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Implementation analysis of an information sharing system within the Supply Chain

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Abstract

Purpose - The purpose of this paper is to help third-party logistics providers solve the difficulties in implementing a new system for their information related operations. To fulfill this purpose, three research question have been made:

1. *What makes the implementation of the information system difficult for third-party logistics providers?*
2. *What facilitates service transfer/implementation of the information system?*
3. *What are the guidelines for a successful implementation of an information system for a third-party logistics provider?*

Method - A case study was conducted with a Swedish freight forwarder company with global presences where empirical data was collected through interviews and document analyses to fulfill the purpose of the paper. Furthermore, to make a theoretical support for the findings, a literature review was carried out. The empirical data and the result of literature review was being compared and analyzed to answer research questions.

Findings - The finding has been made in the order of establishing guidelines for third-party logistics providers, especially small-to-medium size enterprises, to make a successful as well as smooth implementation of a new system for information-related operations with the empirical data and literature review result as support. To begin with, a thorough analysis was made upon the characters of the implementation which will address the difficulties. The findings are mainly related to the processes of the implementation as well as the characters of third-party logistics providers that can cause the downforce. Then, since a better understanding of the initiation of the motivation for the organizations to make the implementation can help to make scientific and thorough guidelines, the findings of which will be presented. Lastly, all the data and analysis will be used to make guidelines for the organization regarding the implementation of a new system for their information-related operations.

Implications - Different studies within the areas related to the study have been made and the paper has made certain contributions to view them in a different perspective by conducting the study on a TPL company. Additionally, the study suggests that the findings have been conducted to solve one specific case which can be broadly used with the consideration of historical factors as well as customer alignment.

Limitations - This study focuses specifically on a case in Sweden. Generalization has been limited due to several variables: national differences, company size and transport services, etc. In addition, the third-party logistics industry has changed rapidly and the subsequent research also has a time limit that the author could not predict.

Keywords

Supply chain, Third party logistics, logistics, information flow, implementation, IT service management,

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1 Introduction

In this chapter, an introduction of the study will be presented. This chapter is divided into five sections. Firstly, the chapter will start with a description of the background to give an overview which will be followed by the problem formulation. Secondly, the purpose and research question will be given. Lastly, the delimitations and outline of the paper will be introduced.

1.1 Background

In this globalization age, the trade relationship between each country is getting closer and closer. Nowadays, overseas shipments can only take a few days to cross the ocean and be delivered to customers who may be on the other side of the world. For that reason, global competition has started and it has become a revolution from the company level to the supply chain level (Lambert and Cooper, 2002). In this regard, a company must build a secure and comprehensive supply chain network to maintain competitiveness in the market(Archer, N. P., 2007). A supply chain consists of different companies along the way from creation to delivering a good product or service to end customers (Prater, E., & Whitehead, K. 2012). Several tools can be used to analyze the supply chain such as the arrangement of function, inventory function and performance measurement etc., among which, the essential tool is the practical arrangement of logistics (Sadler,2007). Logistics can be considered as a provision of suppliers including shipping supplies and also service and support systems (Liu, John J,2011). Moreover, a good logistics arrangement can reduce inventory costs and ship the cargo just-in-time by managing the production and distribution flow. To some extent, it can adjust flexibly to any fluctuation and disturbance happening within the supply chain e.g. shortage of raw material (Zieger, 2018). However, not every company can handle all the functions together, and sometimes a better solution might be to outsource some tasks and concentrate develop the core business of the company. A Company that is willing to outsource its logistics function to a third-party logistics (TPL) provider is aiming to improve its competitive advantage, for example, better customer experience, more efficient production and so on. Statistics show that around 74% of companies diciede to outsource their logistics to TPL providers (Langley, Coyle, Gibson, Novack & Bardi, 2009). Under this circumstance, TPL providers are committed to deliver better service to their customers and maximum market's share. There are several difficulties that TPL providers must to cope with, among them, the inefficiency in information sharing between companies is one of the most considerable barriers to overcome regarding a third-party logistics arrangement (Cheong, 2003). Therefore, how to overcome this barrier has been the key for a third-party logistics company to open the door to success.

The authors hold deep interests in this area and use it as the main topic to discover more profound findings. A company named TKL Logistics at this time comes into view which is a Swedish TPL service provider and launched a project known as "Client Portal" in 2021. The Client portal is an information system helps TKL Logostics to better communicate internally and externally. The platform is relatively mutual and has some regular customers using it so that the author could get instant feedback and information about the whole project process. The company wishes to expand its services with the help of its new information system: Client Portal. Meanwhile, the Swedish TPL service provider is aiming at promoting its system as a competitive advantage in the industry. Therefore, they need to well organize the implementation of how to let regular customers accept the Client Portal as well as advertise it to potential customers. However, the company is currently facing difficulties in the implementation of the system to the public. Thus, the authors will conduct a case study of this specific company and finalize the findings towards the research questions in the end.

1.2 Problem formulation

As mentioned in the previous section, outsourcing logistics has become a trend for organisations involved in logistics operations to improve their supply chain. The status of TPL providers in the market becomes more and more critical. Within the supply chain, TPL providers play a role in integrating logistics activities, including the movement of inventories and information sharing (Bowersox *et al.*, 2012b; Marasco, 2008). To improve the service quality of TPL providers, the capability of the information system has been essentially important.

As one of the methods of improvement in most areas, automation has always been highlighted by top management to keep the company competitive in the market (Liker, 2004; Sadler, 2007; Harris, 2008). However, not every TPL provider decides to develop their automation competence, especially regarding information systems. It often depends on whether competitors develop automation or whether investors want it (Sadler, 2007; Harris, 2008). To gain more profound knowledge regarding implementing an automated information system (information system), the authors have conducted a study on a case company that has faced challenges in the implementation of information system.

For the case company, the difficulties they face can be traced to various reasons. On the other hand, as a trend in the development within the supply chain, these difficulties will not only be faced by the case company but also can occur to the other TPL providers. The authors have chosen to conduct their study based on the case company to make a general conclusion for the TPL industry. The difficulties are also mentioned by Agutter (2003), which involve the characteristics of the implementation of an information technology (IT) system. The difficulties commonly have not caused the companies that have the resources to invest in the new system many problems but delays in the deployment. However, these issues can cause the failure to deploy the development for small to medium enterprises.

In conclusion, to discover a solution for TPL providers in information system implementation, this paper will conduct scientific research regarding the difficulties as well as the benefits of the implementation. By discovering the difficulties of implementing an information system, guidelines can be developed to help solve such issues for TPL providers. The benefits will also be discovered to be used for additional points for the guidelines.

1.3 Purpose and research questions

The purpose of this thesis is to explore how to implement an information system in the case of TPL providers. The results will be compiled as a framework of guidelines, which could help TPL providers to improve their effectiveness in the related area in the future.

To better fulfil the purpose, the following research questions have been formulated:

The purpose of question 1 is to solve the question that the case company is faced with during the implementation of the information system. By answering this question, some difficulties will be listed and analyzed. This research question is fundamentally important because it can help tremendously with how to implement an information system in this case.

1. *What makes the implementation of the information system difficult for third-party logistics providers?*

The purpose of research question 2 is to shed light on what helps the case company to carry out the implementation of the information system. The question will be answered based on two aspects: the case aspect and the theory aspect. More precisely, the authors will examine

research question 2 by gaining an understanding of the case company and reading the literature in related areas.

2. *What facilitates service transfer/implementation of the information system?*

Based on the answers from first two research questions , the author are able to shape the structure of the framework of the guidelines and answer question three correctly.

3. *What are the guidelines for a successful implementation of an information system for a third-party logistics provider?*

1.4 Delimitations

The study will be written around two research questions and a guideline will be given at the end. It's worth mentioning that there are some elements that are beyond the boundaries set by the author, and thus won't be explored in depth. The first limit is that the authors only use one Swedish company as an example, so the research will not focus on other countries. Second, the demarcation found by the authors is that the size of companies will be limited to small and medium-sized companies, which will not be considered in this paper due to structural differences caused by company size. Finally, the authors of this study, although working from both internal and external perspectives, will shift the focus to the interactions between firms, meaning that the external perspective will be emphasized, not internal perspective.

1.5 Outline

The paper will be structured as Figure 1.1 shows:

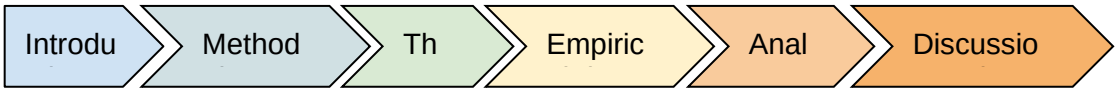


Figure 1.1 - Outline layout (Own creation)

Introduction: the chapter will introduce the research background, purpose and research questions, delimitation, and the paper outline.

Methodology: the design of the research, the process of the research, the reason for the choice of the case company, and two research methods will be presented in this section.

Theory: a section includes the results of the literature review.

Empirical data: the results of the interviews will be presented in this section.

Analyze: the authors will analyze the results of the literature review and the interview in the order of research questions.

Discussion and conclusion: further discussions and the summary of the paper will be put forward in this section.

2 Methodology

This chapter mainly describes the chosen methods and the process of data collection. Moreover, the research design, case company and data quality are also introduced.

2.1 Research Design

To fulfill the purpose and research questions of this paper, the authors decided to conduct a single case study. A case study is usually defined as an empirical study to perform a valuable and deep analysis regarding a contemporary phenomenon in a real-life case (Farquhar, 2012). Farquhar (2012) also stated that the case study is very suitable if the problem that the researchers want to solve is closely connected to the context. As the research questions were generated from a real business company in Sweden thus case study would be the first choice of methods for the authors. In research from Hammond and Wellington (2012) , a case study is usually can be divided into two branches, single case and multiple cases, which depends on the focus. Nevertheless, due to limited resources and time, the authors only have one case company to study.

2.2 Research process

In order to clearly present the research process of this study, Figure 2.1 has been made below where the goals for each step are shown and all steps that are included are laid out.

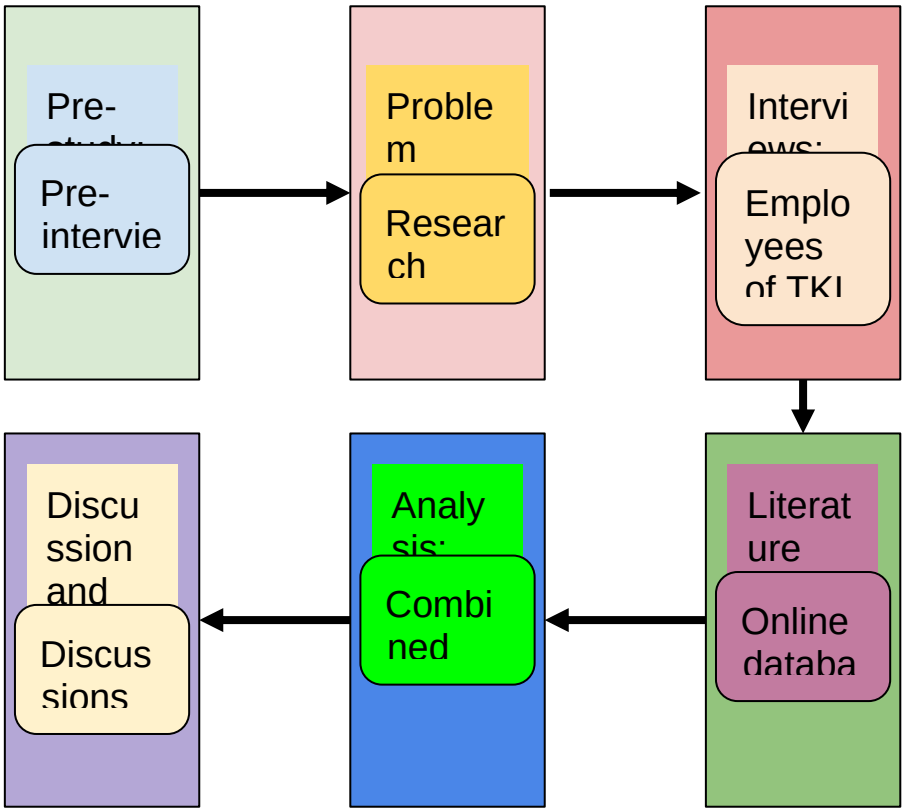


Figure 2.1 - research process

As it can be seen above, a simple research has been done after the interview so that the authors could have a basic idea and a holistic view of the research area. Research questions were also formulated at this step since the research questions would aid the authors in getting to the point in the following steps. Once sufficient information from the Client portal has been collected

through the interviews, the authors decided what the keywords are and search for the scientific materials based on the keywords. The authors applied two data collection methods, which are literature review and interview, to conduct a reliable and valuable study and answer research questions. Several interviews were conducted by having conversations with related employees within the case company, a customer at the case company, and two advisors in Sweden and China. They were asked to describe their understanding of the Client portal and express their views on the client portal, thus helping the authors gain a deep knowledge of this platform. The researchers also chose a literature review during the research process, in which Primo, ProQuest, and Springer, etc were well used to identify important articles and books.

When the interviews and theoretical background were set up, the authors began with the assessment of the chosen method and date quality. At this stage, the authors explained the reason why they used specific methods to obtain and analyze data and evaluate the trustworthiness of the data collected. Finally, a discussion of findings and methods will be given by the researchers in order to give a valid and valuable answer to the research questions.

