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**"An investigation into Practices, Issues and Improvement
Opportunities of Logistical Outsourcing: A study of Integrated
Warehouse Services"**

**A thesis presented in partial fulfilment of the requirements for the degree
of**

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In
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ABSTRACT

A pressure to maintain company's profitability and at the same time a need for the company to increase service level and productivity, has forced the organisation to re-engineer its business systems into a more efficient and effective process. Outsourcing has introduced a new concept to re-engineering the company's business system by transferring the company's non-core business to the experts. Outsourcing can be a tool to achieve the competitive advantage. Even though, unsuccessful outsourcing implementation due to poor planning of outsourcing strategy might result in many problems for the company.

The reality is outsourcing is expected to be further developed in the future. Thus, there is plenty of room for logistical outsourcing growth. Nonetheless, the barriers of logistical outsourcing growth, such as poor outsourcing planning strategy causes the lack of understanding of outsourcing and lack of proper logistical infrastructure. These barriers result in the need to review the issues applicable in the practices of logistical outsourcing. This research, therefore, investigates practices, issues and improvement opportunities of logistical outsourcing with regards to the practices of Integrated Warehouse Services.

The use of multi-strategy research by combining the qualitative and quantitative research leads to the achievement of the research objective. This research found that reasons to outsource, the selection of outsourced activities and outsourcing provider selection process were the most important factors in outsourcing decision making process. The practices of IWS has been identified to gain success in improving customer service, reducing product cost, improve productivity, improving information sharing, reducing response time and improving space utilisation. The outcomes of this research illustrates the there is a tendency to perceive provider selection process and criteria and also the logistical outsourcing agreements and relationships as the logistical outsourcing issues to have the most concern in the practices of Integrated Warehouse Services. This research also found that the company needs to have improvements in the outsourcing agreements and relationships, employees training of outsourcing concept and the selection process of outsourcing provider.

DEDICATION

This thesis is above all dedicated to my parents Subur Sugiarto and Itje Rachmiati for much love, time and finance spent on my aspiration towards higher education; most appreciated is their unabated patience in making my dream a reality. The work is also dedicated to my brother Prayoga Wisudharma.

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TABLE OF CONTENTS

ABSTRACT	i
DEDICATION	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
Chapter One: INTRODUCTION	1
1.1. Introduction	1
1.2. The introduction of logistics	1
1.2.1 Logistics role in micro economy	1
1.2.2. Logistics role in the macro economy	2
1.2.3. Introduction into logistical outsourcing	3
1.3. Background Problem	3
1.4. Research objectives	4
1.5. Research Question	4
1.6. Limitation of study	5
1.7. Research structure	5
Chapter Two: LITERATURE REVIEW	7
2.1. Introduction	7
2.2. An overview of supply chain management	7
2.2.1. Supply chain definition	8
2.2.2 The importance of supply chain	10
2.3. Logistical Management	10
2.3.1. Logistics as part of supply chain management	10
2.3.2. Logistics Definition	11
2.3.3. The important role of logistics	11
2.3.4. Scope of logistical activities	12
2.4. Introduction into warehousing	13
2.4.1. The nature and importance of warehousing	13
2.4.2. The role of warehousing in the logistical function	14
2.4.3. Warehouse operation	14
2.5. Outsourcing	15
2.5.1. An overview of outsourcing	15
2.5.2 The development of the concept of outsourcing	16
2.5.3. Outsourcing decision making	16
2.5.4. Benefits and Reason to Outsource	17
2.5.5. Pitfalls and reasons not to outsource	18
2.5.6. Outsourcing Provider Selection	18
Provider criteria	18
Selection process	19
Provider assessment	20
2.5.7. Contract management	20
2.5.8. Outsourcing agreement and relationship	21
2.6. Logistical Outsourcing	21
2.6.1. The role of logistical outsourcing	22
2.6.2. Strategic alliance of logistical outsourcing	24

2.6.3. Critical success outsourcing	25
2.6.4. Current practices and issues of logistical outsourcing.....	26
North America.....	26
Western Europe.....	26
Asia Pacific	27
Chapter Three: METHODOLOGY	28
3.1. Introduction.....	28
3.2. Research Design.....	28
3.2.1. Quantitative and Qualitative Methods.....	28
3.2.2 Deductive and Inductive.....	29
3.3. Method of Data Collection	29
3.3.1. Participant Observation.....	30
3.3.2. In-depth interview.....	31
3.3.3 Questionnaire Development	31
3.4. Data Analysis	33
3.4.1. Qualitative Data Analysis.....	33
3.4.2. Quantitative Data Analysis.....	35
3.5. Research Process.....	35
Chapter Four: THE IMPLEMENTATION OF LOGISTICAL OUTSOURCING.....	37
4.1. Introduction.....	37
4.2. Company Background.....	37
4.2.1. Introduction of VICO Indonesia.....	37
4.2.2. Introduction into company business development.....	38
Business Activity	39
Vision and Mission.....	40
4.2.3. The overview of VICO Indonesia's supply chain	41
Supply chain business process	42
VICO Indonesia's supply chain strategy.....	44
4.3. Integrated Warehouse Services (IWS).....	48
4.3.1. Integrated Warehouse Service (IWS) background	48
Scope of Warehouse Operation	48
Warehousing work flow	51
Previous Warehousing Contract.....	52
4.3.2. Decision making process of IWS	53
IWS Reason's for Outsourcing	53
Warehousing functions that are included in the IWS.....	54
Service Provider selection	55
4.3.3. Integrated Warehouse Services (IWS) practices.....	60
IWS objectives	60
Scope of IWS.....	61
The transfer of warehousing responsibilities	64
Integrated Warehouse Services (IWS) Work Flow	67
Service Level Agreements (SLA)	67
Chapter Five: ANALYSIS OF INTEGRATED WAREHOUSE SERVICES PRACTICES AND ISSUES.....	69
5.1. Introduction.....	69
5.2. The qualitative data analysis	69
5.2.1. Outsourcing strategic planning	69
Outsourcing decision making process.....	70
The scope of outsourcing work.....	70
The provider selection process.....	71
5.2.2 The Implementation of outsourcing strategy	72
Control and monitoring strategy	72
Cross functional system	72
Sharing of Information and Technology Activity	73

The measurement of provider performance	73
5.2.3. The correlation between categories.....	74
Personnel function criteria	76
5.2. Quantitative Data Analysis	76
CHAPTER SIX: RECOMMENDATIONS AND CONCLUSION	87
6.1. Introduction.....	87
6.2. Research objective	87
6.3. Conclusion.....	87
6.3.1. Objective 1: To investigate the factors affecting the logistical outsourcing decision making process	87
The reason for outsourcing warehousing	88
Outsourced warehousing functions	88
Outsourcing provider selection	89
6.3.2. Objective 2: To investigate outsourcing arrangements and to identify the advantages and opportunities, as well as the pitfalls.....	90
Outsourcing arrangement	90
Outsourcing benefits.....	90
Outsourcing pitfalls	91
IWS improvement opportunities	91
6.3.3. Objective 3: To identify the success level of IWS as a current logistical outsourcing activity	92
6.4. Recommendations	93
6.4.1. Outsourcing Strategy Planning	93
6.4.2. Outsourcing implementation strategy	95
6.5. Further research.....	96
LIST OF REFERENCES	98
APPENDICES.....	105
APPENDIX A.....	105
APPENDIX B.....	113

LIST OF TABLES

Table 2.1 Historic supply chain management events in United States	17
Table 3.1 Question headings.....	32
Table 4.1 Sanga-Sanga production sharing contract area in East Kalimantan	39
Table 4.2 The effective voting interest of the IJV parties	39
Table 5.1 The reasons for outsourcing logistical activities.....	77
Table 5.2 The reasons for not outsourcing logistical activities.....	77
Table 5.3 The benefit of logistical outsourcing	78
Table 5.4 Provider Selection	80
Table 5.5 Logistical outsourcing agreements and relationships	80
Table 5.6 Information Technology	81
Table 5.7 Current logistical outsourcing issues.....	82
Table 5.8 The concern of logistical outsourcing	83
Table 5.9 The company emphasis to improve the logistical performance	83
Table 5.10 Improvement opportunities of logistical outsourcing	85
Table 5.11 Descriptive statistics for Logistical Issue	85
Table 6.1 Outsourcing activity levels of Integrated Warehouse Services	94

LIST OF FIGURES

Figure 2.1 Historic supply chain management events in United States	7
Figure 2.2 A generic supply chain.....	9
Figure 2.3 Warehouse function and material flows	15
Figure 2.4 Categories of outsourcing	23
Figure 3.1 Steps of questionnaire development	32
Figure 3.2 Processes and outcome in grounded theory.....	34
Figure 3.3 Research Process	36
Figure 4.1 Production Filed of VICOIndonesia in East Kalimantan.....	38
Figure 4.2 The effective voting interest of the IJV parties	40
Figure 4.3 Integrated Asset Management	41
Figure 4.4 Supply chain network	42
Figure 4.5 Supply Chain Business Process	43
Figure 4.6 AVID business process	45
Figure 4.7 Reorder process	45
Figure 4.8 Physical Inventory	46
Figure 4.9 Cataloguing system.....	46
Figure 4.10 GMC Work Flow	47
Figure 4.11 The scope of previous warehouse operation	49
Figure 4.12 Warehouse operation phase	50
Figure 4.13 Warehouse work flow	52
Figure 4.14 CSMS Steps.....	56
Figure 4.15 Scope of Integrated Warehouse Services.....	62
Figure 4.16 Integrated Warehouse Services workflow.....	68
Figure 5.1 The explanatory relationship of Integrated Warehouse Services	75

Chapter One: INTRODUCTION

1.1. Introduction

This chapter introduces the importance of the logistical functions in a business environment and shows its role as a major contributor in achieving competitive advantage. It will explore the role of logistics in both microeconomic and macroeconomic level. Furthermore, a brief description of outsourcing is provided as an innovative strategy to achieve competitive advantage, followed by an introduction of logistical outsourcing.

1.2. The introduction of logistics

The logistical process affects almost every person's daily life, directly or indirectly, as well as affecting the economic state and development of every country. It has a significant effect on the society, industry, organisation and the individual.

Logistics management is part of the supply chain process that plans, implements, and controls the efficient, effective flow and storage of goods, services, and related information. They are processed from the point of origin to the point of consumption in order to meet the customer's requirements (Stock & Lambert, 2001). This process can be implemented in both manufacturing and service areas.

1.2.1 Logistics role in micro economy

Logistics has a role in the economy, both in a micro and macro economic scope. In today's environment, demand of products and services has increased in complexity and variety. In the recent decades, a thousand new products and services have been introduced and leads to an increasingly competitive business environment. In fact, companies have found difficulties in maintaining traditional profit and growth sales. In facing these challenges, companies must continuously investigate new strategies to improve their business performance and achieve competitive advantage in their particular market.

Competitive advantage is achieved by performing strategically important activities, and ensuring that these activities are performed more efficiently than its competitors (Kujawa, 2003). A company's profitability can be improved either by increasing revenue through increasing the price or reducing costs in production. Logistics management is a major strategy in achieving this competitive advantage by ensuring that it is able to continuously provide a higher level of service to the end user - more effective and efficient than its competitors (Christopher, 1998).

The logistical functions have a further impact on other business functions including finance, marketing, human resources, information technology and manufacturing (Christopher, 1998). For example, the manufacturing function is highly dependent on the systems of the logistical functions to deliver materials and supply parts needed at the appropriate times and at the appropriate quantities, as demanded by the market. The objective of the logistical function is to have an efficient operation by reducing lead times and stock levels (Stock & Lambert, 2001). The inter-relationship between the logistical and manufacturing functions results in an efficient cost reductions and optimum production. These factors lead to the benefit of competitive advantage in the global business environment.

Moreover, logistical services can gain profitability as well as impact cash flow and capital efficiency (Christopher, 1998). Many companies fail to recognise the real significance of logistical fixed asset; but however, many others are reconsidering their deployment of fixed capital in logistical facilities (Greaver, 1999). In many cases, some companies have removed these assets through the outsourcing of certain activities of third parties.

1.2.2. Logistics role in the macro economy

At macro economic level, logistics affects the rate of inflation, interest rate, productivity and other aspects of the economy (Kujawa, 2003). The distribution of material from point-of-origin to point-of-consumption has a big contribution to the Gross Domestic Product (GDP). For example, nations spend high amounts of money on freight transportation, warehousing, storage, inventory carrying cost, administration, communication and management as part of logistical process. The improvement of logistics in a company can eventually increase a nation's efficiency, resulting in positive effects on prices paid for goods and services, national debt, currency valuation, international competition, availability in investment capital and economic growth (Stock & Lambert, 2001).

The effectiveness and efficiency of the logistical activities place a key role and influencing the micro and macro economy, and any strategy that has a purpose to improve logistics performance is not only important for the company, but also to a country and its socio-economic welfare (Stock & Lambert, 2001)

In conclusion, many companies in today's business environment are forced to seek ways to improve competitive advantage and profitability, and that includes increasing efficiency and effectiveness of its logistical systems. This outcome can be achieved through the implementation of innovative strategies, such as outsourcing of logistical activities with the purpose of improving the performance of the logistical functions. Outsourcing enables a company to focus on its core competencies by transferring their non-core activities to logistic

service providers (third party logistics-3PL) who have expertise and can provide efficiencies and effectiveness of logistical activities.

1.2.3. Introduction into logistical outsourcing

Companies are under pressure to satisfy the increasing customer demands, and at the same time ensure growth, profitability, and shareholder value for the companies under difficult market conditions (Greaver, 1999). To survive, companies need to increasingly focus on their core competencies. Hence, there is a popular strategy adopted by many successful companies that is known as outsourcing.

Outsourcing is defined as the act of transferring the company's internal activities to an outside provider. Agreements of both parties are stated in a contract (Greaver, 1999). However, there are some issues to be considered in implementing an outsourcing strategy. One of the issues is that there is an actual loss of control over the outsourced activity for the company. Outsourcing may not reduce costs, and may be at risk of providing service below the standard level. The provider may have inadequate skills, knowledge and technology. The company may also find that the cost of outsourcing is higher than expected (Kujawa, 2003).

Globalisation has made logistical activities is very important in any company. Therefore, at today's business environment, many companies are deciding to outsource various logistical activities to the experts in order to have a lower cost and improving service level.

1.3. Background Problem

The role and the importance of logistical outsourcing have been outlined in the previous section. It provides a brief introduction to the content of this thesis. This section introduces the main issue that is addressed in this thesis and describes the background problem in this study.

