistic Göteborg	Roxtrane, Linköping	
DFDS Logistics AB, Järfälla	Jönsson Novabolagen AB, Norrköping	SACT AB Stockholm, Arlanda	
	KGA Logistik AB, Karlskoga	Samfrakt Sydost AB, Kalmar	

RESEARCH GÖSTA HULTÉN

Appendix 2: Structured interview question

Third-party logistics services for e-commerce customers

Part 1: General information about respondent

Name of company:

Name of Respondent:

Position of Respondent in the company:

Is it possible that we can use the information from this survey for our study with your company name? Yes No

Would you like to have a final version of thesis when it is completed? Yes No

Part 2: General information

1. **Does company have e-commerce customers?** Yes, No (If No, please complete to **part 3** only)
2. **Do you remember when company got the first e-commerce customers?**
Please write month.....year _____
3. **How many e-commerce customers does your company have until now?**
_____ customers
4. **How many regular customers does your company have?** _____ customers
5. **How long does it typically take from first step (*e-commerce customer contact your company*) to sign contract with e-commerce customers?** If possible, explain the process

6. **How long does it typically take from first step to sign contract with *regular customers*?** If possible, explain the process

Part 3: Services offering for regular customers

7. **Which options below is *the best description of your company service for regular customers*?**
 - Our company offers the standard services with little adaptation for specific customers.
 - Our company offers standard service and value-added service to make a bundle of service for customers.
 - Our company works together with the customers' organization to improve the logistics efficiency for the customers.
 - Our company plays a role as a consultant to develop advanced solutions for each customer.
8. **How often does your company provide the following services to regular customers?**

	Never	Less than once a month	Once a month	2-3 times a month	Once a week	2-3 times a week	Daily
Warehousing							
Packaging							
Product making							
Labeling							
Transportation							
Cross docking							
Product return							
Fleet management							
Freight consolidation							
Shipment Planning							
Traffic management							
Inventory management							
Carrier selection							
Customer service							
Freight payment							
Auditing							
Order management							
Fulfillment							
Help desk							

Other services for regular customers:.....

Part 4: Services offering for e-commerce customers

9. **Do e-commerce customers have any specific requirements? If, they have, please give example**

10. How often does your company offer services to e-commerce customers?

	Never	Less than once a month	Once a month	2-3 times a month	Once a week	2-3 times a week	Daily
Warehousing							
Packaging							
Product making							
Labeling							
Transportation							
Cross docking							
Product return							
Fleet management							
Freight consolidation							
Shipment Planning							
Traffic management							
Inventory management							
Carrier selection							
Customer service							
Freight payment							
Auditing							
Order management							
Fulfillment							
Help desk							

Other services for e-commerce customers:.....

Part 5: Differences between e-commerce customers and regular customers

11. What types of distribution does your company provide for e-commerce customers? (You can choose one or more alternatives)

- Distribute direct from customer warehouse to consumers
- Distribute direct from some whole sellers/retailers to consumers
- Distribute direct from your local warehouse to consumers
- Distribute direct from your national warehouse to consumers
- Distribute direct from producers to consumers

Other distribution channel.....

12. What type of delivery point does your company use for e-commerce customer? (You can choose one or more alternatives)

- Consumer's home
- Post office
- Consumer's work place
- Your local drop-point near consumers

Other point of delivery:

13. What time of delivery does your company offer for e-commerce customer? (You can choose one or more alternatives)

- Contact consumers to arrange time before delivery
- Your working hours (please write your working hours)
- Weekdays between 18-20
- Saturday
- Sunday

14. What type of IT infrastructure does your company use for regular customers?
.....

15. Does your company need more IT investment for e-commerce customers?

- No, we use the same IT infrastructure as regular customer
- Yes, we invest more IT infrastructure to support for e-commerce customer.
If possible, please describe what type of IT infrastructure used for e-commerce customer:

16. How challenging is it for you to deal with e-commerce customers compared to regular customers?

Much lower Slightly lower About the same Higher Much Higher

17. What kind of difficulties does company face when dealing with e-commerce customers?.....

18. To what extent does your company have the ability to solve problems for e-commerce compared to regular customers?

Much lower Slightly lower About the same Higher Much Higher

19. Compared to regular customers, how high is your degree of adaptation to individual customers?

Much lower Slightly lower About the same Higher Much Higher

20. Further comments:

21. Would you please provide us some documents to understand more about your services? Please send documents to e-mail: ngtu1188@student.hj.se

22. It would be very useful for the project if you are able to give us 10 minutes for a short follow-up by phone. Please fill out the contact information below if this is possible

Your phone number:

Time:

Date:

Thank you for your cooperation!

Appendix 3: Semi-structured interview general question

1. What do you think about the development of e-commerce customers for 3PL companies?
2. When you have e-commerce customers, do you need to create new services for them? (specific services) What are their demands?
3. How do you distribute the goods to e-commerce consumers if they are outside your distribution area?
4. About order management, how do you process order from e-commerce consumers? For example, you receive total order daily from e-commerce customers or you will process directly each order from consumers.
5. What challenges do you face with e-commerce customers?
6. What kind of changes does your company make for a specific e-commerce customer?
7. Do you have anything else to say about e-commerce customer?