2.3 Selection of Case Company

The study is carried out by conducting a case study at a third-party logistics provider. The case company is called TKL logistics that operates around the world in various countries with the aim of providing a cost-effective and reliable transport solution for iys customers (*Om oss*, 2021). It is mainly located in Europe and Asia with headquarters in Jönköping, Sweden. TKL Logistics was founded in 1994 in Anderstorp and the company expanded its operations with its new offices that were opened in other cities in Sweden, such as Jönköping, Gothenburg and Stockholm and more (*Om oss*, 2021). TKL logistics located its new office in Shenzhen, China, and thus the business is a big step forward since it was officially expanded in Asia in 2013 (*Om oss*, 2021). Moreover, this means that the TKL Logistics network is in every corner of the world and as a result, its partners can enjoy their efficient transport service. TKL Logistics currently collaborates with hundreds of companies and has 65 employees in 14 offices in 7 countries. The annual revenue of TKL logistics was 300 million SEK in 2021 (*TKL Logistics AB – Sweden – Global Forwarding Partners*, 2021).

The case company operates logistics solutions as a third party for its customers. It uses different transport channels such as road, rail, water and air freight, which makes them an ideal forwarding company for its customers (*Om oss*, 2021). Therefore, it would help customers calculate the transport costs with different channels and offer the best option to save customers' money and time also reduce the environmental impact (*Client Portal*, 2021).

Due to the authors' specific focus and other objective conditions such as limited time and few researchers, the selection of the case company was not difficult to formulate. The authors have at the beginning of the researchers decided that a small or medium-sized company would be better to conduct a complete study. Therefore, in research by Merritt (2019), a small-sized company is defined as one with 50 or lower than 50 employees and a medium-sized company has a total number of between 50 and 250 employees based on the Organization for Economic Cooperation and Development. Merritt (2019) also pointed out that a company whose number of employees is between 50 and 250 and an annual income of less than EUR 50 million in the European Union could be considered a medium-sized company. In this respect, TKL Logistics met the standards that the authors had set and a big reason is also that they now face a question about the information system which is the core problem that the authors want to investigate.

2.4 Data collection

2.4.1 Interview

Interviews are a research method that is defined as the researchers communicating with the person that they want to research, e.g. interviews, participants and topics. Interviews are first checked under ethical rules regarding consent to interviews, recordings, protection of subject anonymity and respect for confidentiality (Hammond & Wellington，2012).

According to Beck and Manuel (2008), when gathering data, an interview would be a good choice if the study tends to explore human issues and an experience of looking for themes. Therefore, conducting a semi-structured interview would be the most suitable method for this case study.

There are two phases of interviews in the research process mentioned above, one is in a pre-study and another is parallel to the literature review. The purpose of the interviews in this phase was to gain a holistic view of how the case company organized and basic knowledge of the Client Portal. Therefore, the first selection of interviewees was based on the job role, a person who has a clear idea of the structure of the case company and the process of launching this platform. Table 2.1 presents detailed information about the interviews in the study.

Number of interviews	Date (year-month-date)	Position in TKL logistics	Time duration	Form	If it is recorded?	If all present?	Type of interview
1	2021-02-26	manager	37min	Online meeting	Yes	Yes	Semi-structured interview
2	2021-05-03	manager	34min	Online Meeting	Yes	Yes	Semi-structured interview

Table 2.1 - summary of the interview with company manager for data collection

The next phase of the interview is in the main study, where the authors conducted four interviews with employees in TKL Logistics, TKL Logistics customers and advisors. The purpose of these interviews was to collect a broader spectrum of qualitative information about people who can provide suggestions in logistics as well as great experience within the area. More detailed information was given in Table 2.2:

Number of interviews	Date (year-month-date)	interviewee	Time duration	Form	If recorded	If all present	Type of interview
1	2021-05-15	customer	45mins	Online meeting	Yes	Yes	Semi-structured interview
2	2021-05-20	Employee	52mins	Online meeting	Yes	Yes	Semi-structured interview
3	2021-07-19	advisor 1	48 mins	Online meeting	Yes	Yes	Semi-structured interview

4	2021-07-20	advisor 2	45mins	Online meeting	Yes	Yes	Semi-structured interview

Table 2.2 - summary of interviews for more data collection

There are three types of interviews including structured, semi-structured and unstructured interviews and all six interviews in this research are semi-structured interviews. a semi-structured interview was used throughout the research process since the purpose of the interviews is to gain a deep understanding of the case company and the Client Portal. Hence, the researchers could improve or change their research questions in time if there are any interesting ideas coming up. Combining the above reasons, this kind of semi-structured interview is very suitable for this research compared to other types of interviews. Yet there are some disadvantages of interviews for the researcher, especially when it comes to unnecessarily complex answers to questions. The respondent might explain it repeatedly which will increase the difficulty in analyzing data (Williamson, 2002).

By using a semi-structured interview, some basic questions that cover the topic of the study must be predetermined and asked during the interview to ensure that the necessary data was collected. Whereas, the semi-structured is more likely to be a conversation with interviewees so in this respect the researchers can obtain some detailed information which allows the researchers to expand their topics of study (Harrell et al., 2009)

2.4.2 Observation

It is difficult to find the definition of what observation is, yet the latest definition stated by Bell and Weters (2014), the observation is a data collection technique that studies something or someone to collect specific data. The observation was based on TKL Logistics official website. There are basic information of TKL Logistics and key facts about the Client Portal that must be collected through the obeservation of the website.

2.5 Literature review

According to Williamson's research (2002), the literature review can lend itself to the development of a good theoretical framework in the paper. On the other hand, without preparing sufficient theoretical knowledge in the investigated area as a basis before the study, the authors could not get inspired and deepen their understanding of the topic. A literature review will reveal the gap in topics and boost the authors' interest in doing a case study. (Yin, 2003). In this way, the authors decided to use a literature review as the research method to collect theoretical data. With reference to Hammond, M., & Wellington, J (2012), A literature review would support the researchers with an overview of what has been written in the field that they want to study. Due to the nature of the study, the authors mainly review academic literature to build a theoretical framework. An academic study includes peer-reviewed journal literature and books written for the academic audience (Hammond, M., & Wellington, J, 2012).

Once the method is chosen, the author begins with a pre-study by searching for the keywords "Third-party logistics provider", and "information system" through different databases. The search engines utilized to find the theory were ProQuest Central, Primo (Jönköping University), Diva and Google Scholar. The key terms changed during the search process due to the advanced search engine. The articles that focus on the two keywords often include "IT service

management" and "Supply chain" which broadens the topic and leads the authors in interesting directions. Many articles were defined as relevant to the thesis at the same time as synonyms and several keywords were entered so that no valuable articles were omitted. Based on the first stage of the reference list, deeper and more narrow research was conducted. Search under keywords such as "information flow" "resistance" "information platform" and relevant articles and books within the research topic were found. It is worth mentioning that the authors were careful with the publication date of articles because the TPL service industry is innovative and relatively new nowadays. However, some dates may be old due to some concepts that had been explored in recent decades. Another point that the authors are careful about is how many times the articles or books have been cited. The more articles or books have been cited, the more reliable the authors evaluate.

2.6 Data quality

According to Leung (2015), there are three criteria to assess the quality of qualitative research which are validity, reliability and generalizability. In the following content, the authors will analyze the data quality through these three aspects.

2.6.1 Validity

Validity in qualitative research, described by Leung (2015), are the criteria for evaluating whether the functions, processes and data are "suitable" or not. If data are not collected under appropriate content regarding cultural and contextual variables, different methodological choices will alter the validity of the results. (Leung, 2015) To increase validity, the most appropriate method was chosen to collect the data, i.e. literature review and interview, which was explained in the previous section. Yin (2014) argues that the case study is able to use multiple sources that can be considered to its greatest strengths. Therefore, the authors use analytical triangulation method in the paper. Data collected from interviews and literature reviews were cross-analyzed to improve the data quality of the study.

2.6.2 Reliability

Reliability can be seen as the trustworthiness of the process and final findings (Stiles 1993). According to Silverman (2001), the higher the quality of recordings and transcripts, the more reliable the data quality. In order to be able to achieve a higher quality of recordings, all interviewees are anonymous throughout the conversation. So that the answers to the interview come closer to their true feelings and opinions. With the interviewees' approval, the authors recorded the interviews so no detailed information would be omitted. Therefore, the reliability will be significantly improved.

2.6.3 Generalization

The generalization, or in other words external validity, of the study can be assessed if the findings can be genalized to other cases (Bell *et al.,* 2019). This research only put attention on one single case in Sweden with small and medium-size and thus the generalization will be decreased to a certain extent.

2.7 Data Analysis

There are five analytical techniques described by Yin(2018), which are pattern matching, explanation building, time-series analysis, logic model and cross-case synthesis. To begin with, Yin stated that using pattern matching in the case study is the ideal analytic techniques. The logic of this technique is to compare the empirical pattern, which is studied from a specific case study, with the pattern predicted by the researchers before the research was conducted (Trochim, 1989). The second technique described by Yin (2018) is explanation building which

is special considering its difficult procedure. The goal of this technique is to build an explanation of the case in order to present data analysis. Additionally, time-series analysis is listed as the third analytic technique by Yin (2018) and it follows many intricate patterns in experiments. As the pattern becomes more complex and precise, the time series analysis can provide a solid basis for the case study's conclusions. Unlike the previous techniques, the fourth technique has been incredibly useful during the past few years according to Yin(2018), particularly in the case study evaluation stage. This analytical technique is the logic model which could stipulate a series of occurrences over an extended period of time (Yin, 2018). Lastly, the fifth technique presented by Yin (2018) only focuses on the analysis of multiple cases. Cross-case synthesis would be highly recommended, as mentioned if the research includes more than two cases.

After synthesizing each technique, explanation building is explanation building are utilized for the study. With reference to Yin(2018), explanation building is most relevant to exploratory case studies. If research questions begin with "*What*", such as *"What are the similarities between omnichannel retailers and offline retailer?"* Questions of this type are justifications for conducting exploratory research, to present relevant hypotheses and propositions for further investigation (Yin,2014). Therefore, this study is an exploratory study as all research questions are of the same type as above. Explaining the construction process is not operationally well documented. In the authors' opinion, the criteria to evaluate the data are the working experience of interviewees, the knowledge of the Client Portal and the scientifical quality of the literature.

3 Theory

In this section, the author will go through the literature that was examined. Key concepts and terminology will be presented, related to the study area. There will be three sections in this chapter which are IT service management, third party logistics (TPL) and information flow. The first section will introduce the concept of IT service management and introduce relevant knowledge to the study area. The second section will further explain the main content of third party logistics, which will be followed by a further explanation of information flow and information systems at the end.

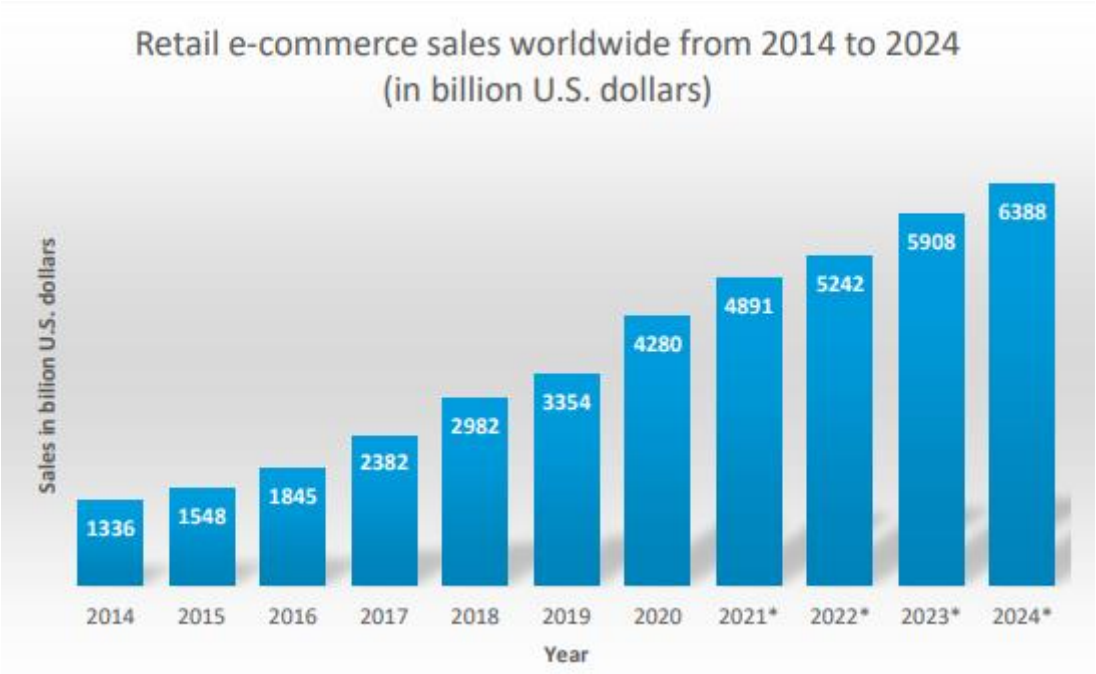
3.1 IT Service Management

With the rapid development of technology, information technology (IT) has become an essential part of everyone's life including the supply chain area. With the growing awareness of information flow as well as the growth of e-commerce business, IT service has started to take a big part as well. As Wheatcroft (2014) said, ITSM has mainly two focuses, which are to serve the customers with the agreed standard and corporate with other IT functions to expand their services.

IT service is a service that combines information technology, people and processes which is provided by the IT service provider (Agutter 2013). To be more specific it means that ITSM has a purpose that helps the company to manage the usage of information technology to improve the service quality for the customers. Additionally, ITSM also includes the function of the supplier, which in most cases is internal IT support, to help the company to achieve the goal (itSMF, 2019). IT service management usually includes an agreement on a service level towards what kind of services should be delivered, where the agreement is called SLA (service level agreement) (itSMF, 2019).

As mentioned before, the common roles in ITSM include service provider, service customers, user, sponsor and process manager, etc. Service providers are usually an organization who provides the IT service and can also be the consumer as well, which means that the service provider is a department within the company who usually defines the requirements of the service while receiving the service, which is called service customer. Users are the individuals or other organizations who use the services provided by the service customer. In most IT service management structures, stakeholders usually take the main role in making the decisions regarding the requirements of the services while providing resources such as financial support or equipment support.