In today's global economy, companies are changing rapidly under pressure to maintain their profitability, and at the same time there is a need to increase service level and productivity. This fast changing environment, with premium knowledge, flexibility and performance, force organisations to rethink their paradigms - that owning the factors of production is the best way to achieve the competitive advantage (Greaver, 1999). Outsourcing has introduced a new concept to shift the company's activities to the experts. Even though outsourcing can be a powerful tool for achieving competitive advantage, unsuccessful outsourcing can lead to sub-optimal performance, lack of morale, and loss of business opportunities. Outsourcing might result in many problems for organisation, due to companies searching for short cuts to deal with incompetence and financial pressure (Kujawa, 2003).

Outsourcing of logistical functions is accompanied by success stories as well as potential pitfalls and problem. Some logistics expert would suggest that outsourcing is not a meaningful force in business (Lynch, 2000). The reality is outsourcing is not only a popular trend today, but it is expected to be further developed in the future. Thus, there is plenty of room for logistical outsourcing growth. Nevertheless, the barriers to logistical outsourcing growth include poor planning; lack of knowledge and inadequate performance of service providers (Greaver, 1999; Kujawa, 2003; Lynch, 2000). This is directly a result of the lack of understanding of the logistical outsourcing concept, requirements and arrangements, and the lack of proper logistical infrastructure (Kujawa, 2003).

Those barriers result in the need to review issues applicable to logistical outsourcing practices, thereby identifying improvement opportunities for logistical outsourcing in the particular business areas. This research focuses on the analysis of integrated warehouse services as one of the logistical functions that have been outsourced currently in the company - an object in this research.

1.4. Research objectives

The objectives of this research are to investigate practices and issues of Integrated Warehouse Services as an implementation of logistical outsourcing and to identify the improvement opportunities of logistical outsourcing.

In achieving the primary objective, it is supported by secondary objectives as follows:

- To investigate the factors affecting the logistical outsourcing decision making process
- To investigate outsourcing arrangements and to identify advantages and opportunities, as well as the pitfalls.
- To identify the success level of Integrated Warehouse Service as current outsourcing logistical activities.

1.5. Research Question

The principle research questions have been created to guide this research. They are utilised to facilitate the research in achieving the objectives.

The research questions utilised in this research project are as follows:

- *What factors affect the decision to outsource warehousing as one of the logistical functions?*
- *What factors affect the choice of logistical outsourcing provider?*
- *What is the impact of Integrated Warehouse Service implementation?*
- *What are the improvement opportunities of Integrated Warehouse Service implementation?*

1.6. Limitation of study

The research study of the logistical outsourcing practices limits its focus on Integrated Warehouse Services as outsourced logistical functions. The discussion of logistics outsourcing practices will be limited only for warehousing as a part of logistics function. This research study only uses one company as its research object.

1.7. Research structure

Chapter One provides an introduction into research project. A description of the importance of logistical function and its role in achieving the company's profit and competitive advantage are shown in the beginning of this chapter. It is followed by a description of outsourcing as a popular strategy in improving company's performance and logistical outsourcing as the main factors to be considered in achieving competitive advantage. Finally, the research questions are established to guide researcher in conducting this research. In answering the research question, research objectives are provided and classified into primary and secondary purposes.

Chapter Two, The literature review, broadly explores the logistics concept as part of the supply chain management. It explores the role and importance of logistical functions in a business environment. Next, it provides an exploration of outsourcing concept as a strategic tool to achieve the competitive advantage. Logistical outsourcing is a focus in this literature review. The literature shows the trend in doing logistical outsourcing together with its benefit and pitfalls in theoretical background as a consideration in making a decision to outsource the logistical functions.

Chapter Three discusses the methodology used and describes the data collection process. This research combines two methods of research design; qualitative and quantitative methods. Data are gathered through the observation, in-dept interview and questionnaire. It gives a picture of logistical outsourcing practices.

Chapter Four, this study focuses on Integrated Warehouse Services as an implementation of logistical outsourcing strategy in this company. In the beginning of this chapter, it explores the company's background and some introduction of company's supply chain business process. The decision making process of Integrated Warehouse Service is described in the overview of Integrated Warehouse Services background. It is completed with the description of provider selection process. The comparison of warehousing system – prior and after implementation of outsourcing strategy is also provided.

Chapter Five, provides the analysis of strategic planning and implementation of Integrated Warehouse Service (IWS). The focus of this chapter is the analysis of decision making process

of outsourcing and provider selection process. Another focus of this chapter is the analysis of benefits and potential problems of the practices of Integrated Warehouse Services.

Chapter Six, this chapter provide the conclusion of this research and some recommendations for the Integrated Warehouse Services as one of logistical outsourcing practices and further research.

Chapter Two: LITERATURE REVIEW

2.1. Introduction

This chapter provides an overview of logistical outsourcing as a strategic tool to achieve competitive advantage in today's economy. The broad concept of supply chain and logistical management is reviewed. Next, the exploration of the logistical outsourcing concept, together with its benefit, risks and potential problems in its implementation are provided in order to better understand the basic concept of outsourcing. Current practices and the experience of the implementation of logistical outsourcing in some countries are given in the last part of this chapter.

2.2. An overview of supply chain management

The history of supply chain development is presented in the figure 2.1. It began in the 1950s when the concept of traditional manufacturing method was first introduced. It continued with a mass production strategy to reduce cost and improve productivity during the 1950s-1960s. Unfortunately, little attention was paid to creating supplier relationships, improving process designs and flexibility, or improving product quality. Thus, new product design and development was slow and there was no sharing of technology and information through strategic partnerships at that time.

During the 1960s and 1970s, the importance of effective use of material was recognised and manufacturing became aware of the impact of high inventory. These issues led to the concept and development of Material Requirement Planning (MRP) and Manufacturing Resources Planning (MRP II) in the 1970s. The 1980s was the period when supply chain became better known (Keith & Webber, 1992). Real global competition begins when costs are lowered, product quality is improved and level of customer service is increased. These conditions led to the introduction of two new concepts in manufacturing Just in Time (JIT) and Total Quality Management (TQM). The purposes are not only to improve quality, manufacturing efficiency and delivery time, but also to introduce a low inventory concept and a cooperative supplier-buyer-customer relationship. Furthermore, in the early 1990s, Business Process Reengineering (BPR) was introduced as a new trend to rethinking and redesigning business processes in order to reduce waste and increase performance. This resulted in an emphasis to enhance long term competitive advantages (Wisner, Keong Leong, & Tan, 2005)

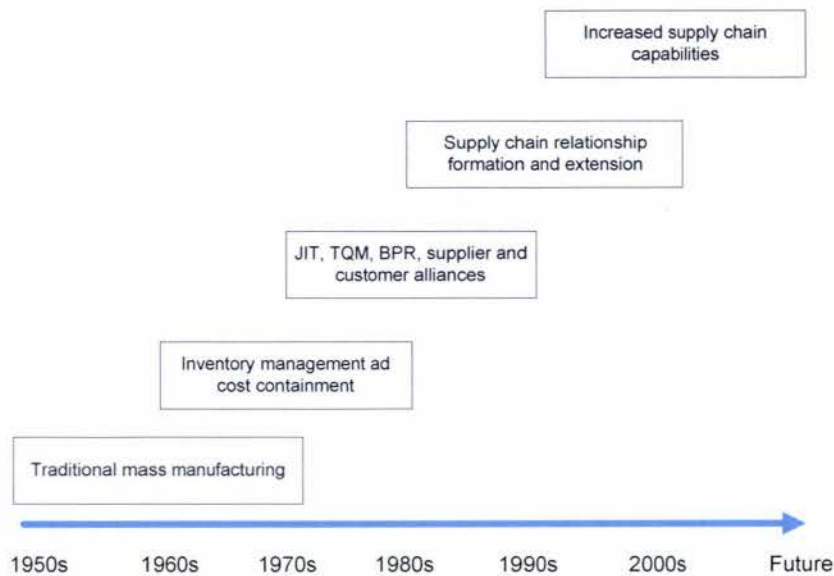


Figure 2.1. Historic supply chain management events in United States (Wisner, et al, 2005b)

2.2.1. Supply chain definition

The supply chain has been viewed as an integration of various functional areas in an organisation to improve material flow through manufacturing and distribution process (Houlihan, 1987). Similarly, another point of view describes a supply chain as the chain that links each manufacturing element and supply process from raw material to end user; through several organisational boundaries (New & Payne, 1995; Scott & Westbrook, 1991). However, it has been argued that supply chain focuses on how organisations utilise the supply process, technology and capabilities to achieve competitive advantage (Batz, 1995). Another previous study of the supply chain shows that the supply chain is related to some other activities, such as, integrated purchasing strategy, integrated logistics, supplier integration and buyer-supplier partnership (La Londe & Masters, 1994; Tan, Kannan, & Handfield, 1998). Most previous research generally focused on improving the efficiency and competitive advantage of manufacturers. However, another definition of supply chain management comes from transportation and logistics literature of distributors and retail industry. It stresses the importance of physical distribution and integrated logistics which place logistics as an important function of business (New & Payne, 1995). In the development of the supply chain, it has further been defined as the coordination of manufacturing, logistics and material management function in an organisation (Farley, 1997). A slightly different perspective, is to view the supply chain as the management of business activities and relationships between organisations, suppliers, and customers in the entire supply chain (Harland, Lamming, & Cousins, 1999).

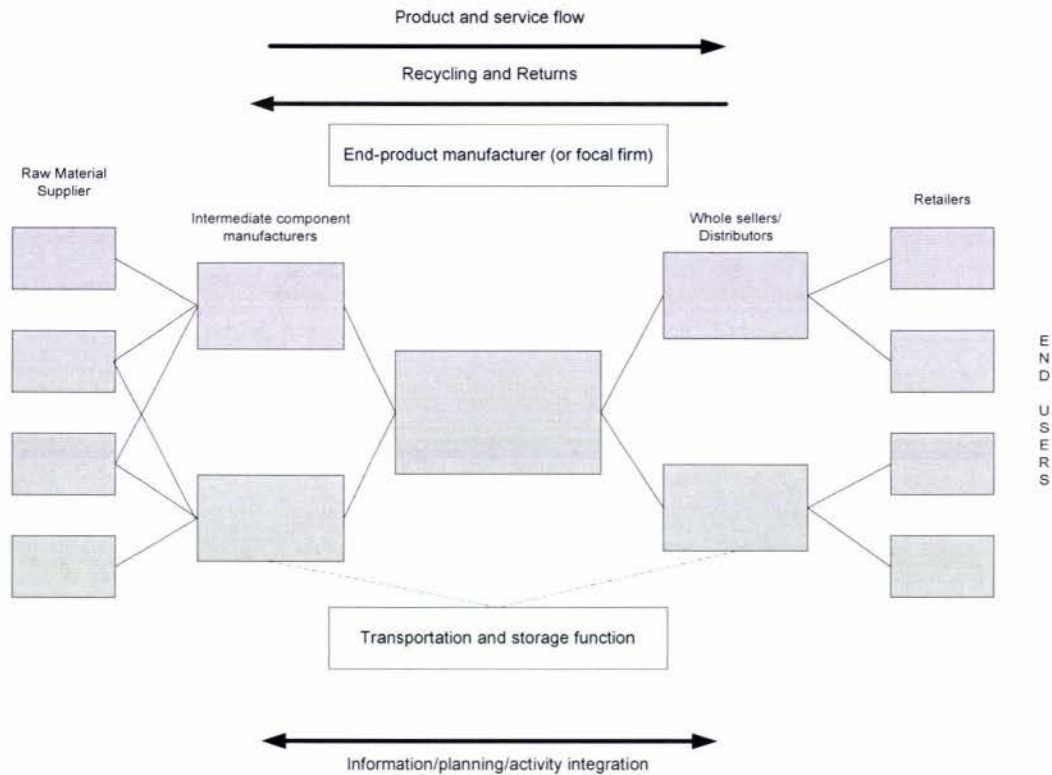


Figure 2.2. A generic supply chain (Wisner et al., 2005)

Figure 2.2 shows the process of material supply starting from extracting raw material from the ground and selling it to intermediate component manufacturers. These companies turn the material into something usable by the customers. The final products are sold to wholesalers or distributors, who then sell these products to retailers. Retailers sell the products to the end user. End users buy the product based on cost, quality, availability, maintainability, and reputation to achieve their satisfaction (Wisner et al., 2005). The end user may need to return the products and this process is known as reverse logistics.

All functions that include production, delivery product service, material recycling, manufacturing component, products and services are called supply chain. Figure 2.2 represents supply chain for the manufacturing process. In practice, supply chain management can be applied in any business process. Figure 2.2 shows that supply chain management is a process of combination of planning, information and activity integration.

A number of other companies might be involved directly in the supply chain process which plays an important role in delivering goods and services to the customers. They are service providers, such as freight forwarding companies, information system providers, public warehousing, consultants and third party logistics companies. These providers are extremely useful. The company provide better service to its customers at the lowest possible cost, enable firms to

save money and allow buyers and seller to have more effective and better communication quality.

The idea of the implementation of supply chain management is coordinating and integrating a number of activities among the process in the supply chain to improve efficiency, quality and service. Therefore, to achieve this success, every element in the supply chain needs to be integrated and work well together.

2.2.2 The importance of supply chain

The role of the supply chain is significantly important in a business environment. Considering that a supply chain is an integration process of all related elements, it requires an effort to achieve its success. The integration process of the supply chain results in better quality, better production, and more reliable transportation. Another benefit of the integration process of the supply chain is to make the company more comfortable with investing capital in better facilities, products and customer services. In this particular condition, suppliers will be more interested in participating in new product development and this adds more benefits (Wisner et al., 2005)

2.3. Logistical Management

2.3.1. Logistics as part of supply chain management

In capturing the role of logistics as part of supply chain management, it is significantly important to distinguish between logistics management and supply chain management. The differences between logistics and supply chain have been studied. A previous study of supply chain and logistics stated that the understanding of supply chain management is not considerably different from the understanding of logistics management. Supply chain includes elements that are not included in logistics scope, such as information systems and coordination of planning and control activities (Cooper, Lambert, & Pagh, 1997).