It is said that with the help of some other strategies, the basic IT service management concepts are used within the e-commerce business (Pollard, 2010). The Growth of e-commerce since it started has been intense as figure 3.1 shows. With the rapid growth of e-commerce, the usage of IT service management is growing at the same time. According to Agutter (2013), due to the function of IT service management, an organization's effectiveness and efficiency can be improved with proper IT service management.



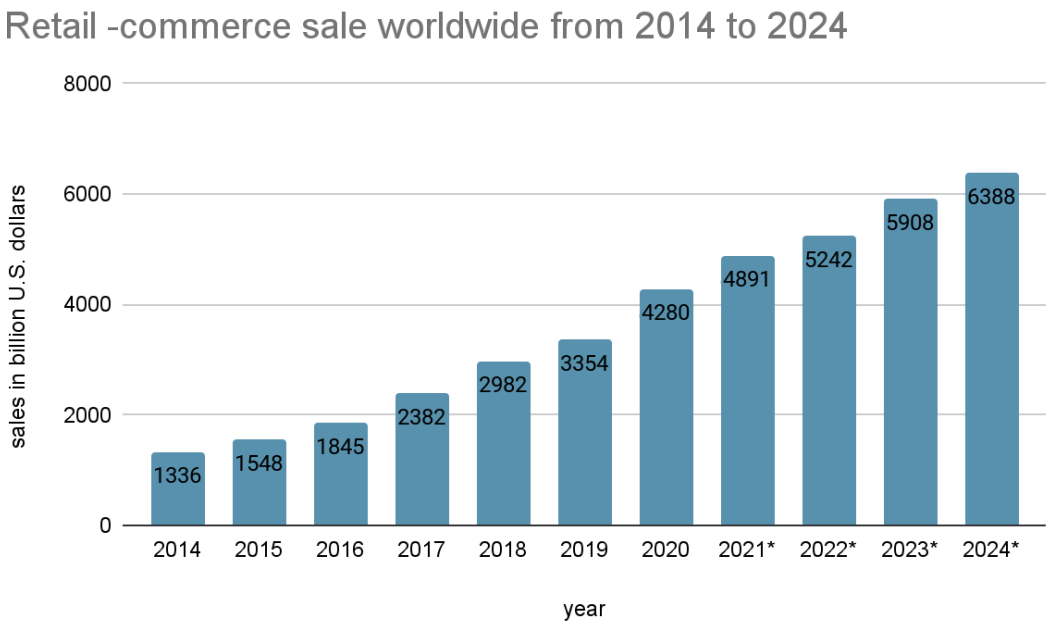


Figure 3.1 -Retail e-commerce sales worldwide from 2014 to 2024 (Statista, 2021)

3.1.1 Business Process Management

Bussiness Process Management (BPM) is described as an intensive system for organizations to manage and transform their first set of new ideas into operations (Brocke & Rosemann, 2014). As Pereira et al.(2021) described, BPM is also a tool for improving the ITSM processes. It is addressed that BPM has to follow the listed rules: the mapping and documentation of the activities, focus on the customers, activities to measure the performance of each step of the process, continuous optimization, inspiration from the best practices of the superior competition and culture change (Pyon et al., 2011). Zairi (1997) has also listed some rules for BPM to govern which also include the mapping documenting of major activities, creating a focus on the customers by linking key activities horizontally and procedures that secure discipline, consistency and repeatability of quality performance.

3.1.2 Service desk

As the face of the company in IT service management, the service desk serves the purpose of being the only way for the customers to communicate with the company (Göbel 2016). The service desk is one of the functions of the IT department of the company using processes, procedures and technology that is needed to finish jobs that normally are coming from the customers (Wheatcroft, 2014). In addition, Wheatcroft (2014) mentioned that as a service desk, twenty-five percent of the time and energy will be spent on developing the processes.

3.1.3 Service lifecycle

Information Technology Infrastructure Library (ITIL) can be considered the best practice for IT service management as Agutter (2013) said. As it has been named, it is a database that can provide the IT service user tools to use IT service management in practice that is developed by the British government (Agutter, 2013). According to The Official Introduction to the ITIL Service Lifecycle by OGC - Office of Government Commerce (2021), the service lifecycle is considered the core practice of ITIL. A service lifecycle contains five phases as figure 3.2 shows, which are Service Strategy, Service Design, Service Transition, Service Operation and Continuous Service Improvement (Agutter, 2013).

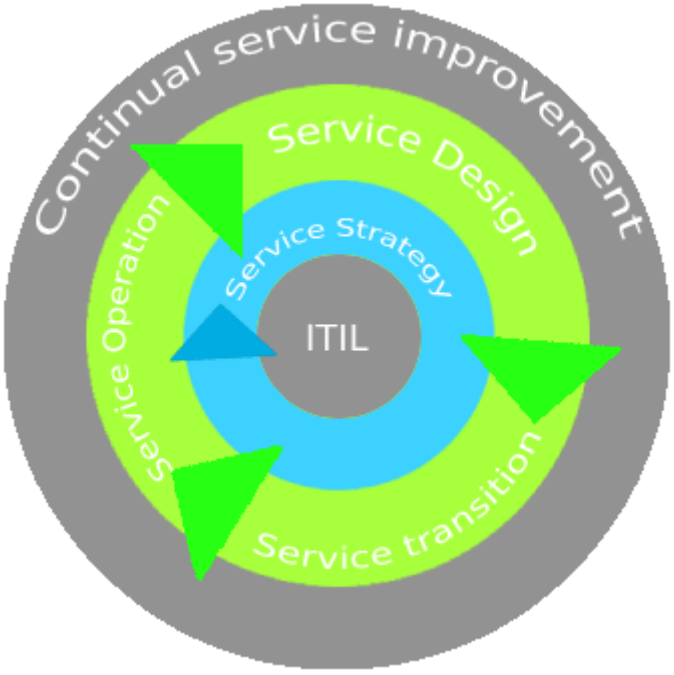


Figure 3.2 - Service lifecycle (Agutter, 2013)

Service Strategy as the hub of the service lifecycle, drives the lifecycle which means the service lifecycle can not be operable without a service strategy, while continuous service improvement enables the process to be sustainable as well as continuous (Agutter, 2013). Service strategy oversees the whole operation and defines the processes and roles of service providers (Agutter, 2013). After making a service strategy, the service provider needs to design the services to fulfill the objectives which are made during the process of defining the service strategy (Agutter, 2013). Service transition is defined as placing the service in a living environment that includes field tests and adjustments to ensure that the services are operational (Agutter, 2013). Different from service transition, service operation aims at monitoring the service activities in the live environment and fixing the problems when they occur.

3.1.4 Service transition

At the stage of designing service strategy and service design, a service level will be decided according to the agreement with the customer while the capacity of the service provider will be taken into consideration as well. Based on the service level agreement (SLA), processes and the service standard will be designed in the service design part. Therefore, before the company enters the service transition stage the service will be designed and planned out.

Before the services are put up online and operated to the customers, tests should be run to ensure the service provider has the capacity to execute the service strategy efficiently and the services are indeed executing the purpose of the service strategy, which is the purpose of service transition. (Gallacher,2012) There are some objectives for the transition phase, which include the change of the service, managing the risk, deploying the service into the live environment and developing certain assessments on the services. (Gallacher,2012) Figure 3.3 shows the overview diagram of the process for service transition which involves some specific processes to support the transition of the services (Long, 2012). In addition, since service transition serves the purpose of transferring the service to a living environment, the processes will involve all the resources as well as personnel that are involved in the services.

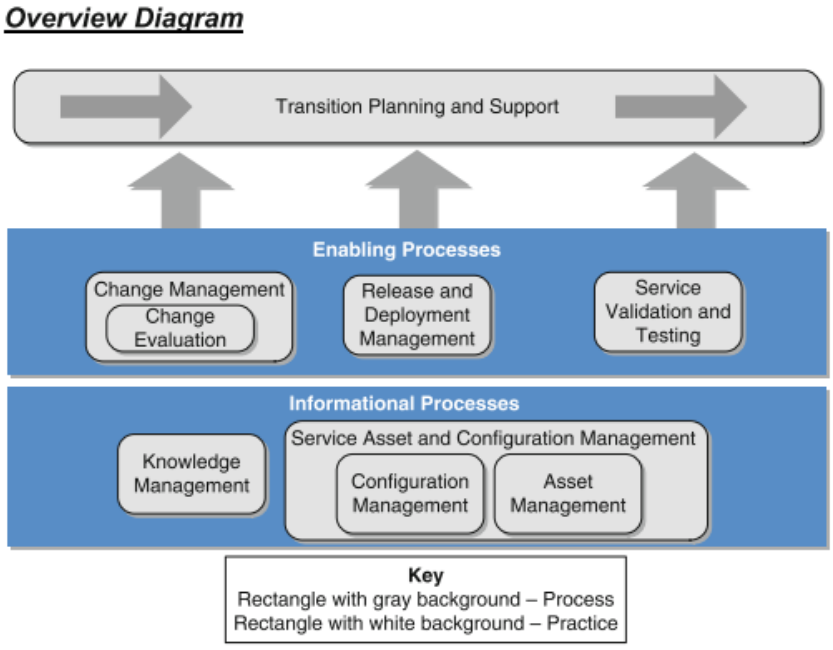


Figure 3.3 - Overview Diagram (Long, 2012)

As mentioned before, service transition includes a number of processes that serve different purposes that help the transition of the service from plans to live environment. The main process for service transition is transition planning and support while change management, release and deployment management and service validation and testing as more detailed processes are focused on (Long,2012).

3.1.4.1 Change management

Change management has the purpose of managing changes to the IT infrastructure within IT service in a controlled manner which in other words means that with good management of the

changes, the company can have a successful transition and changes in their services to a new environment (Agutter, 2003; Long, 2012). Figure 3.4 shows a BPMN workflow on a standard process of change management showing important steps in the process.

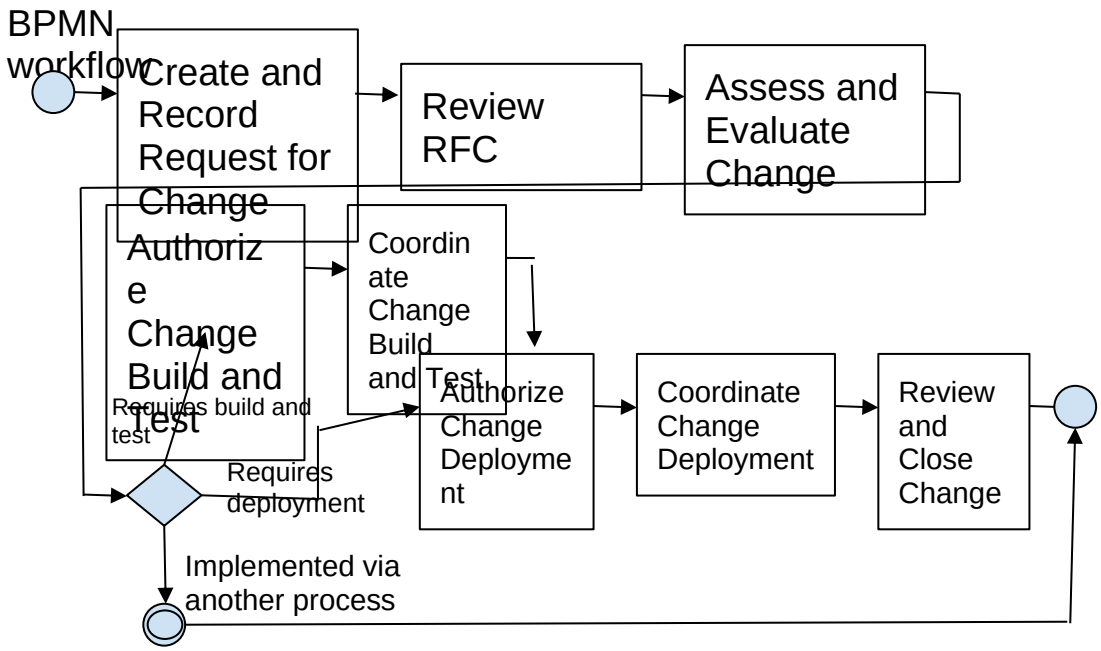


Figure 3.4 - BPMN Workflow for change management (Long, 2012)

According to Agutter (2003), there are three types of changes which are standard changes, normal changes and emergency changes. Standard changes are the changes that were approved in advance which are low-risk and low-impact. Normal changes are the changes that were initiated by the manager which contain higher risks but were assessed by the stakeholders. When critical business services are experiencing major incidents and failures, emergency changes are requested which will still be designed, managed and tested as soon as possible to make the business services back into function. (Agutter, 2003)

At the beginning of initiating a change, a thorough analysis should be done to assess the benefits after the change, the reason for the change, the risk of making the change and the resources that are required for the change (Office of Government Commerce, 2007). Tools like SWOT and PESTLE can be used. SWOT is to analyze the strength and weaknesses of the company, opportunities and threats in the business environment. PESTLE can analyze five external factors including political, economic, social, technology, legal and environmental factors (Ellis, 2011). External and internal factors can be the trigger for the changes to happen. External factors are mostly coming from the business environment as well as the competitors (Office of Government Commerce, 2007).

In summary, change management is a process in service transition that enables companies to authorize changes in their IT services. Organizations need to make proper internal and external analyzes before making changes to ensure that the process can be processed successfully. Different types of changes will require different process orders. However, the basic elements are the same.

3.1.4.2 Service asset and configuration management

Knowledge management and service asset and configuration management (SACM) are considered informational processes which means these are the processes that the companies

use to help them get the information they need to enable the transition of the processes (Agutter, 2003; Long, 2012). A servicing asset includes everything that can be used to help deliver the service while configuration management is used to take responsibility for the configuration items that serve the same purpose as a service asset. (BS, 2014) SACM can but is not limited to, providing and managing the information about service assets, configuration items (CIs), also the relationships between them. (Augtter, 2003; BS, 2014)

3.1.4.3 Release and Deployment management

Release and Deployment management is a process that manages the physical building, testing and deploying of the assets that are used to deliver services, which are managed through SACM, to compose authorized changes (Agutter, 2003; Long, 2012). After the information about service assets and CIs has been delivered to the release and deployment team, they will use the information to proceed to make the changes, which can be also called releases, that were authorized in change management. According to BS (2014), there are four different types of releases which are differed mainly by the amount of the components in the release as Table 3.1 shows. In Table 3.1, the differences between the releases, that are under an example for a software release, will be listed.

Full release	• All of the components • New versions will be fully installed
Delta release	• Changed components that have been changed since the last release • Only install the updates
Package release	• A combination of full and delta release
Emergency release	• An urgent need has occurred for a release

Table 3.1 - Types of releases (BS, 2014)

Agutter (2003) has summarized the release and deployment management into four phases which are planning, build and test, deployment and review and close. It is important for the company to keep a record of the release and deployment operations for the further development of the services.

3.1.4.4 Service Validation and Testing

As the last step in the enabling processes of service transition, service validation and testing can be understood as a further elaboration of the last phase for release and development management and serves the purpose of validating and reassuring the new changes have the utility and warranty can meet the service level that the customers and the service provider have agreed upon (Agutter, 2003; BS, 2014). The new releases will be put into a test that is designed to be close to the live environment, so the service provider can decide if they will make more changes or withdraw the releases or be satisfied with them (Agutter, 2003). A great boost of confidence can be provided to the service provider with this process but can be ignored by the company due to the favor of meeting a deadline (Agutter, 2003).

3.2 TPL

As one of the logistics outsourcing solutions, third-party logistics providers, also known as 3PL or TPL, are service providers who mainly integrate with supply-chain-related and information-related activities, for example, logistics, warehousing, light manufacturing,

tracking and tracing, etc. (Bowersox *et al.*, 2012b; Marasco, 2008). Since companies like DHL, UPS have extended their services from previously only warehousing and transportation to nowadays including financial services, consulting and IT service management, the concept of TPL has been merged (Gadde & Hulthén, 2009).

Revenues, Historical and Projected

NAIC	**488500**
Title	**Third-Party Logistics (3PL), Supply Chain and Freight Forwarding Industry (U.S.)**

Revenues - Historical (Millions of $)

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Revenues	$94,789	$99,322	$107,945	$112,241	$118,975	$125,519	$132,384	$137,659	$132,979
Growth Rate, Revenues		4.78 %	8.68 %	3.98 %	6.00 %	5.50 %	5.47 %	3.98 %	-3.40 %

Revenues - Projected (Millions of $)

	2021	2022	2023	2024	2025	2026	2027
Revenues	$139,761	$145,771	$151,601	$157,514	$163,499	$169,876	$176,969
Growth Rate, Revenues	5.10 %	4.30 %	4.00 %	3.90 %	3.80 %	3.90 %	4.18 %

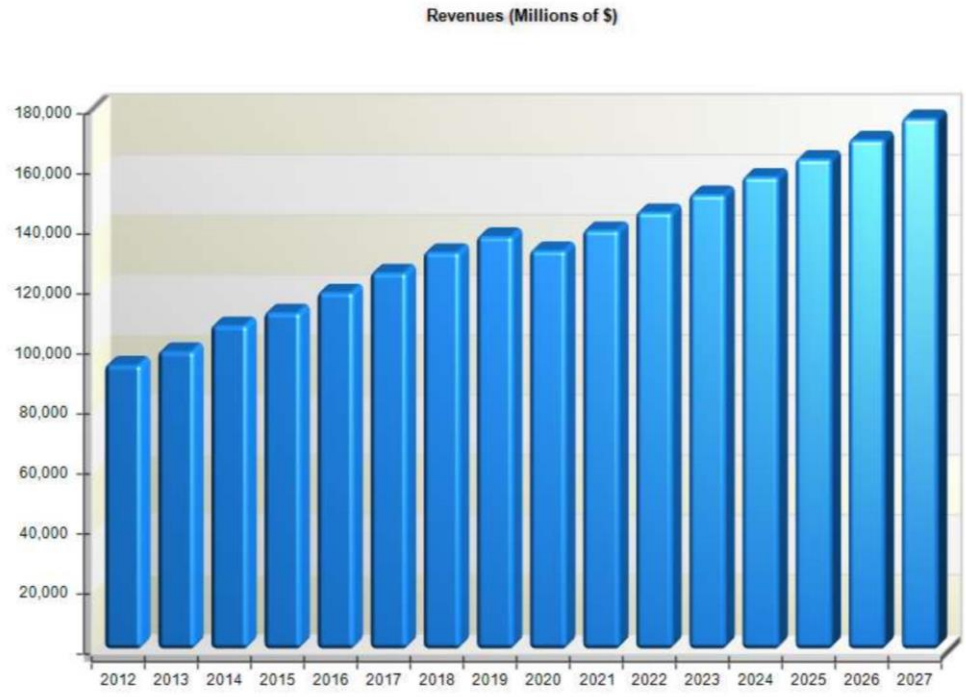


Figure 3.5 - Revenues, Historical and Projected (Anonymous, 2021)

In the past two decades, TPL has taken a more important role in the industry. As we can see in Figure 3.5, the revenues of third-party logistics in the U.S. has been steadily growing from 2012 to 2019, due to the COVID-19 pandemic happening in 2020 the industry has taken a major negative impact which leads to a decrease in the growth. However, according to the prediction, the third-party logistics will be steadily growing afterwards AZZAAZSXDCFas usual (Statista, 2022).

3.2.1 Drivers for and against

As a third-party logistics provider, a business-to-business model would be their main business model, in which customer relationship management takes a great role. As Ellis (2011)

described, understanding the customers' value can help the company to provide better service for them.

As Daim *et al.* (2011) mentioned, TPL can provide a lot of benefits for the customers while simultaneously having trade-offs for the improvements. Table 3.2 will show some of the drivers for and against outsourcing logistics to a third party that the paper will focus on further explaining which are considered to be related to the research questions.

For	**Against**
• Reduction in cost (Bowersox *et al.*, 2012b; Deepen, 2007; Grant, *et al.*, 2017; Mello *et al.,* 2008) • Service improvement expectations (Mello *et al.*, 2008) • Improve productivity (Deepen, 2007; Grant *et al.,* 2017; Leahy *et al.* 1995) • Environmental factors (Mello *et al.*, 2008) • Upgrade in IT capability (Deepen, 2007; Mello *et al.,* 2008) • Reduction on risk (Bowersox *et al.*, 2012b)	• Reduction in flexibility (Mello *et al.,* 2008) • Lack of IT service (Diabat *et al.,* 2013) • Uncertainty in service levels (Mello *et al.,* 2008; Ackerman, 1996) • Uncertainty in risk management (Bowersox *et al.*, 2012b)

Table 3.2 - Drivers for and against outsourcing logistics

According to Mello *et al.* (2008), cost reduction and service improvement expectations are the two most frequently cited reasons for the activities of the company to outsource logistics activities. Companies can release a lot of manpower and other resources by outsourcing the logistics to improve their productivity according to multiple studies, while in the condition of having a good logistics service can help the company to shorten the performance cycle which will lead to improvements in their productivity as well. (Deepen, 2007; Grant *et al.,* 2017; Leahy *et al.* 1995). For example, a manufacturing company decided to outsource their logistics to a company that provides better logistics solutions, in terms of quality and efficiency, there can be a reduction in delivery time, risk of broken inventory or operation cost. Furthermore, Mellon *et al.* (2008) also listed some other reasons for the companies to outsource logistics which can be summarized as environmental factors that include the influence of globalization, complexities of operating in a just-in-time (JIT) environment and regulations changes, etc. Another driver is that by outsourcing logistics companies can upgrade their IT capability (Deepen, 2007; Mello *et al.,* 2008). IT expenditures can be costly within the supply chain with the costly equipment and service, but companies can save that great cost by simply outsourcing the logistics which need IT systems' coordination to a third party.

Flexibility can be brought to a company when the company has its hands on all the operations. Therefore, when the company outsourced its logistics operation to another company, they have lost its flexibility, for example, the ability to make special requirements towards the transport of the inventory (Mello *et al.,* 2008). According to Diabat *et al.* (2013), companies tend not to choose the TPL providers because of the lack of application of IT which has taken an improving role in the efficiency of the logistics value chain which again shows the importance of the existence of IT application. Moreover, it is important for the customers and TPL providers to have clear agreements on the service level which can be caused by a lack of communication and understanding (Ackerman, 1996). In addition, some factors like reduction of job opportunities,

reduction of advertising opportunities and chances of higher operating costs can be the hidden costs for outsourcing logistics which also makes the companies think twice before making the decision (Mello *et al.,* 2008). These factors can drive the companies away from outsourcing their logistics operations to a TPL provider.

As a logistics manager, reducing the uncertainty in the performance cycle and demand cycle is their main focus (Bowersox *et al.* 2012b) which can be reduced by outsourcing the logistics to a third-party logistics company. In this case, the risk of the uncertainty in the performance cycle, particularly the logistics part, will fall onto TPL providers. On the other hand, the company needs to take the risk that the TPL providers fail to provide the service to reach the agreed service level due to the lack of qualification of the employee (Diabat *et al.*,2013).

3.3 Supply Chain

Supply chain consists of multiple firms and with the collaboration between which to hold strategic positions and improve operational efficiency (Bowersox, 2012b). A typical network of supply chains was illustrated by Ravindran (2012) as Figure 3.6 shows.

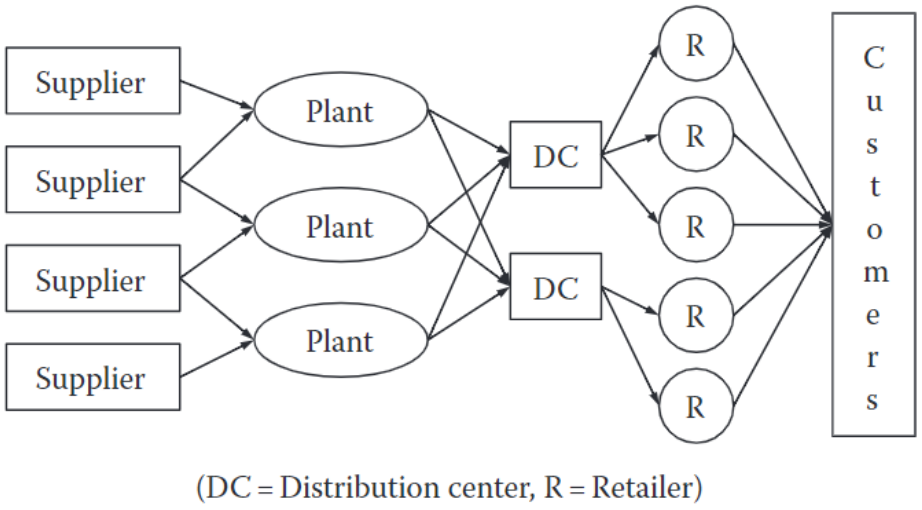


Figure 3.6 - Typical supply chain network. (Ravindran, 2012)

Chopra and Meindl (2016) have recognized that there are three flows within the supply chain which are product, money and information where products will start with suppliers and end with customers while money flows in the opposite direction and information flow is more complicated. However, Bowersox (2012b) has recognized the flows are under logistics operation instead and has not listed money as the most important flow to be focused on.

3.3.1 Information flow

Bowersox (2012b) has described that integrated logistics operation can be illustrated as Figure 3.7 shows, in which information flow can be understood as a flow of information from and about the customers through enterprises within the supply chain and leads to supply chain operations. As a collection of lifecycle phases, tools, management processes, etc., information systems are a practical extension for IT service management which mainly are used in information flow (Pollard, 2010).

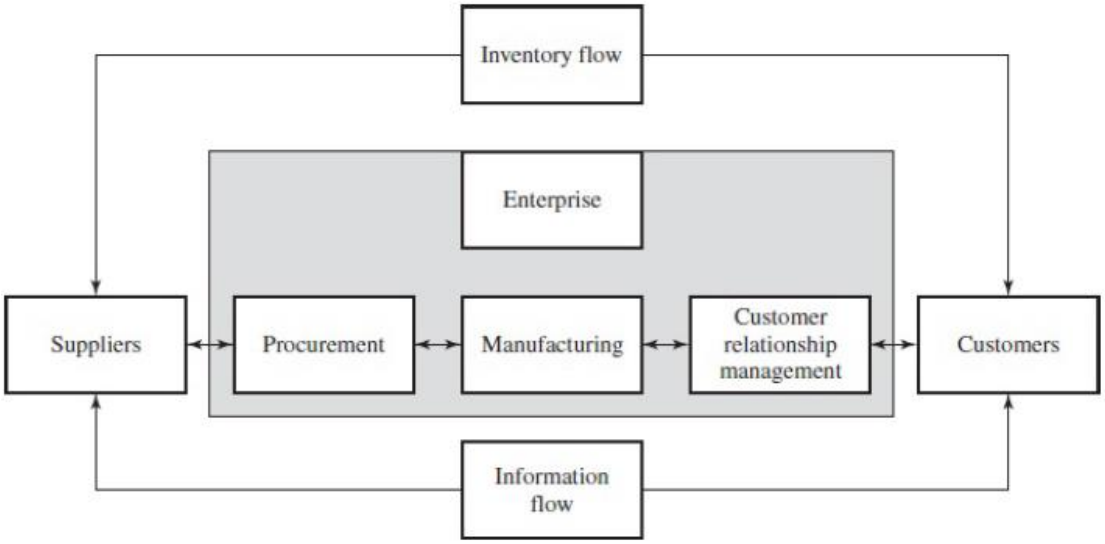


Figure 3.7 - Logistics Integration (Pollard, 2010)

As the driver for material flow, information flow consists of a diverse range of information systems and communication technologies to deliver information along the chain which is made of a variety of enterprises (Sadler, 2007). Within the supply chain, a mismanagement of the information, inaccurate or not synchronized with the inventory flow, can lead to the dissatisfaction of the customers (Singh, 1996). Three levels of information have been listed by Sadler (2007), first is data followed by information then knowledge, which are divided by the understanding of the information and the usage of the information by the company. Logistics information normally is arranged into a system called a logistics information system which consists of multiple functions that benefit different roles in the integrational logistics, for example, forecasting (Sandler, 2007; Singh, 1996). As an example, good usage of the information can help the company to make a better forecast of the demand of the product which leads to reductions on bullwhip effects (Jeong, 2019). This reduction can influence greatly, not limited to, the performance cycle consisting of logistics operations.