Rushton, Oxley, & Croucher (2000) summarised the difference of supply chain management and logistics over classic concept and classified into four distinct classifications. Firstly, supply chain is viewed as a single entity rather than a series of some separate elements; procurement, manufacturing, distribution, etc. This also presents how logistics are viewed from forward-looking companies. Secondly, supply chain management is more to do with strategic planning process, while logistics is more to do with operational systems. Thirdly, supply chain management is provided for a different approach to dealing with inventory. In traditional concept, inventory has been used as a safety-valve between the separate components in the supply chain. Meanwhile, in the modern perspective, inventory is used to balance the integrated production flow. Finally, the key success factor of supply chain management is the use of an integrated information system as part of the whole supply chain rather than an individual

function as a separate component. Moreover, supply chain has been viewed as a network activity that places logistics as an individual activity that is significantly important for the success of the supply chain (Coyle, Bardi, & Langley Jr, 2003).

2.3.2. Logistics Definition

In the real business context, logistics has been defined as the management of all inbound-outbound material that consists of integrated functions of purchasing, transportation and storage. In manufacturing terms, logistics is linking the pre-production, in-production and post production activities (Cavinato, 1982). However, in earlier studies, logistics was firstly defined as a strategy in handling troops in the theatre of war, and then some time afterwards logistics was used to describe the technique in packing stores. During both World Wars, logistics received much attention and its definition developed into the activities and methods connected with supplying armed forces including storage requirements, transportation and distribution. The aim is to provide each echelon with an optimum quantity of each supply item in order to minimise overstocking material (Simpson & Weiner, 1989). Military logistics has focused upon the engineering dimension of logistics, such as reliability, maintainability, configuration management, life-cycle management, continuing supply support, with increased emphasis upon modelling and quantitative analysis (Russel, 2000).

APICS, the association for operations management, has defined the definition of logistics both in terms of the business and military context. In the business context, logistics has been defined as the art and science of obtaining, producing and distributing material and product in proper place and quantities. Meanwhile, in military terms, logistics has a greater usage that includes the movement of personnel (Cox, Blackstone, & Spencer, 1998). Logistics is a process of planning, implementing, controlling the flow of storage goods, services and related information from point of origin to the point of consumption. This process includes inbound, outbound, internal and external movement and the return of material for environmental purposes (Davis & Drumm, 2002). In the twenty-first century, logistics has been viewed as part of management which has four subdivisions: business logistics, military logistics, event logistics and service logistics (Coyle et al., 2003).

2.3.3. The important role of logistics

Today, logistics is considered as a strategic weapon in making extensive use of the human and material resources that affect a national economy in the context of business and economy as whole (Rushton, Oxley, & Croucher, 2000). To support this idea, a statistical data of cost of logistics either for whole economy or individual firms is provided. Several studies have been conducted over the years in order to determine the cost of logistics. According to the International Monetary Fund (IMF) logistics cost an average of 12 percent of the world's gross domestic product (Ballou, 2004). A previous study has estimated that logistics cost for the U.S

economy are 9.9 percent of the U.S Gross Domestic Product (GDP), or \$921 billion (Delaney & Wilson, 2000) and logistics cost has been reported at about 50 percent to 60 percent of sales for the average manufacturing firm (Ballou, 2004). To conclude, value added is gained by minimising these costs and delivering the benefit to customers and firms' shareholders. Considering there is always cost associated with the movement and storage of goods which is now recognised as distribution and logistics. It has been proved that logistics has a very positive contribution to the value of product (Rushton et al., 2000).

Logistics value has been considered to provide a huge benefit to achieving competitive advantage. Product value is related to the ability of customers to purchase product at the right place and right time (Coyle et al., 2003; Stock & Lambert, 2001). Another description of value logistics has been introduced by Porter in his value chain concept. Value chain concept includes inbound, outbound and customer service that are responsible for value creation (Porter, 1985). However, Porter's value chain model does not identify the value created by logistics specifically.

Moreover, logistics also plays an important role in economic terms. It can be viewed from two perspectives; macro and micro perspectives. Cost on macro basis will increase with the growth in the economy. The increasing goods production and consumption is associated with logistical cost. To determine the efficiency of the logistical system, there is a need to measure total logistical cost in terms of Gross Domestic Product (GDP), which been used as a measurement of the rate of economic growth. In macro basis, logistics has a correlation with other functional areas in a company, such as, marketing, manufacturing/operation, finance, accounting and any other areas (Coyle et al., 2003).

2.3.4. Scope of logistical activities

Logistical activities includes transportation, storage, packaging, materials handling, order fulfilment, forecasting, production planning, purchasing, customer service, site location and other activities (Coyle et al., 2003). Each activity has a different concern in logistical practices. Transportation and storage focuses on transportation trade-off, while material handlings and order fulfilment concern with on efficiency of the operation. Moreover, inventory accuracy is very important in forecasting activities, and another concern is the time perspective that is related to production planning and forecasting activities.

Another earlier study summarised logistical activity as order processing, inventory, transportation, warehousing, material handling and packaging and also added the facility network design in the scope of logistics activities (Bowersox, Closs, & Cooper, 2007). Facility network design is concerned with determining the number and location of all types of facilities required to perform logistical functions. Earlier, key logistical activities have been defined as order fulfilment, new product introduction, new product development, product return, the provision of spares and information management (Rushton et al., 2000).

2.4. Introduction into warehousing

As described in the scope of logistical activities, warehousing is one of the major activities in gaining success in logistical system. Warehousing is an important activity in material distribution, from raw material, work in progress through to finished goods. Warehousing is costly in terms of people and facilities and equipment required, and its performance will impact directly on overall supply chain performance (Rushton et al., 2000).

Traditionally, a warehouse was used as a place to store the products (Rushton et al., 2000), but warehouse function has been developed with the arrival of just-in-time, strategic alliance, and logistical supply chain philosophies in 1990s (Coyle et al., 2003). Warehousing has taken on a strategic role in achieving logistical goals of shorter cycle times, lower inventories, lower costs, and better customer services. Moreover, to meet the customer demand for lower prices and shorter cycle time, warehouse processes regarding productivity and cost improvements, need to be examined (Coyle et al., 2003).

2.4.1. The nature and importance of warehousing

As an illustration of how important warehousing is in economic terms, a statistical frame is presented. In 1999, in the USA, warehouse costs amounted to \$75 billion, or 0.81 percent of GDP and the total supply of U.S. warehouse space was 6.1 billion square feet. The statistical data shows the growing need of warehouse space and rising importance of warehousing (Delaney & Wilson, 2000). In addition, warehousing also plays a very important function in a macro-economic sense. It aids time utilisation for distribution of raw material, industrial goods, and finished products and increases the utilisation of goods by broadening time availability of products (Coyle et al., 2003). Through the warehouse function, companies can make products available when customers need them. Warehousing has been considered as a value adding tool in the logistical process.

The importance of the warehouse function has been recognised in its role in performing services in a company. They are identified in four categories; the first service is to geographically combine the customer demand for goods to achieve economy of scale; the second service is to provide geographic distribution of the goods to customer; the third warehouse service is to provide the means for the company to store products demanded by seasonal demand; and the last service is to provide the means for the company to store goods that are produced throughout the year. It allows the company to reduce costs by purchasing material in a large quantity (Mulcachy, 1994)

2.4.2. The role of warehousing in the logistical function

Warehousing contributed to about 20% of the surveyed companies' logistics in 2003. Warehousing is an important part in the logistics process. It is commonly used for storing or buffering products at and between point of origin and point of consumption (de Koster, Le-Duc, & Roodbergen, 2007). The basic role of warehousing in logistical functions is a place where a company stores or holds raw material, semi-finished goods, or finished goods for varying periods of time. The perspectives of the role of warehousing has developed since the realisation that warehousing can add more value than cost to a product (Coyle et al., 2003).

Warehousing provides several value adding roles as consolidation, product mixing, service, contingency protection and smooth operation. Companies can save transportation cost by consolidating smaller shipments with larger shipments and product mixing. Providing the product when the customer needs it is significantly important. Having goods available in the warehouse when the customer needs them, usually lead to customer satisfaction and enhances future sales. Another warehouse function is protecting against transportation delays or vendor stock-outs which is very important to consider when delivering material. It enhances transportation economics, production economics, customer support, service policies, meeting changing market conditions and uncertainties, overcome the time and space differences, provide temporary storage of material to be disposed and providing a buffer location for trans-shipments (Coyle et al., 2003).

2.4.3. Warehouse operation

There are various methods and equipment for storing and handling material in warehouse operation. Basic warehouse functions and material flows are illustrated in the Figure 2.3. *Goods inwards* include the unloading and unpacking of incoming material, quality control and the recording of receipts and deciding where the received goods are to be put in the warehouse. Then, goods are moved to *reserve storage* from goods inwards and warehouse information system is updated. Furthermore, stock availability is maintained for order picking through the *replenishment* function. This is important to enhance the ability to filling order on time. *Order picking* is also important for achieving a high level of customer service. It is the process of retrieving products from storage or buffer areas in order to respond to a specific customer request. This is the most labour-intensive operation in a warehouse with a manual system, and a very capital-intensive operation in an automated warehouse system. In the case of small order sizes, sometimes it is required to batch a number of orders together and put them together as one order for the picking process (Drury, 1988; Goetschalckx & Ashayeri, 1989; Tompkins, White, Bozer, Frazelle, & Tanchoco, 2003). However, the warehouse operation continues with the sorting process and after picking, goods are brought together and combined as a complete order under the *collate* process. The last function of the warehouse is assembling and packing goods to be delivered to outbound vehicles and the process known as *dispatch*.

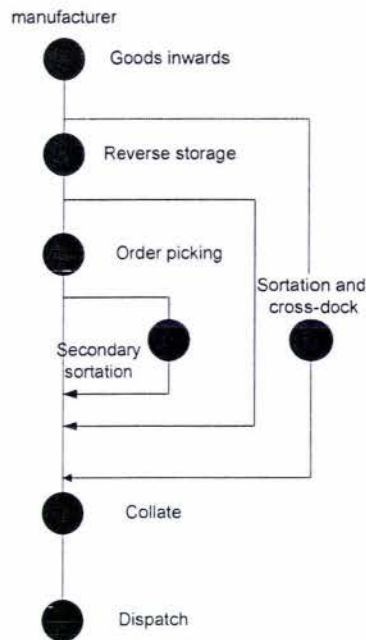


Figure 2.3. Warehouse function and material flows (Rushton et al., 2000)

2.5. Outsourcing

2.5.1. An overview of outsourcing

In today's business environment, outsourcing has been viewed to be a new way of delivering raw materials, goods, components and services by utilizing knowledge, experience and creativity of new suppliers (Embleton & Wright, 1998). Outsourcing has also been defined as transferring the company's internal activities and decision making to outside providers (Greaver, 1999). It is further defined as a management tool among a number of options in the company for competitive advantage (Lonsdale & Cox, 2000). Moreover, outsourcing is used to achieve rapid and sustainable improvement. It was found that 65 percent of respondent organisations use an outsourcing pattern to create high performance of support operation and it was not just to reengineer support process, but also improve key business capabilities (Jane, Martin, & Alvin, 2002).

Outsourcing has been reviewed as an important key in business strategy to enhance a competitive advantage for the past several years. Outsourcing is an excellent strategy for companies to shift fixed cost into a variable cost model. It can potentially reduce unit cost and minimise capital acquisition and ownership cost. It is a fact that outsourcing strategies have been accepted and become a business weapon (Cavinato, Flynn, & Kauffman, 2006). One survey finds that around thirty four percent of US companies have moved production activities in the past year and labour costs were the most cited reason for outsourcing (Cavinato et al.,

2006). However, difficulty and complexity of transforming business processes to the new concept of outsourcing often happens due to poor planning. It eventually results in the loss of knowledge base (e.g. process knowledge, corporate knowledge, insufficient system and infrastructure and the loss of previously skilled in-house workforce) (Cavinato et al., 2006).

2.5.2 The development of the concept of outsourcing

The growth of outsourcing has resulted from the characteristics of the business environment and an emphasis on cost saving and increasing profit (Embleton & Wright, 1998). During the development of the outsourcing concept, companies no longer assumed that all activities must be provided internally, therefore outsourcing became a strategic tool in today's business environment (Kujawa, 2003).

The factors to consider when making decisions about outsourcing were also developed. It is critical that companies should understand the reasons for considering outsourcing together with its benefits and pitfalls (Greaver, 1999). The reasons for outsourcing have changed from cost disciplines to strategic re-positioning, core competencies, greater services and higher value creation (Kakabadse & Kakabadse, 2000). Historically, outsourcing was used when organisations could not perform, perhaps due to incompetence, lack of capacity, financial pressures, or technological failure, but cost saving was usually the primary motive behind outsourcing (Kujawa, 2003). Today, outsourcing is more than just a cost saving.

2.5.3. Outsourcing decision making

It has been decided that decision making is the most important of the additional management functions. The decision deals with present and future impact and should be carefully considered for every possible risk that might happen. Decision making can be defined as a process to choose the best alternative solution after considering the consequences, advantages and disadvantages of each alternative (Kroon, 1998)

Furthermore, there are different characteristics of decision planning in regards to outsourcing, e.g. considering levels of outsourcing activities, time frame, focus, and level of integration. Lambert, Stock, & Ellram (1998) summarised the outsourcing planning types in the table 2.1 below.

Type of plan	Time frame	Focus	Level of detail	Level integration
Operational	Day to day \leq 1 year	Efficiency	Heavy financial orientation	Functional
Tactical	\geq 1 to 5 years	Event	Somewhat financially oriented	Integrated-functional
Strategic	5 to 10 years or more	Competition, resources, stakeholders	Few financials, more goal oriented	Integrated-corporate and supply chain

Table 2.1. Characteristics of planning types (Lambert, Stock, & Ellram, 1998)

Identifying core competencies of a company is necessarily important and involvement of top management is also crucial with the identification of all possible uncertainties and the overall possible effect on the business and its employees. Additionally, cost must be analysed and the various outsourcing options and relationship types also need to be considered (Kujawa, 2003).

2.5.4. Benefits and Reason to Outsource

It is important for a company to understand the benefit and disadvantages of outsourcing when considering factors while making an outsourcing decision. The reason to outsource also covers the benefits of the outsourcing concept. The most obvious advantage to the outsourcing concept is reducing cost and capital requirement; increasing profitability and custom services; and expanding services and expertise (Greaver, 1999). Some of the drivers of outsourcing decisions are the opportunity to concentrate on the core business and the ability to manage a cost stream with fewer variables (Lankford & Parsa, 1999).