According to Harris (2008), one of the ways to develop an information flow is implementation of lean concepts which can help the company to shave off the unnecessary processes or operations to make the main process more efficient. Based on the Toyota Production System (TPS), automation can greatly help the process to be more effective by saving more resources (Liker, 2004). Implementation of automation in the information flow can improve the efficiency of the delivery of the information and accuracy of the information which should not be ignored due to the investments that are required or be developed for the reason that the competitors have equipped the automation (Sadler, 2007; Harris, 2008).

As it was mentioned, implementation of lean concepts to the information flow processes is one of the ways for developing (Harris, 2008), in which, visualization is considered to be a tool to increase the efficiency within supply chain operations (Liker, 2004). In Hofstedel (2005) and Deimel *et al.* (2008) option, transparency of a supply chain can be understood as the ability for all the stakeholders within the supply chain to gain understanding of the product related information. Therefore, in the content of informational flow, can be understood as all the stakeholders can have the access to which. Meanwhile, traceability is an ability for the stakeholders to follow the path of the product as well as have access to the records of the products (Dabbene *et al.*, 2014; Bechini *et al.*,2008). These abilities can provide more visualization to the stakeholders within the supply chain processes. It was mentioned by

Trienekens *et al.*(2012) that the increase of traceability and transparency not only can improve market efficiency but also can enhance the information exchange throughout the supply chain.

3.4 Resistance in change

As Waddell (1998) mentioned, changes in activities will be resisted by four factors, which are rational factors, non-rational factors, political factors and management factors. Rational and non-rational factors can be understood as individuals having their own rational or non-rational reasons against the change. Political factors are caused by political reasons which can be both individual or organizational. Management factors consist of poor management of the processes (Waddell, 1998).

4 Empirical data

In this section, empirical data collected from the interviews will be presented. Firstly, the organization of the study will be more detaily introduced relating to the study. Then the data about the company's customer interview will be collected. Lastly, some third party options will be presented.

4.1 Interview

4.1.1 Introduction

Interviewee 1 decided to design an innovative platform that is more transparent and convenient for customers to get information.

"*I hope the customer could easily understand the difference between TKL logistics and other third-party logistics companies and this new platform can be seen as a competitive advantage of TKL logistics*." said the interviewee 1 when the authors questioned about the initiative of creating this platform. "*We hope we can get more customers by promoting this platform, and this is the most important thing.*" Additionally, the efficiency was improved due to the Client portal because the employees can quit using emails to contact customers. Moreover, interviewee 1 pointed out a stronger relationship would be built by using the Client portal. *"We seek to keep our regular customer in a long run."* said interviewee 1.

In the following interview, the interviewee gave a thorough introduction to the platform. The platform is called Client Client and Figure 4.1 is the front page of the Client Portal. Customers can first calculate the transport cost for different channels and order the best optimal solution. Once the order was sent, a real-time delivery route would be shown on the map until the order is finished and customers could see where the cargo was 24 hours a day together with customer's supplier. In addition, relative documents e.g. invoices and packing lists are automatically saved on the Client Portal. This function combines both the customer and the customer's supplier to keep them on the same page. Now there are about 100 customers who use the client portal and 50 of the customers work with TKL logistics because of this platform.

"*There is a lot of potential on this platform. With those functions, I believe the Client Portal can bring logistics transportation to another level.*" said interviewee 4.

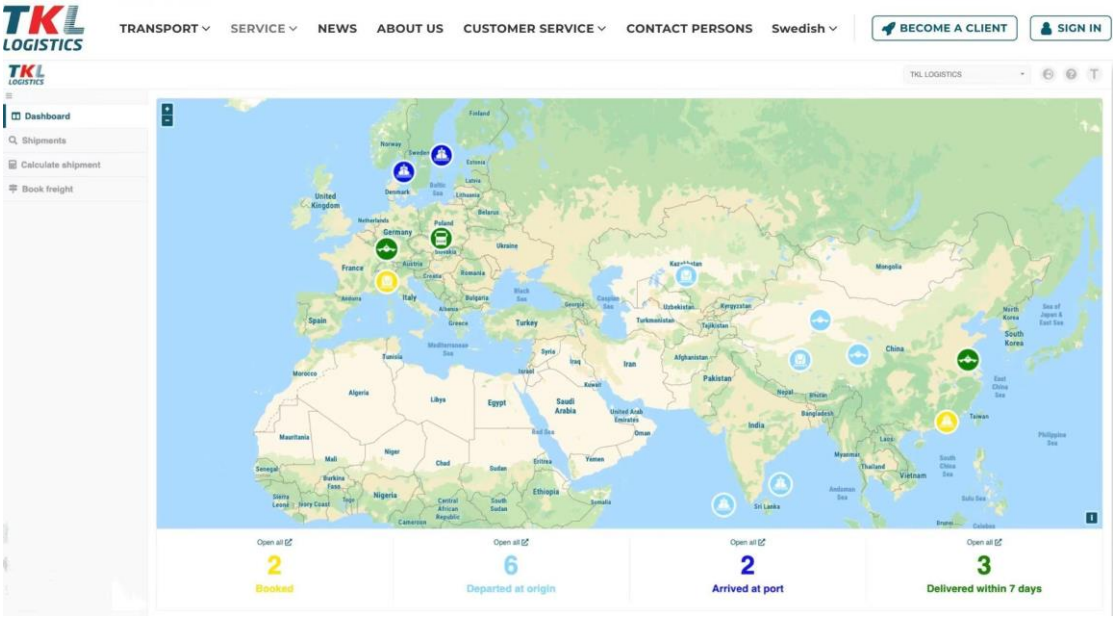


Figure 4.1 - front page of TKL Logistics (Freight Forwarding with Personal Service, 2020)

4.1.2 Occurred problem

Although TKL Logistics is keen to make the Client Portal easy to use, some problems still arise when people do not want to jump out of their own box. For example, customers will sometimes forget passwords, and this problem would be easily solved with a simple click on *Forgot Password* option. Instead, customers will ask TKL Logistics through telephone for what they shoul do do. Another resistance emerges from the internal, some employees thought their work would be removed. With such an attitude, the employees intend to refuse to accept the changes as they do not want to lose their job. Last but not least, TKL logistics always encourages all levels within the customer company to participate in this project by using the Client Portal and providing valuable feedback. TKL Logistics is committed to inviting every customer along the supply chain to the Client Portal. Nevertheless, this ideal image is still difficult to reach, because, referring to interviewee 1, they do not have any theoretical knowledge that supports them to systematically market the Client Portal. All the above problems are mentioned during the interview with TKL logistics employees.

4.1.3 Project process

At the beginning of the project process, interviewee 1 spent a lot of time acquiring knowledge in the IT area and discussed with colleagues what they really want from the platform and its vision about it. Due to the lack of knowledge, they decided to outsource the coding to an IT company and the design of websites to a design company to make it user-friendly. There was a meeting every other week with three employees from TKL logistics, one from the IT company and one from the design company to share the status of the project and exchange ideas and opinions. It is very clear to the interviewee that the project process comprises a number of steps but they will not take another step until the first move was made. In total, the Client Portal TKL logistics finally launched the beta version with great effort.

4.1.4 transition progress

TKL logistics transfer the Client Portal to customers from face-to-face meetings to online meetings due to COVID-19. A tutorial about the platform would be given during the meeting

with the customer who is usually the manager or contact person. In addition, TKL Logistics will let its customers know in time when there is a function update. If a customer finds any problem in the Client Portal, a service personnel in TKL logistics will help the customer to address the problem.

4.2 Customer feedback

The customer company that the authors interviewed is a small-to-medium size enterprise. Its business can be considered as a part of reverse logistics which can be understood as the recycling of the materials. The company recycles the raw material, remanufactures and sells it back to the market with the quality that can be reused.

During the conversation, interviewee 3 emphasized how pleasant and convenient they felt as a customer when TKL logistics provided personalized services such as demonstration seminars and contact numbers for professional advisory. Such services can meet their own special needs to a great extent. He also stressed the importance that the material being transferred has some special requirements with the method of transportation. "*The problem for us right now is that all the batteries are unique and difficult to classify, … there is nothing standardized.*". At the moment, the unique requirements of the transportations are communicated through emails; it was not enabled on the platform for the customers to make the special requirements. However, it has not yet caused any problems for the company since personal communication is still the main communication method. In addition, *integrating with TKL with our packaging supplier would be ideal for us… it would be nice that TKL can help us manage our packaging solution partner"* said interviewee 3.

TKL Logistics plays the role of TPL provider for the company which includes the transportation of the material from A to B. Meanwhile, the company has not yet made a documented process regarding the ordering and tracking process and has not yet been introduced to the Client Portal platform as their main information system. Based on the interview, the customer company was shown about the system through a seminar with the representatives from each side of the company. During the seminar, the platform was demonstrated personally and interviewee 3 said "*I loved the demonstration, it is very personal and it has answered all my questions.*".

An important reason is mentioned for the company to choose TKL Logistics as their main partner. The company "*would be proud to introduce to our customers that we are partnering with a company that can provide us with a secure logistics operation.*". In view of the fact that the Client Portal has been introduced to the market, it could be considered a very important marketing tool for both TKL logistics and its customer company. In this way, the customer companies would attach great importance to this cooperation since it will build a stronger relationship with their customers in the long term. It is a win-win situation for TKL logistics and its customers. As the interviewee 3 said "*TKL has valued the development of technology in the right way. … They have been working with us to develop their platform in the function to integrate with our suppliers as well.*"

4.3 Third-party **opinion**

This section, empirical data from the interviews with some third party advisors are presented. The advisors are previously or currently involved within the supply chain where they have integrated or will integrate with the logistic operation.

4.3.1 First advisor

The first consultant has worked for a Swedish company called Kongsberg Automotive as their design manager and process development consultant afterwards for 29 years. A great deal of

experience has been gained from the work that enabled him to provide valid opinions to the case.

During the consultant's work experience, the “purchasing processes” were not required to be involved because it was believed that the Customer Portal was mainly integrative. However, the adviser has encountered several processes regarding internal communication as well as some experiences that consist of incidents with failure in the logistics operations. It was mentioned: “*The communication methods are different from project to project. We mainly used telephone calls, e-mails and faxes. Depending on the project, we have meetings either once a day or once a week, it depends on the project. ”* An example was taken that when a shipment of car parts was ordered but the ship that contained the order was accidentally sunk in the Pacific Ocean, which delayed the project. As the information was not shared as efficiently as now, more delays were made due to the inefficiency of the transmission of the information. After being introduced to the customer portal, advisor 1 has raised some options for the project. “*It is a big step for the company and this has great potential, but it seems to require a lot of investment from the company. This can make buyers' lives much easier!* "In addition, questions were asked about the changes that have taken place within Kongsberg Automotive, especially about how employees reacted to changes. It was mentioned that there are different reasons for resistance because different staff would have different impacts. Less than half of the employees, however, have some choices on the changes and most of them follow the orders and instructions given by the management.

4.3.2 Second advisor

The other adviser comes from China, who previously worked at Prysmian as logistics manager and is now employed as a consultant. This advisor has worked with foreign companies for many years and has experience of transportation abroad. Regardless of job position, the opinion of Asian companies should be highly valued as it can be enormously different from European companies due to cultural differences and raised importance of Asian countries.

From this advisor's perspective, the Client Portal is very practical due to its useful function. A great complement was given when it comes to comparing costs for different shipping options and booking shipping for uploading and handling the customer's shipping documents.

"A lot of paperwork can be saved and it's good for the environment too." said the other adviser. And because the consultant's company has used the SAP platform, an application software that helps companies of all sizes in all industries to become an intelligent company (*system | Vad betyder - info*, 2021), it was assumed that a fluid and fast adoption could take place in TKL Logistics. Another point was made that the use of the Client Portal can improve the cooperation and coordination between each company due to increased transparency and communication improvement. Despite these advantages, the adviser has some doubts about the ordering function with regard to dangerous goods and other special transport. Unlike e-mail ordering, the customization of portal ordering is questioned because each load has its own special notes for the transport. Customers may feel insecure about their shipments if the cargo specifications have not been confirmed by the responsible staff themselves.

5 Analysis

In this section, a thorough analysis will be carried out in the order of three research questions with the support of empirical data and literature review. The result of the analysis of the first and second question will be used to help analyze the third question. The main idea will be around the implementation processes (e.g. IT service management processes) and the content of supply chain management and third-party logistics.

5.1 Research question 1

RQ 1, as shown below, is aiming at analyzing the difficulties of the implementation which can be understood in different angles.

What makes the implementation of the information system difficult for third-party logistics providers?

First of all, the implementation processes are deeply related to the IT service management process which means that the difficulties can be analyzed from the angle of IT service management. On the other hand, the concept of resistance to changes can also be a part of the reasons that cause the difficulties. Mainly, as a TPL provider, TKL has the characteristics that prevent them from having the operation smoothly as well. In addition, in this section, the cause of the difficulties will be analyzed with theories and empirical data.

5.1.1 ITSM perspective

Firstly, in this case, partly IT service management processes was carried out without the knowledge of the subject and from IT service management perspective, there are some problems within the processes TKL Logistics has executed that leads to the difficulties. In this case, the authors have observed that TKL Logistics has taken a role as a service desk while being the service provider at the same time. In other words, TKL Logistics will both be the front end to communicate with the users and also need to make sure the IT service will provide the service according to the service level agreement. As it was described by the manager the users are TKL Logistics customers and their employees, meanwhile the company is looking forward to adding the customers' supplier in the future as well.

A new information system implementation will require multiple processes from the company, most importantly the company will enter the service lifecycle as Figure 3.2 illustrated. The company has finished the service design phase and they are in the service transition phase. The first step for the service transition will be service asset and configuration management where TKL Logistics can use this process to assess their resources for the up-coming processes. It was not mentioned that the company has made a systematic assessment but the company has roughly recognized that they are not equipped enough to proceed. Therefore, outsourcing became their solution as their short-term investment. Without a systematic assessment of the resources, TKL Logistics is forced to invest, mainly financially, a large amount into the processes. However, to improve their situation, the manager mentioned that they have outsourced an IT company to help them build up their platform who can represent the company and in the future take charge of the Client Portal.

Since the purpose for this information system (e.g. Client Portal) is to replace the original system (e.g. email, phone calls and meetings), change management becomes their priority process. The process of change management was clearly not executed by the company which leads to lack of systematic requests and detailed records. New ideas were brought up by the TKL representatives during the meetings with the project partners (e.g. IT company and designing company). No obvious difficulties have occurred without a systematic process but the possibility for the problems to occur still exists.

No obvious action regarding release and deployment management and service validation and testing has been described since most of these processes are executed by the IT company. As the service desk, TKL should be active in collecting the feedback of the customers' and deliver the information to the third-party companies or change their operation plan accordingly which is what has been emphasized by the manager about the current action of TKL Logistics.

Secondly, as a TPL service provider, TKL contains a lot of option for the customers to choose or not to choose as their outsourcing logistics. It was both introduced by the manager during the interview and also shown on the website that TKL offers LCL-solutions, personal service and great flexibility (*Freight Forwarding with Personal Service,* 2020). LCL-solutions stands for less than a container solution which means TKL Logistics will combine different orders into whole containers then make the shipment. In this way, less space waste will occur which can lead to higher efficiency in logistics operation and cheaper cost for the customers. With their personal service and great flexibility, they can give their customers a cost reduction, an improvement in productivity, a reduced risk and to achieve the customers' improvement expectations.

With the introduction of the Client Portal, the ordering processes for customers can be improved by reducing personal communication which leads to reduced flexibility and increased uncertainty in service levels. The Client Portal, according to the manager, can provide the customers a platform to place orders, calculate prices and trace the orders, etc. In this way, it will not be necessary for the customers to email or make phone calls with TKL Logitics to place an order which means information about special requirements of the orders will need to be additionally delivered to TKL Logistics. A great concern was raised regarding the reduction of personal communication and the flexibility of their service. It was emphasized by the customer in the interview that *"I loved the personal connection with TKL because whatever I do, I just need to call the contact person and all the details will be settled."* The reduction in flexibility is mainly caused by the standardized orders that the Client Portal can provide, which will lead to a mis-advertisement that TKL cannot provide tailor-made service. In addition, when the customers decide to change or cancel orders, the platform does not provide the option for the company which means it is less flexible for the customers to make changes in the orders. The reduction of personal communication has another effect which is related to the increase of uncertainty in risk management. These concerns have been addressed by the customer who has tested the Client portal but who has not yet implemented the system in their business. The advisors have also raised concerns that the loss of personal service, with the introduction of the Client Portal, could lead to the loss of customers.

In this case, the author realized that the case company has not met the requirements for ITSM processes that were extended with the concept of rules that BPM must follow. TKL logistics failed to document the activities as well as the mapping of such, the measurement of the performance for each step of the progress and seek inspiration from the best practices from the superior competition. Even for an informal, unstructured company, the BPM process structure can enable the company to manage activities in an organized manner (Zairi, 1997). The lack of complying has led the company to a certain level of difficulty as it was mentioned by Pyon et al.(2011).

5.1.2 Resistance of changes

It is mentioned by Waddell (1998), that there are four factors that will cause resistance to changes. Both advisors, without knowing the actual investments of the project, have noticed this change will require a large number of investments and one of them has raised the concern towards certain resistance towards the change due to the large investments required. However, TKL is committed to the change and internal resistance has not yet been discovered. Externally,

the concerns that were mentioned previously have become certain factors for the customers to resist the change of the information system between them and TKL.

As the data have shown, the company can experience a lack of expenses of the project which can be categorized as the failure of the management. Non-rational and rational factors can also act as a major part for the external customers to resist the change of the communication channel for which various customers have different concerns towards the impact of the change.

In conclusion, the difficulties are caused by the requirements from IT service management processes as well as the lack of execution of systematic processes partly while the resistance of the changes has played an external role in the cause of the difficulties. Both theoretical support and empirical data have presented the details as well as the reason behind the cause of the difficulties.

5.2 Research question 2

After analyzing the difficulty in implementation of the information sharing system, the next research question is converse as follows. The authors would like to explore:

What facilitate service transition/implementation of the information system?

In order to answer this question logically, a few key points will be first listed by the authors and a short conclusion will be given at the end to give the readers a full framework.. Collected empirical data and the theory will be combined together in this section to give a completed analysis.

5.2.1 Traceability and transparency

As mentioned in empirical data, the first advisor emphasized the importance of effective communication between companies, otherwise the end customer could not adjust the production or sales plans if something unexpected happened. One of the functions of the Client Portal is the map that represents shipping information in real-time. To be effective in communication, this map can help not only end customers but also end customers' suppliers and third-party logistics to be kept up to date at all times. In this respect, transparency between each company in the supply chain was improved because transparency in the supply chain means that all stakeholders have the same understanding of the current situation and can get the information they want without delay (Hofstede, 2005; Deimel et al.., 2008). During the interview with the customer, it was emphasized that they would enjoy the improvement of the transparency of the information regarding the service processes so that they can get in touch with their customers with the correct information while saving a certain amount of time. By meeting customers' needs, TKL Logistics could strengthen their customer relationships and achieve its goal with the information system.

Another factor was mentioned by the other advisor during the interview and is also found in the theory. The other advisor provided positive feedback on the Client portal for its various functions, especially the availability of real-time product information. A comment was made that the client portal makes it easier for customers to track chat history and related shipping documents when they need to. This is confirmed by the head of TKL Logistics that customers can upload and manage the document and history in the client form instead of looking for important information or paper in several emails that can cause waste of time and energy.

Thereafter, this function can speed up the process of implementing the information system, which is very important because the client portal can increase the traceability of logistics. With regard to the value that TKL Logistics wants from the client portal, the requirement for improved work efficiency can be met. It is a win-win solution for both TKL Logistics and its customers.

5.2.2 Forecast

With a view to improving transparency, a more accurate forecast will be generated from the customer's perspective. This idea was suggested by the first and second advisors that if real-time information can be seen on the map, the end customer can determine the plans in advance. As a result, the cost and risk of production would be reduced, which is also the driving force for outsourcing logistics to third-party logistics. (Bowersox et al., 2012b; Deepen, 2007; Grant, et al., 2017; Mello et al., 2008) This would help customers better adapt to the client portal as these drivers raise customer satisfaction to an additional stage. In addition, a bullwhip can to some extent be prevented when a better forecast for the product was made (Jeong, 2019).

5.2.3 TPL provider perspective

In order to better facilitate the implementation of information systems, it is impossible not to take into account the various benefits that information systems may offer TPL service providers. Because of this benefit, TPL service providers strive to maximize the benefits of the information system.

According to interviewee 1, the authors came to three major advantages of using the customer portal that TKL logistics had pre-written. The first advantage is that they want to attract new customers when the platform is officially launched. With this in mind, it can be seen as the most important advantage that TKL logistics expects from the Client portal since the customer. The first reason is that every company needs to grow. Without increasing the number of customers, the company can basically saturate your market (the existing customers) and have no place to go. Even though there would be some opinions that say it is also important to strive for stability, regarding the current reality of open innovation and with the incredible speed of change, companies that could not expand their scale of business tend to disappear.

The next advantage is to make TKL Logistics' own work more efficient. While using the previous system, many emails were sent back and forth, which entailed a large amount of processing time and eventually led to low efficiency in the work. Also, as mentioned at the beginning of the article, one of the biggest difficulties for a TKL arrangement is the lack of efficiency in the information system. On this point, having this advantage would hugely help TKL logistics to compete with other TPL services providers.

The last advantage is related to regular customers. TKL Logistics always aims at building a deep relationship with its customers. The interviewee said that with the launch of the new platform, TKL logistics can retain regular customers for a longer period. This means, in another word, to develop customer loyalty and build stronger customer relationships.

5.2.4 Customer perspective

Two important values are emphasized during the interview part. Personal service was the first value that interviewee 3 mentioned. The interviewee 3 love the one-on one meeting when TPL Logistics was given at a tutor. Another value was building a good brand image. Customers can publicize the company images by partnering with TKL logistics and using the Client Portal. This can help the customer company stand out from the crowd and thus attract new customers.

5.3 Research question 3

Research question 3 has the purpose of providing a guideline for the TPL organizations to implement an information-sharing system. In previous sections, the difficulties and the cause of the difficulties have been analyzed and there are a handful of methods that can be used to solve the problem. The main idea for organizations is to implement ITSM processes. Firstly, guidelines regarding IT service management processes will be presented. Secondly, the character of the TPL provider, as well as the facilitation of implementation of the information

system, will be used to help improve the functions of the Client Portal which can help reduce the resistance of changes.

5.3.1 ITSM

To begin with, the company needs to implement ITSM processes with proper mapping and documenting of the activities. In this case, the authors have suggested some processes for the case company to implement for this case.

First step for the organizations is to establish proper roles for the personnel involved in the activities such as service desks, service provider, consumer and sponsors. With a clear establishment of the role, duties can be assigned accordingly in a systematic way with a clear structure which can prevent chaos and save a lot of unnecessary waste.

Next step is to as it was mentioned, multiple IT service management processes are required to be executed in this while the company has not made a systematic process. A systematic process can help the company greatly in increasing the efficiency of the execution from the point of view of saving time and investments. To begin with, a proper service asset and configuration management can be applied to the company as well as their project partners (e.g. IT company and designing company) so that TKL Logiztics can have a better knowledge of what they can afford and can have a better forecast of the project development. Some change management processes can help the company by providing records of the changes as well as formal requests. With the recordings, the company as well as third parties can keep track of their actions and can be used to compare with the assessments before the project starts. Wastes (e.g. time, money) can be saved in terms of eliminating unnecessarily repeating the same actions. Release and deployment management and service validation and testing are the most executed processes by TKL as described. Little improvements can be found since most of the operations are third-party IT company's responsibility. Last but not least, measurements upon the performance for each step should be established with the consideration of the customers as well as best practices from competitions. In this case, due to lack of budget, the project manager is asked to oversee the whole operation which includes activities that require making a horizontal connection in between processes.

5.3.2 Manage the resistances of changes

Secondly, resistances of changes need to be dealt with and to do so, understanding the resistance will be critical as well as the reason for the resistance. TKL as a typical TPL provider while being a small-to-medium size enterprise has the characters from both identities. TKL holds the fame of great personal service and great flexibility while providing unique solutions to lower the cost for the customers. Customers hold the value of low cost but high-quality service which can be provided by the company at the moment. However, the introduction of the new information system raised worries from the existing customer and our advisors. They are worried that the platform can not replace the old system (e.g. emails, phone calls and meetings), in terms that the new platform will standardize the orders from customers. This will prevent customers from understanding that the company can provide customization since personal assistance can be greatly reduced due to the loss of the first personal contact. The factors were analyzed in the previous action. To deal with the potential resistance, the case company needs to withhold their service standard as well as their speciality within the business. A new solution should be made besides expansion in enabling the platform to reach customers' partners. A great emphasis should be made to make clear that the company will provide the same level of personal service as well as service quality. In addition, assessments of the customers' value within customer relationship management should be made and further market research to help the company understand the direction of development.

To sum up, as a trending solution in supply chain management, third-party logistics has been chosen by more and more companies. However, there will be certain trade-offs for a company to choose TPL as their logistics operation method. For this case, TKL Logistics can make a deeper assessment of their customers' characters which can help them to understand the needs of the customers leading to greater service.

6 Discussion

In this chapter, findings and analysis will be thoroughly discussed according to the research question. Then the method of the research will be discussed. Implication of the study will be summarized in theoretical and managerial point of view. Lasly, the conclusion of the study will be drawn in the end.

6.1 Discussion of findings

The result of each research question will be discussed in the following section.

6.1.1 Research question 1

In previous sections, the factors that led to the difficulties have been explored for the case company with the conclusion in ITSM perspective and the resistance of changes. Meanwhile, more perspectives can be used to discover the factors.