Outsourcing has been viewed from three different perspectives; *strategically*, where it allows management to focus on its core competencies; *financially* where outsourcing enables the management to reduce capital requirement and *operationally* when outsourcing simplifies industrial relationships by contracting out most excess labour (Greaver, 1999; Stock & Lambert, 2001). Another previous study of small businesses found that some benefits of outsourcing are to secure expertise, cost effectiveness, to improve management control over the business and allow an entrepreneur to attend to more urgent daily activities. Moreover, in global perspectives, primary reasons behind the outsourcing decision are performance, cost saving, productivity, cycle times, customer service, market share and quality (Elmuti & Kathawala, 2000). On the other hand, outsourcing can enable organisational flexibility and the speed to react to business changes to increase (Zhu, Hsu, & Lillie, 2001).

2.5.5. Pitfalls and reasons not to outsource

Despite its benefits, implementation of outsourcing also has several disadvantages and potential problems. There are many reasons for a company not to outsource its business activities, such as, company control would be diminished by outsourcing; cost would not be reduced through outsourcing and there is also an assumption that the company has adequate skills and resources; therefore they do not need to engage in the outsourcing process. There is also an assumption that the particular process in a company is too important to be outsourced and outsourcing is too complex to be considered (Kujawa, 2003).

Moreover, the disadvantage of outsourcing was stressed from the perspective of human resources. It is claimed that outsourcing has another drawback in lower morale due to staff reductions. It can damage the morale of existing workers and may encourage the most talented staff to seek opportunities elsewhere (Embleton & Wright, 1998). Earlier studies have identified another outsourcing risk as loss of core activities, being leveraged by providers, loss of strategic flexibility, suffering interruption to supply, receiving poor supply quality, fall in employee morale, loss of internal coherence, confidentially leaks and loss of intellectual property rights (Lonsdale & Cox, 2000).

Implementation of outsourcing concept can result in a potential problem. Previous research found that the most serious problem is the fear of changes in a company, including fear of job loss; the second serious problem is poor selection of sourcing partners that might cause poor performance of outsourcing; the third factor is inadequate training and skill in managing outsourcing activities; lack of understanding of the company goal in implementing outsourcing becomes a main problem in outsourcing pitfalls. Another problem is a lack of comprehensive plans and support from top management. (Elmuti & Kathawala, 2000). It has been argued that misinterpretation of the scope of outsourcing activities may cause a failure in outsourcing implementation (Greaver, 1999).

2.5.6. Outsourcing Provider Selection

When implementing outsourcing, it is significantly important to carefully select and manage the service providers. Beginning with the right provider qualifications, selection process and a good provider relationship will help to achieve success with outsourcing.

Provider criteria

In achieving success through provider performance, it is essential to select the right providers. In early studies, provider selection criteria has become more specific, for example, strategic buyer-supplier partnership (Kahraman, Cebec, & Ulukan, 2003). The most common criteria

used in provider selection is cost, quality and delivery performance (Kannan & Tan, 2003). In earlier studies, similar criteria as quality, cost and service has been identified as the main categories in provider selection (Ghodyspour & O'Brien, 1998). Moreover, in industrial buying research, criteria such as quality, service, delivery and price have also been considered as major provider selection criteria (Bhutta & Huq, 2002).

In previous studies, a different point of view has identified joint development, culture, forward engineering, trust, supply chain management, quality and communication as key components of provider selection criteria (Choy & Lee, 2003). A higher requirement of provider criteria selection in collaboration and information coordination has been identified as a result of outsourcing development (Chopra. & Meindl., 2001). A previous study prefers to focus on qualitative measurement, such as, delivery performance, proven customer satisfaction, proven management capabilities, commitment of specific resources, trust, good cultural fit and willingness to share knowledge than quantity measurement (Greaver, 1999)

However, low price has been viewed as important when performance and capability requirement are satisfied (Murphy & Poist, 2000). Other research identified price, geographical scope, and business expertise as the most important criteria selecting 3PL (Third Party Logistics) as outsourcing provider (Kujawa, 2003). Another study of 3PL market, this time in China, ranks the important criteria in selecting 3PL providers from most important to least as follows: industry/operational experience; reputation; lower price; network coverage; own strategic assets; integrated logistics capabilities; and good IT systems (Huang & Kadar, 2002).

Selection process

There are many different aspects of the provider selection process. Earlier studies have provided a general guide to the provider selection process. It is divided into three main phases. The first phase is the process which involves an *internal assessment* in identifying the most suitable activities in relation to outsourcing. The second phase is concerned with the *reviewing process* of services and potential providers. The last phase is the *preparation of invitation* for providers/contractors in the tendering process.

However, this process normally requires an additional process in order to identify any potential problems and issues in risk assessment process (Rushton & Walker, 2007). Selection process of outsourcing providers must cover the identification of potential providers for all functions to be outsourced (Kasilingam, 1998). In addition, selection process might require a site visit which begins with an initial screening of provider candidates in which their experience, level of service and financial feasibility is assessed (Sopher, Lareau, & Crum, 2002).

Provider assessment

The selection process usually continues with the assessment process in order to define, describe, and measure specific performance that is needed to be met by the outsource contractors. Provider assessment and performance measurement is important as a baseline for planning and improving provider management (Chin, Yeung, & Pun, 2006). The measurement of providers/contractors is normally known as Key Performance Indicator (KPI) (Cavinato et al., 2006).

Some earlier literature has stated that provider assessment criteria focuses on quality, cost, flexibility and technology, long-term supplier relationship (Goetsch & Davis, 2003; Saunders, 1997). In another study, supplier evaluation criteria have been classified and the most utilised criterion is price followed by on time delivery and service quality (Droge, Germain, & Stock, 1991). Recent literature has suggested different models and approaches in connection with supplier quality. Many researchers have identified the assessment criteria with respect to strategic alliances, supplier development and supplier monitoring (Chin et al., 2006). Strategic alliance stresses the maintenance of long term and cooperative relationships which involves trust, commitment and interdependence to mutually share risk and reward of long-term relationship (Lemke, Goffin, & Szejczewski, 2003).

2.5.7. Contract management

A contract is a document that contains information and requirements. It usually consists of service specifications that need to be provided, tariff and mutual obligations in running the outsourcing operation (Fan, 2000). Outsourcing is about a contractual agreement between users and service providers. Thus, the agreement is negotiated and signed by both parties (Zhu et al., 2001). The contract should be clearly understood by both parties.

The provider agreement should identify services to be provided by the provider, any penalty clauses, terms of payment and methods for making changes to the agreement. Depending on the agreement, a contract may also need to include additional items, such as licensing agreement, patent rights, disaster recovery, protection of assets and unusual circumstances (Zhu et al., 2001).

In managing the outsourcing contract, there is a need to measure the provider's performance and identify and stipulate the required service level. A suitable monitoring and evaluation process is required (Kujawa, 2003). It would be very effective to have a regular formal business review meeting to cover a business overview by both parties (Fan, 2000)

2.5.8. Outsourcing agreement and relationship

The development of global business strategies relies on symbiotic relationships among partners. The agreement and relationship between user and providers can include several forms of collaboration (Kujawa, 2003).

Collaborative relationships are commonly characterised by flexibility, risk and knowledge sharing. The shape of the outsourcing agreement is formed by several relationship aspects and characterised by degrees of trust, levels of interaction, commitments of parties to the relationship (Eckert, Handfield, Rinehart, & Zaversnik, 1999). Every relationship involved in the implementation of outsourcing is important in increasing the business strategy (Greaver, 1999). The quality of the relationship will also depend on aspects of quality and the sharing of information (Kakabadse & Kakabadse, 2000). Five key characteristics of building a strong relationship have been stated as the sharing of information, sharing of benefit and burdens, multiple contracts between economic entities, cross functional management process and future oriented collaborative process (Lonsdale & Cox, 2000).

A successful partnership generally has relatively few partners and employs a two-way feedback system that allows both parties to discuss problems and decide on further action (Gooley, 1994). Partnerships typically share the same common goals, cooperation in cost reduction programs with minimisation of risks, sharing expertise and new technology (Gentry, 1993). In a strategic alliance, there is a commitment between service user and provider to jointly improve quality and productivity to reduce overall cost (Razzaque & Sheng, 1998). Strategic partnerships utilise joint problem solving efforts to improve services in the market. Partnerships require a high level of understanding of the particular business shared by the company and its service providers (Richardson, 1993). The company achieves competitive advantages by working closely with their partners to improve the logistics performance. One of the examples is the partnership formed between Melville Corporation and Mersantile Logistics (House & Stank, 2001). The partnership was structured to achieve four major operational objectives. They are reduced total logistics costs, reduced transit time, improved information and improved pipeline reliability. However, significant problems were met along the relationship, includes problem of planning and start-up process, documentation, measurement of progress and cultural and organisation barriers (House & Stank, 2001).

2.6. Logistical Outsourcing

Logistical outsourcing can be defined as long and short term contracts between user companies, service companies and third party logistics (3PL). In other research, researchers developed the definition based on the company's need to obtain cost saving and concentrate on their core competencies (Rabinovich, Windle, Dresner, & Corsi, 1999). The logistical

outsourcing contract includes an arrangement to subcontract logistical activities to companies that are capable of providing the service (Lynch, 2000). This type of outsourcing process involves the use of external companies (third party) to perform logistical functions that have been performed internally within organisations (Ravi, 2001). There are many companies providing logistical services including transportation and warehouse companies, consultants, freight forwarders and third party logistics. These companies provide value to users by planning and controlling logistical activities. The services provided are design and development for users, transaction processing and after-sales support as an addition to actually delivering the goods to the customers (Manchester, 2001).

The application of third party logistics is commonly used. Therefore it needs a further discussion of the 3PL's role in the development of logistical outsourcing. Third party logistics (3PL) is an independent company that performs all or some part of user's supply chain logistics activities. The services range from as simple a process as arranging the shipment or as complex a process as designing, implementing, operating and managing the user's supply chain (Konezny & Beskow, 1999). 3PL is characterised by a long term relationship and mutually beneficial relationship between third parties and their clients (Murphy & Poist, 2000).

A logistical service provider focuses on specific elements of the supply chain in order to optimise the physical movement of material from the point-of-origin to the end-users (Stock & Lambert, 2001). 3PL is different from other logistical service providers in the scope of the services that they provide. 3PL provides a broader scope of services including managerial services. Hence, while traditional transportation, warehousing and freight forwarding are limited to one service company, the newer form of providers offer a high degree of management services where they assist in planning and controlling the logistics function (Chow & Gritta, 2002).

2.6.1. The role of logistical outsourcing

In the growth of global business competition, companies realise their need to focus on their core competencies and competitive advantage. The implementation of outsourcing means the companies transfer their non-core activities out to capable service providers that can provide more effectively and efficiently operation. Logistical outsourcing improves the efficiency of logistical system and the scale of economy. It allows company to focus on its core competencies. In order to gain a benefit of logistical outsourcing, it is critical that the outsourcing process is handled properly by capable providers as a partner in the supply chain processes (Kujawa, 2003).

The outsourcing of the logistical function is usually used to manage complex distribution requirements, postponement of manufacturing, cross docking, kitting, inventory, vendor managed inventory, reverse and repair logistics (Sangam, 2004). A previous research

introduces a new dimension which divides all logistical activities into two categories (Novack, Rinehart, & Wells, 1992). The first category is physical activities which are required to create time utilization and meet the customer's needs. It includes inventory, transportation and customer service operation. The second category is the transaction activities that follow the physical activities as the focus on the transaction negotiation process.

Meanwhile, outsourcing activities can also be classified into three categories. They are transactional activities, tactical activities and strategic activities (Sangam, 2004). This is shown in figure 2.4. *Transactional outsourcing* is categorised based on transactions, no long term contract and no connection between 3PL and the outsourcing company, it is driven by price. The second classification is *Tactical Outsourcing* which is characterised by medium to long term basis with negotiated contracts. Price is no longer dominant as a prime factor for this kind of outsourcing. The top level category is *strategic outsourcing* that is better known as strategic alliance. The classification is typically based on long term relationship and strategic issue. In this category, 3PL companies become partnered with the company in supply chain management.



Figure 2.4. Categories of outsourcing (Sangam, 2004)

The most common logistical functions that have been outsourced recently are transportation and warehouse functions. Third party warehousing generally involves a contract for specific services at an agreed price over a contracted period (Chen, Hum, & Sun, 2001). The operational aspects of warehouse functions that have been outsourced include general warehouse aspects, management of the warehouse, warehouse automation and warehouse complexity. While, the general warehousing aspects include size of the warehouse, and number of SKUs (Koster & Warffemius, 2005). Warehouse complexity refers to the number and variety of items to be handled, the amount of daily work to be done and the nature and variety of the process necessary to fulfil the demand of the customer.

Much third party warehousing provides some late configuration activities as value adding services, such as, labelling, packaging, assembly and manufacturing (Ballou, 2004). Besides, many warehousing contracts facilitate other special processes where most of these services serve long-term performance maintenance goals. They are cross docking, cycle counting, internal product, relocation for optimisation, return handling, and quality inspection of inbound products (Koster & Warffemius, 2005)

2.6.2. Strategic alliance of logistical outsourcing

Global business has increased its attention of strategic alliance terms during the past few years. It has become a critical issue for global competitiveness. A strategic alliance requires cooperation and coordination between different independent parties (Bengtsson & Kock, 2000; M. Zineldin, Johannisson, & Dandridge, 1997; M. Zineldin & Jonsson, 2000). However, doing cooperation and competition at the same time and with the same actors, does not always promise a benefit (M. Zineldin & Bredenlow, 2003). Strategic alliance is "an arrangement among firms to work together to attain some strategic objectives" (M. Zineldin & Bredenlow, 2003). Outsourcing is about the strategic use of resources from other parties in order to perform a non-core activity. Therefore, outsourcing can be seen as a strategic tool increasing performance of the company.

The application of logistical outsourcing needs an integration of multiple logistical function areas, such as order processing, product return, packaging and shipment. The integration process in the outsourcing of logistical functions usually shares highly specialised operational skills, physical assets, process, technologies, and transactional information that enables the achievement of economy of scale (Venkatesan, 1992). This process not only allows companies to reorganise their flow of goods and information in the supply chain, but also reduce costs associated with asset ownership, performance monitoring, hiring, management and personal training (Maltz & Ellram, 1997).

A coordinated flow of goods facilitates the integration of pricing, transportation and inventory planning activities (Lee & Tang, 1997). A flow of goods and information plays an important role in logistical outsourcing strategies of companies (Rabinovich et al., 1999). An efficient coordinated flow of logistical information will improve the company's responsiveness to meet the customer demand and have a better relationship with the customer (Stock, 1990). The benefit of outsourcing can be easily achieved by having a good partnership and it requires commitment of both parties on a continuing long term basis (Heinritz, Farrell, Giunipero, & Kolchin, 1991).

Moreover, a strategic alliance is a planned ongoing relationship where both parties share values, goals and mutual benefits. This includes sharing of information along with the risk and reward of the relationship (Gentry, 1993). The success of a strategic alliance will depend on a good partnership among individual parties. The objective of logistical outsourcing for both parties is to achieve an open and long term relationship in order to continually improve the business process (Bradley, 1994).

The most significant problems leading to a failure of strategic alliance are lack of trust of third parties, unwillingness of the company to share information with their provider, disinclination to make a commitment, lack of understanding and a despondent relationship and inability to share risk (Bradley, 1993). An earlier study identified the other problems facing alliances. They are

lack of coordination between management teams, difference in operating procedures, attitudes among partners, and lack of clear goals and objectives (Elmuti & Kathawala, 2001).

2.6.3. Critical success outsourcing

To ensure the success of outsourcing, there are some factors to be considered during and after implementation of the outsourcing process. First, support of the outsourcing decision by the top management is most important (Kujawa, 2003; Razzaque & Sheng, 1998). To get good outsourcing decisions, it is important to educate management about logistical outsourcing. Management needs to be convinced of the benefits of outsourcing especially for the company (Bowman, 1995; Maltz, 1995). Another important point is communication. This is essential for the coordination of internal corporate functions and outsourced logistics. It includes the internal communication between management and internal departments in a company.

The success of outsourcing implementation also depends on the relationship of user and its provider (Bradley, 1994). The need to choose the right supplier is also important in achieving the success of outsourcing (Richardson, 1994). Therefore, the right provider criteria, selection process and provider evaluation is necessarily needed. The sustainable partnership is established from the various relationships between people involved. Open and honest environment, key management, effective internal measurement system, mutual respect and empathy, and commitment is of particular importance in the building of the partnership (Razzaque & Sheng, 1998).

Cross-functional management in logistics has been defined as a process that involves purchasing, operation and physical distribution. It also plays an important role in any successful outcome of logistical outsourcing (Byrne, 1993). Successful cross functional teams aim to study, plan and implement outsourcing initiatives, and to assess any possible risk, resources and information (Kujawa, 2003)

There are several other critical factors to make outsourcing work. An earlier study has focused its research on the customer, establishing operating standards and monitoring performance (Richardson, 1990). Another study of contract logistics claimed that a success in contract logistics also depends on repeatability and discipline to maintain the commitment between logistics users and providers (Trunick, 1989). However, the importance of human factors in logistical outsourcing success can not be underestimated. It is necessary to involve the people that are currently involved in the logistics activities. They must be given an opportunity to be involved in the implementation of outsourcing and proving how valuable they can be (Maltz, 1995). The employees must also be kept informed about the progress of outsourcing implementation (Greaver, 1999).

In conclusion, every step in the transitioning phase of the implementation of logistical outsourcing should be carefully monitored. The key to a successful change is communication and preparing staff members for the change (Kujawa, 2003). Since outsourcing has been considered as a strategic weapon in the re-engineering process, human resources and structural implication must be managed carefully in the implementation of outsourcing

2.6.4. Current practices and issues of logistical outsourcing

A current example of logistical outsourcing is provided by exploring the experiences from three strategic business areas; Asia Pacific, North America and Western Europe. The practice of logistical outsourcing is related with Third Party Logistics (3PL) usage in its implementation.

North America

The implementation of third party logistics (3PL) has been gradually increased for the past several years (Lieb, 2004a). In its development, the perception of logistics changed. There is a clear indication that 3PL was mostly used previously for transportation and warehouse functions, but this has shifted slightly to consider 3PL as a strategic supply chain (Capgemini, 2003). Interestingly, US companies outsource their logistical activities outside the United States and particularly to Asia (61%) (Lieb, 2004a). However, the implementation of logistical practices has negatively impacted on employee morale.

Today, outsourcing is considered as a strategy to improve the supply chain performance and most companies in North America consider logistical outsourcing is a weapon to gain success. As a result, fifteen percent cost reduction was achieved in North America. Asset, inventory and cash to cash cycle reduction and service level improvement were also noticed as benefit of implementing logistical outsourcing (Capgemini, 2004). In order to maintain success of outsourcing, more organisations are inclined to share more freely capabilities with their providers. This strategy can lead to better relationship between company and its provider (Capgemini, 2004). The reasons given for not outsourcing logistics include non-reduction of cost, loss of control and the importance of logistical functions (Capgemini, 2004). Logistical outsourcing is much more common in Europe and Asia than in United States (Cooper & Melvyn, 1991).

Western Europe

The practice of logistical outsourcing in Western Europe has had good results. The majority of 3PL companies in Western Europe have expressed satisfaction in meeting their revenue growth targets (Lieb, 2004a). Cost reduction is the main reason in Western Europe for making a decision to outsource the logistical functions (Lieb, 2004a).

Non-users of logistical outsourcing in Western Europe feel that logistics is the core of the company business and consider logistical management is very important. They assume that companies will lose control over their operation and customer service (Capgemini, 2004). Similar to logistical outsourcing practices in North America, gain share, risk and reward structure are popular in Western Europe. Western Europe has also expressed a high level of satisfaction with outsourcing (Capgemini, 2004). The most popular industry for 3PL companies in Europe is the automotive industry. This is followed by the electronics industry, manufacturing, retail, consumer goods, chemical, health care, pharmaceutical and wholesaler (Lieb, 2004a). Lack of variety in service and lack of strategic management skills seem remains a problems for Western European logistical users (Capgemini, 2004).

Asia Pacific

In practice, logistical outsourcing in the Asia Pacific, is most prevalent in China, followed by Japan, India, Australia, and others (Lieb, 2004b). Differing from North America and Western Europe, cost reduction is the main reason to outsource logistical functions in China (Dai et al., 2003). Insufficient global capabilities are indicated as the biggest reasons for not outsourcing logistical activities. This was followed by poor customer service levels, loss of control and many Chinese companies feel that logistical management as the core business of their company. They also feel that logistical outsourcing may not be economically viable (Dai et al., 2003).

In the broader area of Asia Pacific, loss of control and pessimism about cost reduction are the main reasons for not outsourcing the logistical functions. This reason was followed by logistics is too important to outsource, logistics is part of the core competency, the negative thinking that service levels would not be realised and customer complaints would be increased (Capgemini, 2004). However, there is an increased number of current non-users planning to outsource their logistical activities in the coming years (Gou, 2003).

Information and technology remains the key to achieving benefits in logistical outsourcing. Moreover, the trend in Asia Pacific is to consider finance and operation as key roles in the selection process of logistical providers. Another trend in logistical outsourcing practices in Asia Pacific area is to hire multiple 3PL. Nevertheless, in order to achieve the best possible coordination in the supply chain's cross functional team, it has been suggested that all logistical activities in a company are handled by a single company (Gou, 2003).

Chapter Three: METHODOLOGY

3.1. Introduction

This chapter discusses the methodology used in conducting research into the investigation of logistical outsourcing practices with regards to the Integrated Warehouse Services (IWS). It begins with a discussion of the research design followed by a justification of the application of multi-strategy research. This research applies the multi-strategy research by combining quantitative and qualitative methods. Next, the chapter discusses the participant observation and unstructured interview process. The development of the questionnaires is also discussed along with an explanation of the questionnaire design. Finally, data collection and data analysis from both research methodologies are described.

3.2. Research Design

A research design is a plan, structure and strategy of an investigation in order to obtain the research purposes and questions. It includes an outline of the researcher's approach to the study, starting from writing the hypothesis and its operational implication to the final research result (Kerlinger, 1986). In order to investigate the practices, issues and improvement opportunities of logistical outsourcing with regards to IWS, this study undertakes a multi-strategy research approach that combines both quantitative and qualitative methods.

3.2.1. Quantitative and Qualitative Methods

The two methods of research strategy most commonly used are quantitative and qualitative research (Cooper & Schindler, 2000) and the similarities and differences between the two methods have been discussed by a number of authors (Cresswell, 1998). Quantitative research has been defined as a research method that is based on theory testing, composed variables, measured with numbers, and analysed with a statistical procedure. Meanwhile, qualitative research has been identified as a process of understanding a human problem based on a complex, holistic picture, formed with words and concluded in a natural setting (Cresswell, 1998).

This research combines quantitative and qualitative research methods. There are three models for mixed-method research: two-phased design, dominant-less dominant design; and mixed-methodology design (Cresswell, 1998) . This research applied the dominant-less dominant design because qualitative research has dominated the research method.

In this mix-method research, qualitative research is facilitating quantitative research. There are several ways in which qualitative research can be used to guide the quantitative research (Bryman, 2004). Firstly, the qualitative research forms the hypothesis that is tested through quantitative research and secondly, the quantitative research adds measurement to the qualitative research. The in-depth knowledge acquired through participant observations in qualitative research is used to inform and design the questions in the questionnaire and unstructured interviews (Bryman, 2004).

3.2.2 Deductive and Inductive

Deductive and inductive methods approach the relationship between theory and research. Deductive research is the conceptual and theoretical structure development prior to empirical observations. Meanwhile, inductive research is moving from the observation of the empirical world to the design of the explanation and theories about what has been observed (Gill & Phil, 1997).

The difference between an inductive and deductive approach is found in the strategy used at the beginning of the research. Inductive method is used when no theoretical studies are required before the research; instead, the theory is developed based on patterns and structures of the empirical data. The benefit of inductive methods is when exploring a new area of science, and there are no theories required at the beginning of the research. Unfortunately, the inductive method is difficult to apply in gathering data without any reference of previous knowledge (Gill & Phil, 1997). Meanwhile, the deductive approach is a hypothesis-testing process. New hypotheses are developed from theories, then those hypotheses can be tested on empirical data. Deductive research is commonly used when conducting a quantitative study, however, this method only tests the hypothesis that that the researcher believes (Yan & Wang, 2005).

Since this research predominantly uses the qualitative method, the inductive method is the dominant research method. Information and data are collected through the participant observation method to get an overview of the logistical outsourcing practices with regards to the IWS.

3.3. Method of Data Collection

In the data collection process there are two groups of data sources called primary and secondary. Primary data is originally collected by the researcher to answer research problems and secondary data is information collected by others for purposes that may be different from the particular research purpose (Ghauri & Gronhaug, 2002). Since primary data is collected directly for research purposes, it is more consistent with the research purposes and questions. Nevertheless, its disadvantages are that it takes a long time and is costly to gather the data. On the other hand, secondary data has the benefit of saving time and money because data can be

gathered through academic resources, such as books or journal articles (Yan & Wang, 2005). However, the age of data can be a disadvantage of secondary data.

Primary sources of data collection in this research are gathered from three different sources: the participant-observation and unstructured interview as sources for qualitative data; survey questionnaires as a source of quantitative data; and secondary data gathered through literature reviews, previous related researches and company databases for particular business processes.

3.3.1. Participant Observation

Observation is a purposeful, systematic and selective way of watching and listening to an interaction or phenomenon. Observation is the best approach to collect the required information especially in the interest of personnel behaviour (Kumar, 1999). There are two types of observation: participant observation and non-participant observation. The differences between these two are in the involvement of research participants and observation activities (Kumar, 1999)

A common form of observation in qualitative research is participant observation (Nachmias & Nachmias, 1996). A definition of participant observation has been given as a field strategy that simultaneously combines document analysis, interviewing a respondent, directing participation and observation, and introspection (Flick, 1998). The main attribute of this method is the researcher's involvement, in this case in the warehouse daily operation activities and observing from a member's perspective (Flick, 1998).

The field note is used during this type of observation and is a summary of researcher activities and findings during the research and specifies whatever is observed. There are three phases of participant observation (Spradley, 1980). The first phase is the *descriptive observation phase* when the researcher has the orientation to the field and provides non-specific descriptions of the practices of IWS. The objective is to grasp the complexity of the field as far as possible and to concentrate more on the research question. The second phase is the *focused observation phase*, in which the perspective increasingly focuses on the processes and problems that are most essential for the research questions. In this phase, the researcher is involved in the implementation of IWS from the planning process to the evaluation process for six months. The last phase is the *selective observation phase* when the researcher focuses more on further evidence of any findings of this research. In this phase, the observation continues with unstructured interviews and survey questionnaires (Spradley, 1980).

3.3.2. In-depth interview

Interviews are a common method of collecting information from people, due to their relative accessibility and low cost. Person-to-person interaction between two or more individuals with a specific purpose is called an interview (Kumar, 1999) and is structured by asking and answering questions. Interviews are classified according to their degree of flexibility, as an unstructured and structured interview (Kumar, 1999). An unstructured interview is known as an in-depth interview and it formulates questions spontaneously during an interview, while a structured interview has a pre-determined set of questions. The flexibility of unstructured/in-depth interviews allows the interviewer to ask as many as questions as needed and gather varied information.

The advantages of unstructured interviews is that they are an excellent way to discover the interpretations that people give to their experience (Denzin, 1989), allow aspects of social life to be studied (Daly & McDonald, 1992), and allow for new understandings and theories to be developed during the research process (Liamputtong & Ezzy, 2005). There are also some disadvantages to this method, such as it being time consuming and sometimes costly (Fontana & Frey, 1994; Seidman, 1991), and the existence of bias in different responses due to different understandings and viewpoints between respondents (Yan & Wang, 2005).

Unstructured interviews are conducted with people from all level management and operational who are involved in the practices of IWS. The questions are formulated from the findings from participant observation. The interviews were conducted not in the appropriate time, place or condition. The benefit of unstructured methods is that respondents are more open and honest in answering the research questions. Furthermore, the data and information gathered from unstructured interviews and participant observation are used in the development of the questionnaires.

3.3.3 Questionnaire Development

Since this research applies a multi-strategy approach, the data is collected through a quantitative method where the questionnaire is the most popular data collection method. The main issue in developing a questionnaire is to know what information is needed and how to direct the list of questions to gather the required information from respondents. Researchers have close-ended questions to gather information from the respondents, which are designed from the findings in their observations and unstructured interviews previously done. The layout of the questionnaire should be easy to read and the sequence of questions should be easy to follow (Kumar, 1999). The degree of importance and relevance of individual questions, how questions are answered, the length of the questionnaire, and the precise wording of the questionnaire, will influence the success of the information gathered from respondents (Yan & Wang, 2005).