To begin with, in the perspective of the supply chain, a larger-scale operation analysis is needed. By categorizing the Client Portal as an information system, the system was concerned to be connected throughout the information flow in most of the literature review. However, in this case, the project has not yet achieved that goal. The platform can be only used by internal users (e.g. employees and managers) and external users (e.g. the customers). The literature data have a bigger scope than the actual situation which includes the whole supply chain while the case company only have included the logistic part of the whole supply chain operation. The methodologies were implied in this study to answer the question, nevertheless, there is no doubt that the question can also be analyzed in a larger scale. A personal meeting can help the customers to understand the service better and can help TKL to understand the reasons for the special requirements of the service. Without the meetings, the information will be hard to deliver to the company and can lead to problems for both sides to manage the risk.With or without the platform, personal meetings can be held no matter what, but the purpose of improving productivity is lost.

Since TKL Logistics is a small-to-medium size enterprise, an investment like this project can be costly for them which can be another factor for them to have difficulties in the implementation. Low cost IT service can sometimes lead to low productivity and can be another cause of the difficulty as well (Agutter, 2003).

6.1.2 Research question 2

After the analysis of research question 2, there are several reasons for the facilitated implementation of the information system at this time. However, the authors believe that TKL logistics needs more theoretical background if the case company intends to take any steps forward or make changes within the company. Otherwise there will be many potential risks awaiting the company if they only focus on the current trends.

In addition, the reason that facilitators who have been listed are external that mean both the industry's development and customers' needs have facilitated the change. Internal factors can also be another factor because the new information system can also benefit the internal users in terms of increasing communication efficiency and removing unnecessary workload, etc. Moreover, the Client portal could be seen as a decision support tool for customers.

After analyzing the research question 1, the findings have shown that the external resistance would be an important reason that makes the implementation difficult since customers would hesitate to use the Client portal. In contrast, there is not enough empirical evidence during the

research question 2 that the internal reason could facilitate the implementation of the Client Portal, since the same time as the previous platform has implemented the purpose of also improving internal communication.

With the help of this platform, the customer can easily access information and keep them updated all the time. This would shorten the reaction time of customers and customers can quickly respond to any occasions, in other words, make better decisions. Not only for the logisticstical process, customers would also benefit in the production eventually as the decision would be more precise. Since customer's customers would be involved into the platform, the whole supply chain could be optimized to a great extent. In the author's opinion, this is a major improvement that could be made for the whole supply chain and the individual company.

The author states that expansion and increase of the customer base is in focus from both the customer's and the TPL service providers' perspective. As a result, TPL service providers can drive sales and help the company achieve its goals. This is also proven by interviewee 1 as he said among three mentioned values, the most important thing is to get more customers. For a TPL provider, it is really important to involve the customer's customer in using the customer portal because it not only improves the platform to become more efficient but also to some extent expands the customer base. In the same way, customers can improve the company's image to collaborate with other companies by using the customer portal as it can keep customers updated in real time and optimize the product arrangement along the supply chain. In the end, more customers would be involved, TPL could appeal to new customers and the existing customers could build a long-term relationship with their customers. In this way, having similarities in benefits from both sides means creating a win-win situation for TPL suppliers and customers. A win-win situation would help improve the client portal as each party can benefit from this platform.

6.1.3 Research question 3

The guidelines for the company to improve are based on the fact that TKL has enough resources to make the improvements. An estimation of the cost of the processes can not be calculated for multiple reasons such as the COVID world pandemic can make a great impact on the industry or the uncertainty of the success rate of the test version of the system. With limited capability of investment, a limited action can be made.

On the other hand, it is important whether the company needs systematic processes or not. A structured process can help the executioner to have a better understanding and can trace back the progress to make improvements for the next operation. TKL Logistics have used unstructured processes which gives them great flexibility in the development processes. An unstructured process can provide a great flexibility while increasing certain efficiency at the same time but certain transparency among the project partners can be lost while more complexity can be caused as well due to unorganized character.

In addition, it was mentioned that the platform will decrease the ability for the company to provide more personal service and a certain decrease in customization in their service as well. However, the company is aiming to use the platform to move from quality service to mass-production without realizing the character change for their service. Moreover, personal services are also able to be provided since the old communication channel between customers and TKL (e.g. emails, phone calls and meetings) will not be stopped. For the new customers, it is just an extra step in the ordering process and for regular customers, as long as they are familiar with the platform, this process will be more efficient. A certain trade-off should also be considered by the company depending on their value.

Lasly, this study has been focused on the single case more than general knowledge. However, it can be suggested that with a certain historical knowledge as well as cooperation with customer alignment management, the guidelines can be widely used within the subject and can adapt to other organizations.

6.2 Discussion of method

Throughout the process, the author has struggled with the validity of the interview and the number of interviewees. One hypothesis may be that if the selected method is changed from interviews to mail surveys, more answers might be obtained because the survey can be sent to as many customers as possible at a time. However, the response rate for an e-mail survey is about 3 to 15% (*Mail Surveys | Applicability & Advantages Of Mail Surveys*, 2017), and thereby the authors could not control how many answers they will receive within the time range. Concerning the disadvantages mentioned above, there is not enough time for the authors to wait for the answers and TKL Logistics would prefer to protect their customers' privacy. Therefore, the authors chose to use interviews to collect the data.

In order to better discuss how much was achieved in terms of purpose and research questions, there are eight key criteria of quality in qualitative research can be used to evaluated including worthy topic, rich rigor, sincerity, credibility, resonance, significant contribution, ethics, and meaningful coherence (Tracy, 2020). In the following content, a full analysis will be presented based on the eight criteria.

First criteria is a worthy topic. According to Tracy (2020), good qualitative research should be relevant, timely and interesting. As mentioned in the previous chapter , nowadays outsourcing is trendy and most compnies chose to cooperate with TPL providers so this topic is very timely. Rich rigor is the second criteria, as all the empirical data are all first hand and cover a wide range and different types of intervieweees and thus the opinion is from a different perspective and could be seen very valuable. The next criteria is sincerity refers to transparency and self-reflexivity throughout the study (Tracy, 2020). All interviews were recorded, but self-reflexivity is not mentioned much during the study. The fourth credibility is whether the author describes the results and analysis in detail (Tracy, 2020). A complete description of empirical data was presented in the previous section, while data were collected with an appropriate amount of reliable and valid resources. The research has managed to be conducted with appropriate data and was analyzed reasonably. However, the findings can be more reliable with more types of data.

7 Conclusion

In conclusion, the paper has found out that several characteristics of the implementation can cause difficulties for TPL organizations to introduce new information systems. It involves the requirement as well as the proper usage of IT service management processes and content of supply chain management. Certain characters of service providers will be lost once the information system is introduced to the organization which can match the value the customers withhold, which in this case means that the case company will risk reducing the service quality when the information system is introduced. Combined with the inability to meet the requirement and executing proper IT service management processes, the difficulties of implementing the information system are made.
A smooth implementation of information systems is also described in the paper. The implementation is facilitated by various factors in the characteristics of the information sharing system itself. Most of these factors match the development of the current supply chain and the TPL industry. Transparency and traceability as well as the ability to enable the company to make better forecasts have been highlighted as the factors that facilitate the organization of the implementation activities.

After all, a guideline framework was presented with the knowledge from the previous findings. First, assessments of the company's capabilities should be made before implementation begins. Second, customer value assessment should be evaluated frequently throughout the process to ensure that the information system will not incur disadvantages. Last but not least, proper IT service management processes should be performed accordingly to prevent operational waste.

Finally, as mentioned, the thesis can be used to assist supply chain organizations in similar scenarios with regard to historical data as well as customization management.

7.1 Theoretical and Managerial Implication

This article has certainly contributed to the academic field in the Third Party Logistics industry. The authors provided basic guidance for implementing an information sharing system should be seen as a contribution. Several articles in the field have developed a framework, but in order to serve a company better, it is necessary to go into detail about how an information sharing system is actually implemented by TPL service providers and used by their customers. In this issue, the contribution will help companies effectively cover the gap caused by insufficient information. The results of the thesis can also be used to help TPL organizations reduce the difficulties of implementing a new system for their information-related activities. Moreover, the authors interviewed different people who are experienced in the industry and those opions are valuable to the development in the future. The interview transcript is thereby a contribution to help future research to more clearly study the informationn-sharing system in TPL industry. Additionally, with some regard to historical data as well as customer adaptation management, the results can be applied to various organizations within the supply chain that will implement the information system.

Regarding managerial implication, this paper confirms the theories behind customer relationship management was supported by empirical data. To be more specific, the interview with the company's customer has approved that it will have a negative impact on the customer relationship without fulfilling the values that customers withhold. On the other hand, the paper has extended as well as combined the studies regarding multiple areas, IT service management, information flow and TPL into practical scenarios.

7.1.1 Further research

The purpose of the paper is to study how a inforamtion sysytem can be implemented in a specific TPL service provider. A potential future research is to explore more TPL service

providers that have implemented information systems and to examine typical and differences in implementation. As the authors decribed in the previous section, the employees in TKL Logistics were reluctant to accept changes due to anxiety about the possible loss of his job. Therefore, another interesting future research could relate to psychology to study how to coping with this obsessive mentality and result in better implement new information system internally. In this case study, the scope was limited in Swedish company and the company size is small to midiem. A future study expand the scope to other European countries or Asian countries considering their rapid economic and commercial trade development, while taking into account all company sizes and classifying them into different categories for ease of study. More and more consumers are looking at sustainability, which needs companies to place "sustainability" at the top of the list in many ways. Thus, a future study can focus on the sustainable development the information system will bring to the company, in particular the cost savings of human resources and the positive effect along the chain.

7.1.2 Limitation

The lack of generalization would be the first limitation to consider. The authors only have one company which are located in Sweden as the case to study and thereby the findings could not be generalized to companies in other countries.

References

Ackerman, K. B. (1996). Pitfalls in logistics partnerships. *International Journal of Physical Distribution & Logistics Management*, 26(3), 35–37. https://doi.org/10.1108/09600039610115018

Agutter, C. (2013). *ITIL lifecycle essentials : your essential guide for the ITIL Foundation exam and beyond* (1st edition). IT Governance Publishing.

Archer, N. P. (2007). *Supply chains and globalization*. ProQuest Ebook Central https://ebookcentral.proquest.com

Bechini, A., Cimino, M. G. C. ., Marcelloni, F., & Tomasi, A. (2008). Patterns and technologies for enabling supply chain traceability through collaborative e-business. Information and Software Technology, 50(4), 342–359. https://doi.org/10.1016/j.infsof.2007.02.017

Beck, S. E., & Manuel, K. (2008). Practical research methods for librarians and information professionals. New York, NY: Neal - Schuman.

Bell, E., Bryman, A., & Harley, B. (2019). *Business research methods* (Fifth edition Emma Bell, Alan Bryman, Bill Harley). Oxford University Press.

Bell, J & Waters, S. (2014). *Doing your research project : a guide for first-time researchers* (6 rev. ed.). Milton Keynes: Open University Press.

Bolumole, A. Y. (2001). The Supply Chain Role of Third-Party Logistics Providers. The International Journal of Logistics Management. Vol.12 (4), p. 87-102.

Bowersox, D., Closs, D., & Cooper, B. M. (2012b). *Supply Chain Logistics Management* (4th ed.). McGraw-Hill Education.

Brännhult, D., & Kapanen, G. (2012). The Value of Information Sharing in a 3PL-relationship.

Brocke, V. J., & Rosemann, M. (2014). *Handbook on Business Process Management 1: Introduction, Methods, and Information Systems (International Handbooks on Information Systems)* (2nd ed. 2015 ed.). Springer.

BS, T. (2014). Practical IT service management : *A concise guide for busy executives*. ProQuest Ebook Central https://ebookcentral.proquest.com ‘

Change management (Rev. ed.). (2007). Elsevier/e-Learn/Pergamon Flexible Learning.

Cheong, M. L.F. (2003), “Logistics Outsourcing and 3PL Challenges”, M.L.F Cheong is a PhD student with the Singapore-MIT Alliance (SMA) under the Innovations in Manufacturing Systems and Technology (IMST) program hosted at Nanyang Technological University, Singapore.

Chopra, S., & Meindl, P. (2016). *Supply chain management : strategy, planning, and operation* (6. ed., Global ed.). Pearson.

Client Portal. (2021, October 1). TKL LOGISTICS. Retrieved January 30, 2022, from https://tkl.se/en/client-portal/

Dabbene, F., Gay, P., & Tortia, C. (2014). Traceability issues in food supply chain management: A review. Biosystems Engineering, 120, 65–80. https://doi.org/10.1016/j.biosystemseng.2013.09.006

Daim, TU., Udbye, A. & Balasubramanian, A. (2011). Use of analytic hierarchy process (AHP) for selection of 3PL providers. *Journal of Manufacturing Technology Management, 24* (1), 28-51.

Deepen, J. M. (2007). *Logistics Outsourcing Relationships Measurement, Antecedents, and Effects of Logistics Outsourcing Performance* (1st ed. 2007.). Physica-Verlag HD. https://doi.org/10.1007/978-3-7908-1938-0

Deimel, M., Frentrup, M., & Theuvsen, L. (2008). Transparency in food supply chains: empirical results from German pig and dairy production. Journal on Chain and Network Science, 8(1), 21–32. https://doi.org/10.3920/JCNS2008.x086

Diabat, A., Khreishah, A., Kannan, G., Panikar, V., & Gunasekaran, A. (2013). Benchmarking the interactions among barriers in third-party logistics implementation. *Benchmarking: An International Journal, 20(6)*, 805–824. https://doi.org/10.1108/bij-04-2013-0039

Easterby-Smith, M., Thorpe, R., & Jackson, P. (2015). *Management and business research* (5th edition). SAGE.

Ellis, N. (2011). *Business-to-business marketing* : relationships, networks & strategies . Oxford University Press.

Farquhar, J. D. (2012). What is case study research?. In *Case study research for business* (pp. 3-14). SAGE Publications Ltd, https://www-doi-org.proxy.library.ju.se/10.4135/9781446287910

Freight Forwarding with Personal Service. (2020, June 11). TKL Logistics. https://tkl.se/en/

Gadde, L.H. & Hulthén, K. (2009). Improving logistics outsourcing through increasing buyer–provider interaction. *Industrial Marketing Management, 38*(6), 633–640.