The advantage of using the questionnaire as method of data collection is that it's less expensive and offers greater anonymity for respondents. The questionnaire data has been designed through various steps in this research, shown in Figure 3.1 below.

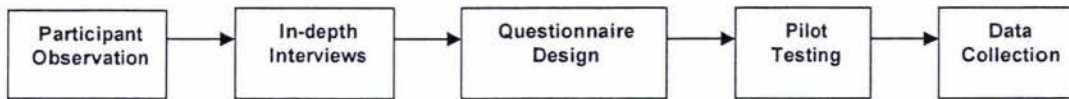


Figure 3.1. Steps of questionnaire development (Source: Own)

The participant observation and unstructured interviews help to formulate the questions in the questionnaire. The participants and respondents help the researcher to gain a better understanding about the logistical outsourcing practices in the company with respect to implementations of IWS. Questionnaire respondents are people who directly in-charge with IWS and have worked in this area for a couple of years and have extensive experience and knowledge about logistics, especially in warehousing operation. The questionnaires drafts were designed in English first and then translated into Indonesian. The researcher is bilingual and fluent in both English and Indonesian, therefore, the problems in questionnaire translation were minimised.

The questionnaire was divided into seven sections, each with a purpose. The first question deals with the reason for outsourcing logistical activities. The second section is about the possible reason for not outsourcing activities. The benefit of outsourcing and the criteria for supplier selection is covered in Question 3. The provider selection criteria and process are included in the Question 4. Agreements and relationships that have been implemented in the practices of IWS are measured in the Question 5. Question 6 covers the need for information technology application in the logistical outsourcing practices. Respondents are also asked about logistical outsourcing issues in the Question 7 and 8, and opportunities for improvement in the future in the Question 9 and 10 as shown in the table 3.1.

Question Number	Description of question
Question 1	The reasons for outsourcing logistical activities
Question 2	The reasons for not outsourcing logistical activities
Question 3	The benefit of logistical outsourcing
Question 4	Provider selection
Question 5	Logistical outsourcing agreements and relationships
Question 6	Information technology
Question 7	Logistical outsourcing issues
Question 8	
Question 9	
Question 10	
	Logistical outsourcing improvement opportunities

Table 3.1. Question headings

Most of questions are designed as close-ended question of Likert scale which criteria of question is categorised from very low to the very high. The objective of this survey questionnaire is to understand the practices, issue and improvement opportunities of IWS with respect to logistical outsourcing practices from respondents' points of view.

The questionnaire was sent through e-mail for a number of reasons. Firstly, an email questionnaire is low cost and more effective than any other survey methods. The lower cost of email surveys is particularly evident when the population is widely spread over a large geographic area. Secondly, e-mail questionnaires are preferable if the answer requires respondents to consult a document or discuss the question with other people (Nachmias & Nachmias, 1996). The survey is accompanied by a cover letter that describes the objectives of the study.

Pilot testing was conducted to detect weaknesses in the design and instrument (Cooper & Schindler, 2000). The questionnaire was tested with a small sample of respondents and the questions revised and resubmitted to the respondents for final approval. A primary concern with the mail questionnaire method was the bias in non-response. Respondents who did not respond in two weeks were mailed with a reminder letter and another copy of the questionnaire.

Questionnaires were sent to 36 respondents from low level management into senior management that directly related to the practices of IWSs. The survey were completed in April 2008 and the total number of completed questionnaires received were 19, providing on overall response rate of 53%.

3.4. Data Analysis

Since this research has applied the multi-strategy research, the data is analysed using two methods: qualitative and quantitative research. The general strategies of qualitative data analysis are grounded theory. Furthermore, the statistical approach is used to analyse data in quantitative data analysis.

3.4.1. Qualitative Data Analysis

Data collection in qualitative methods are voluminous (Patton, 1980). Qualitative data analysis clearly differs from the quantitative approach of dividing and separating activities into data collection, analysis and writing results. The several activities in qualitative methods are collecting information from the field, sorting it into categories, formatting it into a story and picture, and writing the qualitative text (Creswell, 1994).

Analytical induction and grounded theory are probably the most frequently used method in qualitative data analysis. Analytical and grounded theories are often described as iterative

where there is a repetitive interplay between the collection and analysis of data. Consequently, both analytical induction and grounded theory can also be viewed as strategies for the collection of data (Bryman, 2004). This research has applied grounded theory as a method in analysing data. The implementation of grounded theory requires some tools such as theoretical sampling, coding, theoretical saturation and constant comparison. The process of grounded theory, as shown in Figure 3.2, has been applied in this research in qualitative data analysis.

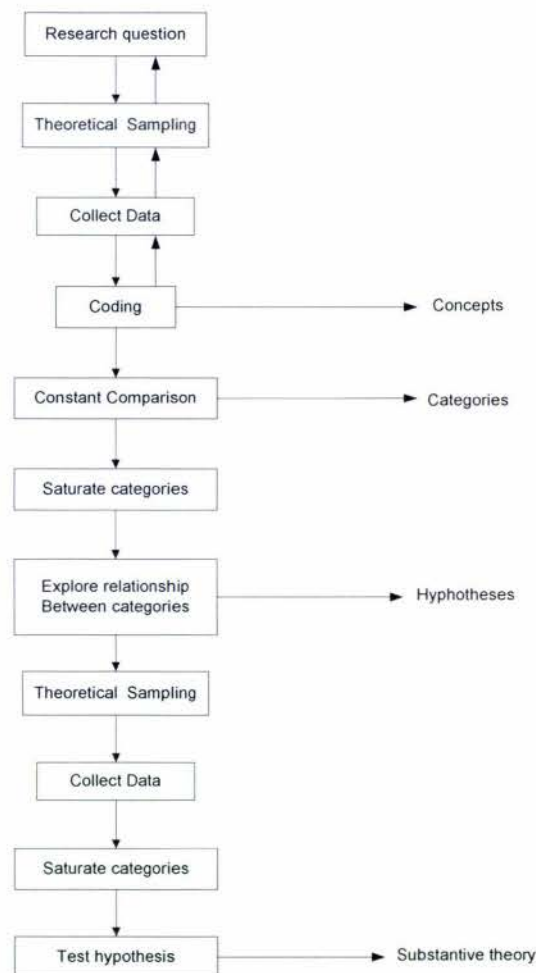


Figure 3.2. Processes and outcome in grounded theory (Bryman, 2004)

The researcher begins with a general research question of logistical outsourcing practices and continues with theoretical sampling by collecting the relevant people for the relevant event. Then, the data is collected from those relevant people through the participant-observation and unstructured interview. Data is coded at the level of open coding to generate a concept. The data is examined, compared, conceptualised and categorised. There is constant movement in these first four steps as shown in Figure 3.2. As a result, new data is gathered through further

interview and participant observation which results in the need for another theoretical sample and coding. Through a constant comparison, categories are generated and the relationship between categories is explored, which results in the hypotheses of logistical outsourcing practice. Further data is collected through theoretical sampling and saturated categories. The next step is testing the hypothesis and leads to the specification of substantive theory.

3.4.2. Quantitative Data Analysis

Quantitative data analysis is applied in analysing the information gathered from the questionnaire. The purpose of the questionnaire is to gather some information of logistical outsourcing with regard to IWSs' practice. This analysis is carried out statistically by using the application of Sophisticated Computer Software (SPSS).

Furthermore, the statistical methods are applied in analysing the quantitative data. Starting with the coding process, all of the answers of the respondents are coded to be analysed statistically by using descriptive statistics. In the first analysis, each category is analysed in order to investigate the perception of logistical outsourcing practices from the respondents' viewpoint. Furthermore, to discover the particular issues of logistical outsourcing is of major concern in the practices of IWSs. This analyses where on the scale of 1 to 5 each issue of logistical outsourcing practices factors falls under (1 = very important, 2 = important, 3 = neither important nor unimportant, 4 = unimportant, 5 = very unimportant. There are eight categories of logistical outsourcing issues and 69 statements.

3.3. Research Process

The purpose of these methods employed in this thesis is to investigate the practices and issues of logistical outsourcing in the study of IWS. In general there are four stages in the research process (Figure 3.2): problem definition and problem statement, information and data gathering, research application and data gathering, and conclusion and recommendations.

Several different methods are used in this research process. In sequence, the detailed process is shown in the Figure 3.3 and the description is as follows:

- The first method used is reviewing the relevant literature and theoretical findings of logistical outsourcing practices and common issues of its implementation.
- This is followed by reviewing the implementation of logistical outsourcing implementation in the case of IWS. It focuses on the practices and issues of IWS.
- The next method used in this thesis is an evaluation of the current IWS by analysing the practices and issues of logistical outsourcing practices.
- To be able to investigate issues and identify the improvement opportunities of IWS implementation, the method of interview and participant-interview is applied to gather

information of logistical outsourcing practices. The questionnaire method of data collection is also used to identify issues and any potential improvement in the future.

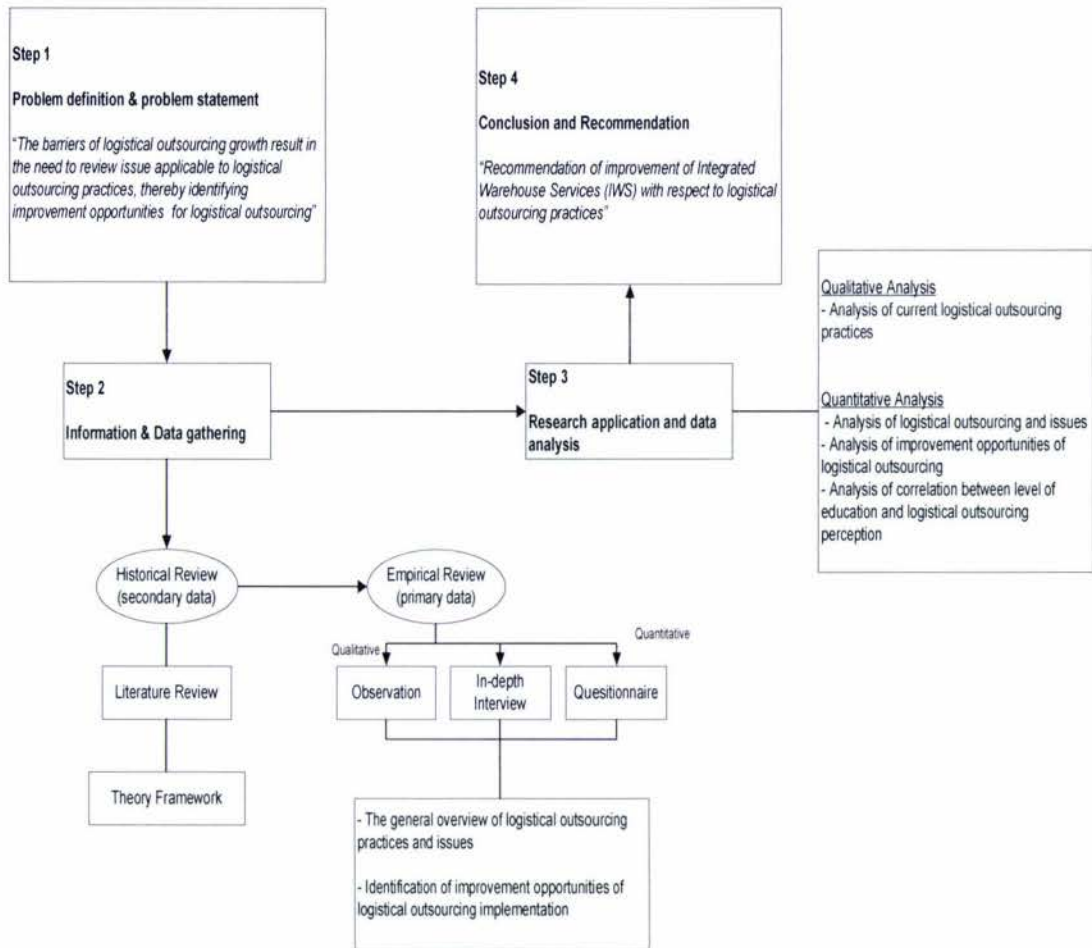


Figure 3.3. Research Process (Source: Own)

Chapter Four: THE IMPLEMENTATION OF LOGISTICAL OUTSOURCING

4.1. Introduction

This chapter explores the company's background in business development, business activity, mission and vision; and introduction into the supply chain process. It is followed with the description of the outsourcing decision making process. The focus of this study is to explore the practice of Integrated Warehouse Services as a logistical function in this company that has been outsourced.

4.2. Company Background

The description of the company's background presents an overview of the development of the company's business area, including its business activities. A brief introduction of company's supply chain process is provided. It is presented together with the specific description of its warehouse process as a logistical function that has been outsourced recently by this company. The warehouse process is also the focus of this research.

4.2.1. Introduction of VICO Indonesia

VICO Indonesia, originally known as HUFFCO, first discovered oil and natural gas in the Kutai Basin of the Mahakam River in East Kalimantan. Huffington and the Virginia businessman, General Arch Sproul, signed a Production Sharing Contract with Pertamina covering 631,000 hectares of the Mahakam River delta. With the backing of joint venture partners Ultramar Indonesia Limited, Union Texas East Kalimantan Limited and Universe Tankships, Inc., they commenced their search and in 1972 discovered the giant Badak Field, establishing one of the most important milestones in the history of energy in Indonesia.

Badak gas reserves are located in the middle of the jungles in Eastern Kalimantan. But Huffington and Sproul had a vision that was shared by both Mobil Oil Company and Pertamina to liquify the natural gas and ship the resultant LNG to Japan, South Korea, and Taiwan.

Since 1972, VICO Indonesia has drilled more than 600 wells and discovered gas volumes totalling 14 trillion cubic feet, as well as more than a billion barrels of liquid. The oil and gas reserves are located in the giant Badak and Nilam Fields, the Mutiara and Semberah Fields, and in the smaller Pamaguan, Beras, and Lampake Fields. Peak production was reached in 1994 at more than 1500 MMSCFD gas and more than 53,000 BPD oil and condensate.

Thirty three years after the discovery of Badak 1 gas well, VICO Indonesia remains one of the main producers in the country. VICO Indonesia is dedicated to ensuring that its activities for the development and production of oil and natural gas are conducted in a safe and reliable manner to maximise value, both to Indonesia and VICO's joint venture partners, as well as to minimise their impact on the environment. VICO currently produces 700 MMSCFD gas and 20 MBPD oil and condensate.

During the last decade of the oil and gas industry, VICO Indonesia has merged with some other oil and gas companies and this has affected VICO ownership. The current joint venture partners of Sanga-Sanga PSC are: BP p.l.c. via "BP East Kalimantan Ltd."; Eni SpA via "LASMO Sanga Sanga Limited"; CPC, via Opicoil Houston, Inc.; and Universe Gas and Oil Company, Inc.

4.2.2. Introduction into company business development

Virginia Indonesia Co., LLC ("VICO") operates the Sanga-Sanga Production Sharing Contract area in East Kalimantan on behalf of itself and others Indonesian Joint Venture (IJV) participants as shown in the figure 4.1.



Figure 4.1. Production Filed of VICOIndonesia in East Kalimantan (Papilaya, 2008)

The table 4.1 shows the IJV participants interest in the Sanga-Sanga PSC:

Virginia Indonesia Co., LLC	7.5 %
OPICOIL Houston, Inc	20%
LASMO Sanga Sanga Limited	26.25%
BP East Kalimantan Limited	26.25%
Universe Gas and Oil Company, Inc	4.375%
Virginia International Co., LLC	15.625%

Table. 4.1. Sanga-Sanga production sharing contract area in East Kalimantan (Vico Indonesia, 2007b)

VICO Indonesia and Virginia International Co., LLC are under joint control by affiliates of LASMO Sanga Sanga Limited and BP East Kalimantan Limited. BP East Kalimantan Limited is an indirect wholly owned subsidiary of BP plc. and LASMO Sanga Sanga Limited is an indirect wholly owned subsidiary of ENI S.p.A. The voting interest of each party is shown in the table 4.2.

Partly	Effective Voting Interest
BP	37.8125%
LASMO/ENI	37.8125%
OPICOIL	20%
UNIVERSE	4.375%

Table 4.2. The effective voting interest of the IJV parties (Vico Indonesia, 2007b)

Business Activity

Oil and natural gas are currently produced from seven fields: Badak, Nilam, Mutiara, Semberah Pamaguan, Lampake and Beras. Most of the natural gas is delivered to P.T. Badak NGL's plant at Bontang where LNG and LPG are produced and shipped. Small volumes of gas are supplied to fertiliser and methanol plants at the Kaltim Industrial Estate and to PERTAMINA's Balikpapan Refinery. LNG is exported to Japan, Korea and Taiwan. This company currently produces 700 MMSCFD gas and 20 MBPD oil and condensate.

All production of four fields, along with gas from fields operated by Total and Unocal, is transported via the Pipeline Network System into VICO's Badak Central Facilities, the centre of East Kalimantan gas operations. The engineers use computers and innovative technology to monitor quality and blending of the gas as presented in the figure 4.2.

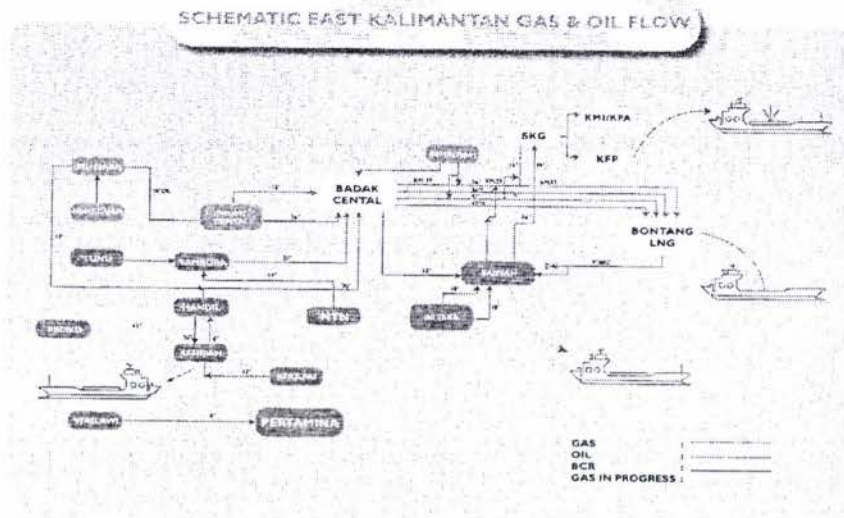


Figure 4.2. Schematic East Kalimantan Gas and Oil Flow (Papilaya, 2008)

Vision and Mission

VICO Indonesia states their creed as "Living in harmony, working dynamically". This statement is supported by the company's vision and mission. The vision is to be recognised internationally as a reliable, dynamic and competitive energy resources company, yielding prosperity to its employees, community, share holders and the government of Indonesia whilst maintaining excellence in operation and HSE (Health Safety Environment). It is back up by the company's mission to develop, produce, and deliver East Kalimantan gas and oil in a reliable manner to maximise value for Indonesia and the company's shareholders through some strategies, as follows:

- Applying appropriate technology and the highest international HSE (Healthy Safety Environment) standards;
- Control costs effectively with continuous improvement in all business processes;
- Providing the best environment for professionals to develop in order to realise their maximum potential; and
- Generating improved quality of life for stakeholders and communities alike.

All of these principles are gained by creating and adding some values through its activities. This company has four main values to be applied. The first value is represented as "Vision" where the value is achieved by being proactive, searching for new options and taking prompt action. The second value is presented by "Integrity" that is achieved by being open and honest, always considering ethics and being mutually respectful with their partners. "Commitment" represents the company's principle regarding relationships both for internal relationships and expanding their partnerships by always being trustworthy, reliable and accountable. Finally, "Outstanding performance" is achieved by adding value through efficiency and effectiveness in every activity,

exceeding the expectation and being professional. Achieving these values give VICO Indonesia today's competitive advantage.

Supply chain concept has an important role in adding values mentioned above. It offers an effective way to have cost efficiency through good management of material supply. In today's business environment, supply chain management is a tool to achieve competitive advantage. VICO Indonesia adopted the supply chain management concept several years ago. Through supply chain operation, various optimisation programs have contributed to some cost efficiency.

4.2.3. The overview of VICO Indonesia's supply chain

"Supply chain management is the integration of key business process from end user through original suppliers and provides products, services, and information that add value for customers and other stakeholders" (Stock & Lambert, 2001).

In its application in this company, supply chain is part of the company's business process. As appeared in the figure 4.3, supply chain links the engineering design process and the operation process. The supply chain process is responsible for providing the required material at the right time and the quantity to be used for operation and maintenance.

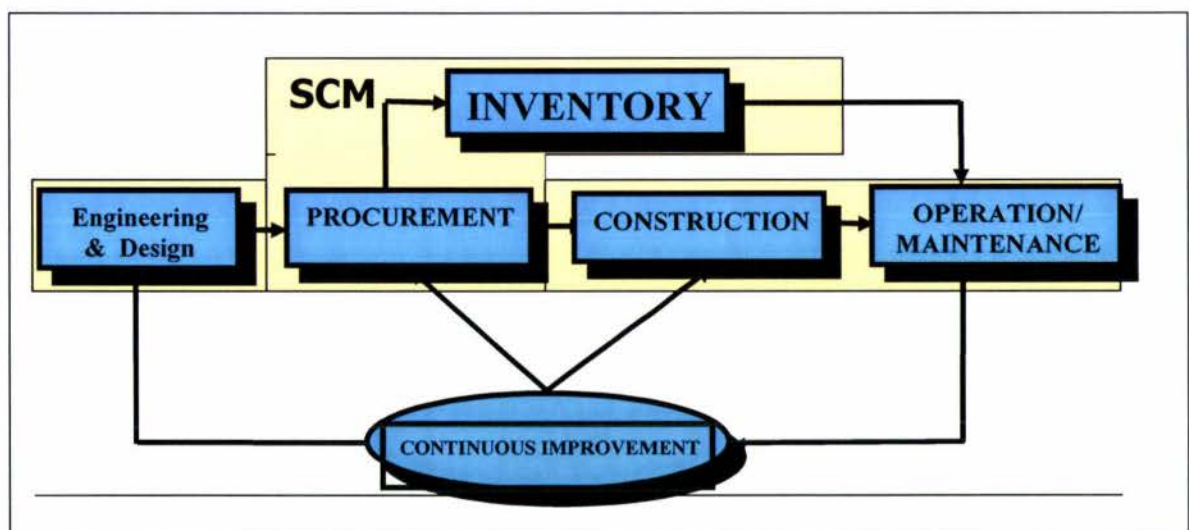


Figure 4.3. Integrated Asset Management (Vico Indonesia, 2004)

Today, this company is involved with more than a hundred suppliers, supplying more than 60,000 material items from many sources of materials. Another part of the supply chain process is to have all supply materials sent to the warehouses for storage. This company has two warehouses; the Badak Warehouse and the Nilam Pipe Yard. Each warehouse consists of several storerooms. Furthermore, the materials are distributed to the various departments within

the company when required. The liquefied natural gas output goes to PT. Badak together with the output of other oil and gas companies in the East Kalimantan area. The products are distributed to other countries, such as Japan, Korea and Taiwan. The network of the supply chain process is captured in the figure 4.4

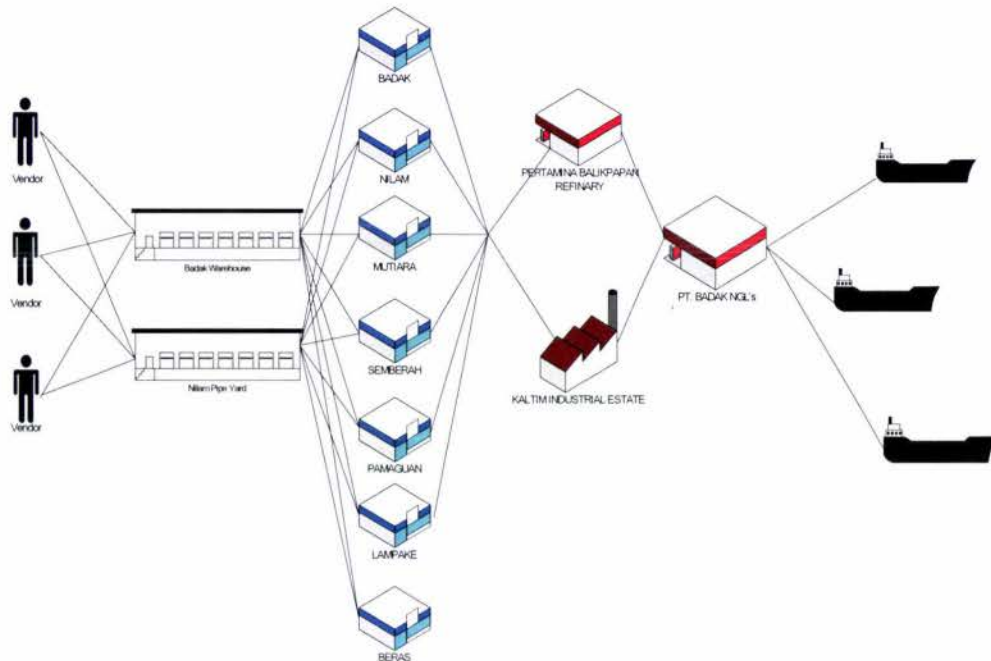


Figure.4.4. Supply chain network (Source: Own)

Supply chain business process

This section briefly describes the current supply chain business process in this company. The flow of business process is provided in figure 4.5. There are four fundamental elements that are included in the supply chain business process, namely the end user; warehouse; inventory and procurement. For the first step, ordered materials are documented in a Store Issue Request (SIR) document. This document is created by the MAXIMO system. Material availability is checked through the inventory databases. Unavailable materials are requested by producing a Material Requisition (MR) document to be sent to the Inventory subdivision. The inventory subdivision will then review the MR document for validity of material specification, price and item's category. After rechecking inventory availability and price, the approved MR list is sent to the Procurement subdivision.

Based on the information contained in the MR document, the Procurement subdivision generates a Request for Quotation (RFQ) document for suppliers in order to get a price quotation from them. After the supplier is chosen and the price has been approved by both parties, a Purchase Order (PO) is produced as the final document in the material ordering process.

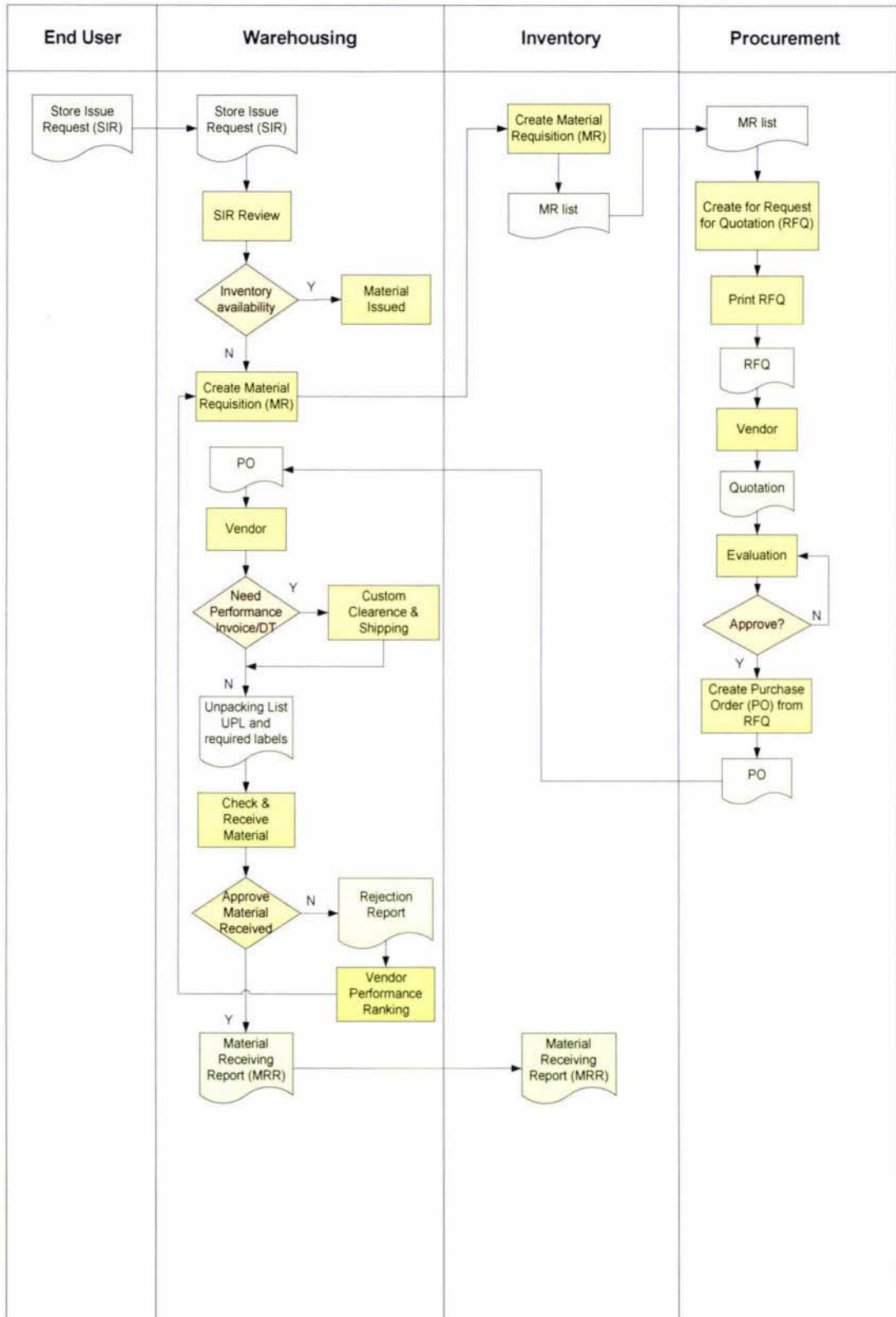


Figure 4.5. Supply Chain Business Process (Source: Own)

The Supply chain business flow is continued with the receiving process as part of the warehousing function. All information required in the receiving process is recorded in a PO document. Materials are received together with a Delivery Ticket (DT) or performance invoice document from the vendor, while material with incomplete documentation is returned to the vendor. The received materials are put on the unpacking list. Those materials will be checked and will be completely received after getting the approval from the receiving operator through the inspection process. The inspection process involves end users and the Operation Integrity Department (OID). Approved materials are reported in a Material Receiving Report (MRR) while unapproved materials are reported in a rejection report.