Gallacher, L., & Morris, H. (2012). *Itil foundation exam study guide*. ProQuest Ebook Central https://ebookcentral.proquest.com

Göbel, H., & Cronholm, S. (2016). Nascent Design Principles Enabling Digital Service Platforms. In *Tackling Society's Grand Challenges with Design Science* (Vol. 9661, pp. 52–67). Springer International Publishing. https://doi.org/10.1007/978-3-319-39294-3_4

Grant, D. B., Trautrims, A., & Wong, C. Y. (2017). *Sustainable logistics and supply chain management* (2. ed.). KoganPage.

Hammond, M., & Wellington, J. (2012). *Research Methods: The Key Concepts* (1st ed.). Routledge. https://doi.org/10.4324/9780203097625

Harrell, M. C., Bradley, M., Rand Corporation, & National Defense Research Institute (U.S.). (2009). *Data Collection Methods. RAND.*

Harris, C., & Harris, R. (2008). L*ean connections : making information flow efficiently and effectively* . Productivity Press.

Hill, S. (1994): Logistics takes new road, in: Manufacturing Systems November 1994: 28-32.

Hofstede, G. J., Spaans, L., Schepers, H., Trienekens, J. H., & Beulens, A. J. M. (Eds.) (2004). *Hide or confide: the dilemma of transparency.* (Chains and networks). Reed Business Information.

Jeong, K., & Hong, J.-D. (2019). The impact of information sharing on bullwhip effect reduction in a supply chain. *Journal of Intelligent Manufacturing, 30*(4), 1739–1751. https://doi.org/10.1007/s10845-017-1354-y

Justin Sunny, Naveen Undralla, V. Madhusudanan Pillai, Supply chain transparency through blockchain-based traceability: An overview with demonstration, Computers & Industrial Engineering,Volume 150,2020,106895,ISSN 0360-8352, https://doi.org/10.1016/j.cie.2020.106895.

Knemeyer, A. M., & Murphy, P. R. (2005). Exploring the potential impact of relationship characteristics and customer attributes on the outcomes of third-party logistics arrangements. Transportation Journal, 44(1), 5-19. Retrieved from http://proxy.library.ju.se/login?url=https://www-proquest-com.proxy.library.ju.se/scholarly-journals/exploring-potential-impact-relationship/docview/204598170/se-2?accountid=1175

Lambert, D.M and Cooper, M.C. (2002), "Issue in supply chain management", Industrial Marketing Management, Vol. 29, pp. 65-83

Langley, C. J., Coyle, J. J., Gibson, B. J., Novack, R. A. & Bardi, E. J. (2009). Managing Supply Chains: A Logistics Approach (8th ed.). South-Western.

Leahy, S., Murphy, P., & Poist, R. (1995). Determinants of Successful Logistical Relationships: A Third-Party Provider Perspective. *Transportation Journal*, 35(2), 5–13.

Leung, L. (2015). Validity, reliability, and generalizability in qualitative research. *Journal of Family Medicine and Primary Care*, 4(3), 324. https://doi.org/10.4103/2249-4863.161306

Liker, J. K. (2004). *The Toyota way : 14 management principles from the world's greatest manufacturer* . McGraw-Hill.

Liu, John J.. *Supply Chain Management and Transport Logistics*, Taylor & Francis Group, 2011. *ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/jonhh-ebooks/detail.action?docID=958318.

Long, J. O. (2012). *ITIL® 2011 At a Glance* (1st ed. 2012.). Springer New York. https://doi.org/10.1007/978-1-4614-3897-7

Marasco, A. (2008). Third-party logistics: A literature review. *International Journal of Production Economics, 113*(1), 127–147. https://doi.org/10.1016/j.ijpe.2007.05.017

Mello, J.E., Stank, TH. & Esper, TL. (2008). A Model of Logistics Outsourcing Strategy. *Transportation journal, 47* (4), 5-25.

Merritt, C. (2019b, March 8). *What Size Company Is Considered a Mid-Size Company?* Small Business - Chron.Com. Retrieved January 30, 2022, from https://smallbusiness.chron.com/size-company-considered-midsize-company-71776.html

Office of Government Commerce. (2007). *The Introduction to the ITIL Service Lifecycle Book* (New title ed.). The Stationery Office.

Om oss. (2021, July 20). TKL LOGISTICS. Retrieved January 30, 2022, from https://tkl.se/om-oss/

Orr, A. T. (2011). *Introduction to the ITIL® service lifecycle. (3. ed.). TSO.*

Pereira, R., de Vasconcelos, J. B., Rocha, L., & Bianchi, I. S. (2021). Business process management heuristics in IT service management: a case study for incident management. *Computational and Mathematical Organization Theory, 27*(3), 264–301. https://doi.org/10.1007/s10588-021-09331-2

Pollard, C., Gupta, D., & Satzinger, J. (2010). *Teaching Systems Development: A Compelling Case for Integrating the SDLC with the ITSM Lifecycle. Information Systems Management, 27(2), 113–122.* https://doi-org.proxy.library.ju.se/10.1080/10580531003684959

Prater, E., & Whitehead, K. (2012). *An introduction to supply chain management : A global supply chain support perspective*. ProQuest Ebook Central https://ebookcentral.proquest.com

Pyon, C. U., Woo, J. Y., & Park, S. C. (2011). Service improvement by business process management using customer complaints in financial service industry. *Expert Systems with Applications, 38*(4), 3267–3279. https://doi.org/10.1016/j.eswa.2010.08.112

R.R. Pant, Gyan Prakash, Jamal A. Farooquie, A Framework for Traceability and Transparency in the Dairy Supply Chain Networks, Procedia - Social and Behavioral Sciences, Volume 189,2015, Pages 385-394, ISSN 1877-0428,https://doi.org/10.1016/j.sbspro.2015.03.235.

Ravindran, A. R., & Warsing, D. P. (2012). *Supply chain engineering : models and applications* (First edition.). CRC Press, an imprint of Taylor and Francis. https://doi.org/10.1201/b13184

Sadler, I. (2007). *Logistics and Supply Chain Integration* (1st ed.). SAGE Publications Ltd.

SAP Business Software | Why SAP? (n.d.). SAP. Retrieved August 5, 2021, from https://www.sap.com/why-sap.html?campaigncode=CRM-NO21-PPC-NSPBRAB&source=ppc-se-GOO-71700000082970585-58700007043409653-se-brand-fc-na&DFA=1&gclsrc=aw.ds&gclid=CjwKCAjwx8iIBhBwEiwA2quaq-ecwuqdsr_NYLQVcM2m1sI2YG_OoNO-Yv1woaQu2-P3hcT6MqWx6xoCWAEQAvD_BwE

Silverman D. Doing Qualitative Research. 3rd ed. Newbury Park, London: SAGE Publications Ltd.; 2009. p. 472.

Singh, J. (1996). The importance of information flow within the supply chain. *Journal of Enterprise Information Management*, 9(4), 28–.

Solakivi, T., Töyli, J., Engblom, J., & Ojala, L. (2011). Logistics outsourcing and company performance of SMEs. *Strategic Outsourcing: An International Journal, 4*(2), 131-151. doi:http://dx.doi.org.proxy.library.ju.se/10.1108/17538291111147982

Statista, 2019. Revenue of the global third-party logistics (3PL) industry. Retrieved March 1, 2020, https://www.statista.com/statistics/638368/us-third-party-logistics-market/

Statista. (2021). Statista - The Statistics Portal. Statista. Retrieved 29th July 2021, from https://www.statista.com/markets/413/ecommerce/#:~:text=E%2Dcommerce%20refers%20to%20the,and%20services%20via%20online%20means.text=On%20top%20of%20B2B%2C%20B2C,shopping%20behavior%20of%20online%20consumers.

Sweden, I. (2019, September 19). *IT Service Management*. itSMF Sweden. Retrieved 26th July from https://itsmf.se/it-service-management/#

system | Vad betyder - info. (2021, July 1). SAP. Retrieved February 6, 2022, from https://www.sap.com/sweden/about.html

Third-party logistics (3PL), supply chain and freight forwarding industry (U.S.) analytics, extensive financial benchmarks, metrics and revenue forecasts to 2027, NAIC 488500 published may 25, 2021. (2021). (). Houston: Plunkett Research, Ltd. Retrieved from ProQuest Central Retrieved from http://proxy.library.ju.se/login?url=https://www-proquest-com.proxy.library.ju.se/reports/third-party-logistics-3pl-supply-chain-freight/docview/2538431010/se-2?accountid=11754

TKL Logistics AB – Sweden – Global Forwarding Partners. (2021, January 1). GLOBLA FORWARDING PARTNERS. Retrieved January 30, 2022, from https://thegfp.com/member-profile/tkl-logistics-ab/

Tracy, S. J. (2010) 'Qualitative Quality: Eight "Big-Tent" Criteria for Excellent Qualitative Research', Qualitative Inquiry, 16(10), pp. 837–851. doi: 10.1177/1077800410383121

Trienekens, J. ., Wognum, P. ., Beulens, A. J. ., & van der Vorst, J. G. A. . (2012). Transparency in complex dynamic food supply chains. A*dvanced Engineering Informatics, 26*(1), 55–65. https://doi.org/10.1016/j.aei.2011.07.007

Trochim, W. (1989). Outcome pattern matching and program theory. *Evaluation and Program Planning, 12,* 355–366

Tsinalis, O., Matthews, P., & Guo, Y. (2015). Automatic Sleep Stage Scoring Using TimeFrequency Analysis and Stacked Sparse Autoencoders. Annals Of Biomedical Engineering, 44(5), 1587-1597. https://doi.org/10.1007/s10439-015-1444-y

Waddell, D., & Sohal, A. S. (1998). Resistance: a constructive tool for change management. *Management Decision*, 36(8), 543–548. https://doi.org/10.1108/00251749810232628

Wheatcroft, P. (2014). *Service Desk and Incident Manager: Careers in IT service management* (1st ed.). BCS, The Chartered Institute for IT.

Williamson, K. (2002). *Research methods for students, academics and professionals.* (2nd ed.). Centre for information studies.

Yin, Robert K. (2014). Case study research: design and methods. 3 ed. Thousand Oaks: Sage Publications

Zairi, M. (1997). Business process management: a boundaryless approach to modern competitiveness. *Business Process Management Journal, 3*(1), 64–80. https://doi.org/10.1108/14637159710161585

Zieger, S. (2018). Logistics. *Victorian Literature and Culture, 46*(3-4), 749-752. https://doi:10.1017/S1060150318000736

Appendices

Appendice 1 - Interview question with manager of TKL Logistics

1. Who suggested the idea of an online information system?
2. What are the reasons behind the changes? Why do you need those changes now? Any expectations from the company?
3. Why is it important to have the system for the company from your point of view?
4. What do you think the company can benefit from this system?
5. What kind of resources do you have throughout the whole project, for example, designing, launching etc?
6. How many people are hired or assigned to the project team?
7. How long did it take to make the first beta version?
8. What is your expectation of the system? (function, development, the importance for the company)
9. Do you think the management has the same point of view of the system as you do?
10. Do you think having theoretical support is important for the system itself?
11. How many companies are using it at the moment? Around 100?
12. Is there a resistance against the launch of the system?
13. How did you promote the system to the customers? Position?
14. How many of them have given a positive response? Do you provide them with proper training?
15. Any other changes are happening at the same time?

Appendice 2 - Interview with the colleague

1. Can you please describe your position and duty in the company?
2. Have you used the client portal? How long have you been using the system? How long have you been in the project for the system?
3. Who suggested the idea of an online information system?
4. Why is it important to have the system for the company from your point of view?
5. What do you think the company can benefit from this system?
6. What is your expectation of the system? (In terms of function and development of the system, the importance of the system to the company)
7. How much resources has the company spent on the development of the project?
8. How many people are hired or assigned to the project team?
9. What are the processes for the development of the project?
10. Have you faced any difficulties during usage and development of the project?
11. If you have faced the difficulties with development of the project with the customers, which factor was the major problem?
12. What factors do you think that facilitate the development process? Actions? decisions?
13. Any other relative changes are happening at the same time?

Appendice 3 - Interview question with the customer

1. Can you please introduce yourself and your company?
2. Can you describe the relationship between your company and TKL logistics?
3. Is your company using the Client Portal?
4. What made you think that you need this platform? TKL promotion or Is there any benefit that you expect from Client Portal?
5. Before the Client Portal how did you handle the ordering and who handled that?
6. How well does your company adapt to the change?
7. Is there any objection or resistance to the change?
8. If there is resistance, why do they exist?
9. How did TKL logistics promote the Client Portal to your company?
10. How many people are using Client Portal at the moment in your company? Do they get official training provided by TKL?
11. Has your company saved resources from the change? What resources have you saved from using this system?
12. What is your opinion in the Client Portal? Do you find it really helpful in your daily work? Or do you think there are any drawbacks while using it?

Appendice 4 - Interview questions with the advisors

1. Can you please introduce yourself and your experiences within the supply chain?
2. Have you ever encountered any platform like the Client Portal?
3. What made you think that you may need or may not need this platform? Is there any benefit that you expect from Client Portal?
4. If you have encountered a platform like Client Portal, how did your company handle the ordering system and who is in charge of that?
5. If you have encountered a platform like Client Portal, how well does your company adapt to the change e.g. from email ordering to portal ordering?
6. Is there any objection or resistance to the change that you can think of? If there is, who may have mainly raised the objection?
7. If there is resistance, why do they exist?
8. In what way do you prefer TKL-logistik to market the Client portal over your company?
9. Has your company saved resources from portal ordering? What resources have you saved from using this system?