VICO Indonesia's supply chain strategy

In providing basic knowledge of the supply chain system in this company, a description of the current supply chain strategy is also important. This section presents a brief description of the supply chain strategy of each subdivision, such as procurement, inventory and also outsourcing strategy as an additional required system.

Procurement Strategy

The general strategy of procurement is to ensure the optimal buying process through the control process, follow up and reallocation of material when needed. Procurement strategy planning is important to determine the introduction of a new product, changes to material quality and price fluctuation (Stock & Lambert, 2001).

One of the examples of procurement sourcing strategy is an auto sourcing of material availability. This system is known as Accelerated Vendor Inventory Delivery (AVID). Its purpose is to achieve a better service level through better planning, increased productivity, optimised inventory level, maintained availability and a simplified supply chain management.

The AVID process is shown in the figure 4.6. Through an auto sourcing capability, all material requests are automatically converted into Material Requisition (MR) as a basic document in the purchasing process. This will also shorten the supply chain process. The AVID system is applied to handle material management and maintenance material replenishment. AVID helps the company to simplify its supply chain by shortening its replenishment and procurement process.

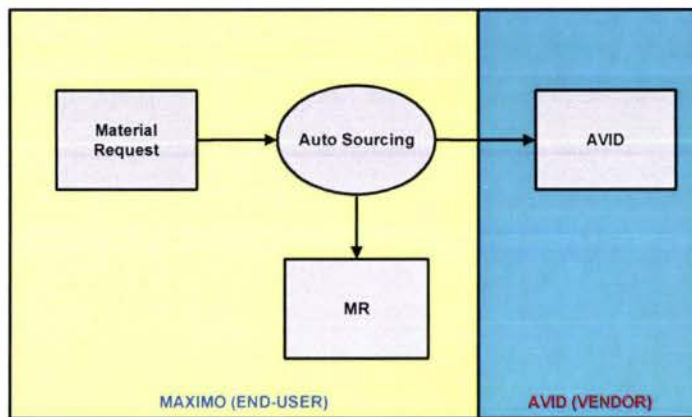


Figure 4.6. AVID business process (Vico Indonesia, 2007)

Inventory Strategy

Inventory is the vital element in the supply chain process. Its performances directly affect the whole supply chain performance. Poor inventory planning and control cause a poor performance of the supply chain. This company has implemented some strategies to improve its inventory system. Inventory strategy is divided into three sections; Re-ordering material, Physical Inventory and System Support (including Catalogue processing). Below are the descriptions of those inventory strategies.

a. Re-ordering process

Re-ordering process strategy is adopted by classifying three re-ordering processes. They are reordering processes based on Material Requirement Planning items, Usage history and Material Requisition (MR). The process is shown in the figure 4.7.

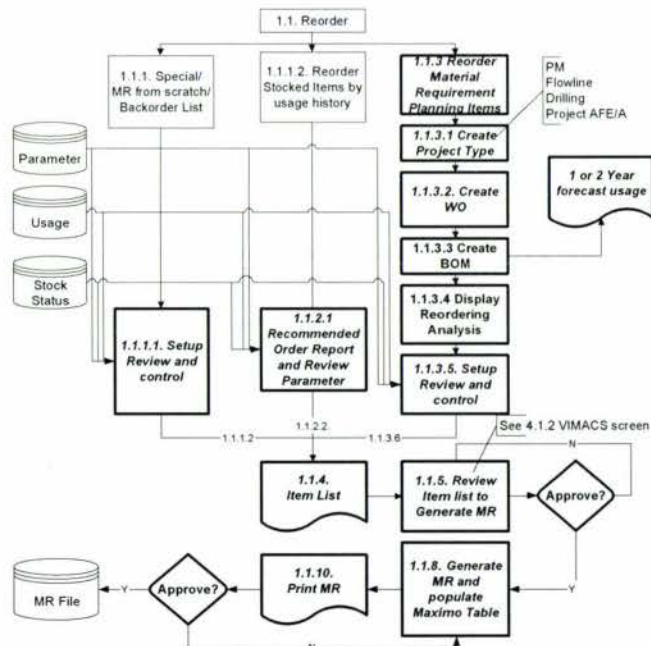


Figure 4.7. Reorder process (Vico Indonesia, 2006)

b. Physical Inventory

Physical inventory system is implemented based on inventory zone. All inventories in each zone are checked by using a count sheet. Physically re-counting items is only done for discrepancies in stock. The warehouse has the responsibility to find the root cause of material discrepancies in stock. The process of physical inventory is presented in the figure 4.8.

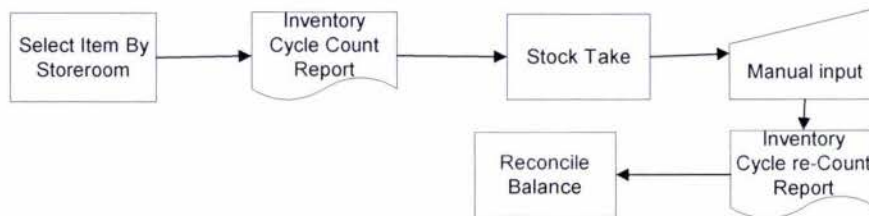


Figure 4.8. Physical Inventory (Vico Indonesia, 2006)

c. Support System

The inventory process is supported by an integrated system known as MAXIMO. Cataloguing is included in this system. The function of the cataloguing system is to connect VICO Indonesia as buyer with its vendors and manufacturers as shown in the figure 4.9. This company has applied the Intermat system to standardise the cataloguing system

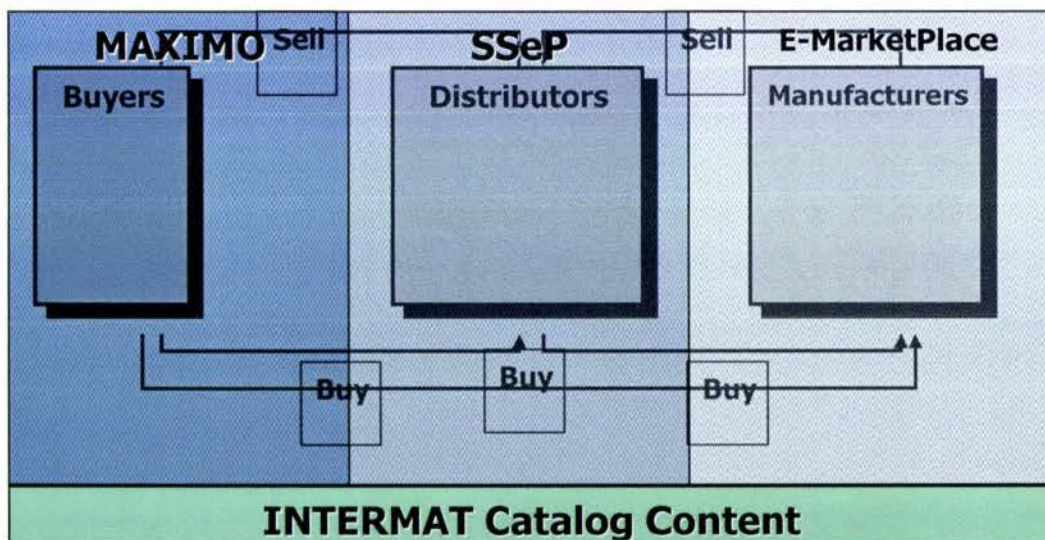


Figure 4.9. Cataloguing system (Vico Indonesia, 2006)

Outsourcing Strategy

Today, outsourcing strategy has been adopted by many successful companies as a tool to reengineer their system. This will enable companies to focus on their core business competencies. Logistical outsourcing is one of the examples of outsourcing implementation. The objective of logistical outsourcing is to have a better management of the supply chain with continuous improvement.

This company has adopted some outsourcing strategies. One of the strategies adopted is the General Material Contract (GMC) system. This is a consignment system that has been applied in order to replenish the general material. The consignment system is a process to shift the inventory ownerships or responsibilities to several key suppliers. The objective is to reduce inventory levels and investment and to increase the inventory velocity and turn over (Stock & Lambert, 2001). In this system, materials are located at the buyer's facilities but owned by suppliers. Buyer companies do not have to include the materials as their inventory until they use them and suppliers replace only what the buyer has used (Stock and Lambert, 2001).

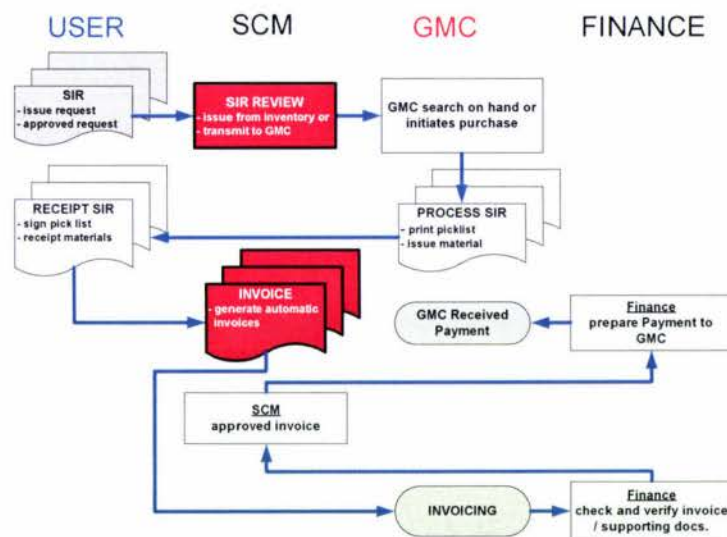


Figure 4.10. GMC Work Flow (Vico Indonesia, 2005)

The figure 4.10 shows the GMC workflow in processing a Store Issue Request (SIR) document. It shows a simple process of material order process. By implementing the GMC concept, the Supply Chain Management (SCM) department has shifted its responsibilities to the key suppliers to replenish the general material. The requested materials are automatically searched and purchased and in a relatively short time (within 24 hours) materials are delivered to users.

4.3. Integrated Warehouse Services (IWS)

Another strategy in implementing outsourcing is Integrated Warehouse Services (IWS) system. This is an example of outsourcing for warehousing functions. The objective of IWS is to transfer warehouse responsibilities to the reputable providers, thus, enabling the company to focus on its core business. The functions to be included in the scope of the IWS are warehouse operations, fuel handling operation, formalities/custom clearance, material expediting, inspection, receiving, waste handling, tubular inspection and maintenance.

Through the IWS, the company applies a new concept of warehousing system. A comparison of warehousing system, prior and after the implementation of outsourcing, is provided. It includes the comparison of warehousing operation, warehousing workflow and warehousing contract. The comparison gives a clear picture of achievement of improve efficiency through outsourcing. In addition, all information of the IWS practices is gathered through observation, in-depth interview process and secondary data.

4.3.1. Integrated Warehouse Service (IWS) background

A brief description of the company's previous warehousing system is provided to present the background reason of the IWS decision. The description of the company's previous warehousing system includes the discussion of scope of warehouse operation, warehouse workflow and the contract related to the previous warehousing functions.

Scope of Warehouse Operation

This company has a complicated warehousing system compared to the warehousing systems in other companies. In general, warehousing systems focus on the receiving activities, put-away activities, storage activities, shipping activities and order picking activities. Meanwhile, the customs clearance process is included in the company's warehousing system. The section below describes the various warehousing functions in this company.

Receiving function

This company has receiving points at several places. They are Badak, Balikpapan, Samarinda, Galendrong, Batam and Jakarta. Their function is to receive materials from the suppliers and other companies in a Production Sharing Contract (PSC).

Inspection function

The warehousing subdivision is responsible for checking all incoming material's quality, specifications and quantity. The purpose is to minimise the discrepancy of material stock.

Shipping function

The warehousing subdivision is also responsible for handling material shipping processes and services including the process of documentation.

Customs Clearance function

The company is responsible for performing services, such as, liaising with import Tax Collector Bank (Perception Bank), collecting the entire supporting documents supplied by the Government Departments, processing and obtaining approval from Government Departments.

Storing and issuing function

The objective of the storing function is to store material in the right place. It directly affects the performance of issuing activities. The issuing process is a process when materials are removed from stock and it is documented. The material movement is reported periodically and the inventory system will be updated in order to generate monthly and annual reports of material stock.

Previously, this company has a full control and responsibility of warehousing operation. Figure 4.11 presents the scope of warehousing operation together with its activities. There are four phases in the scope of warehousing; pre-receive phase, receive phase, acceptance phase and warehouse operation phase.

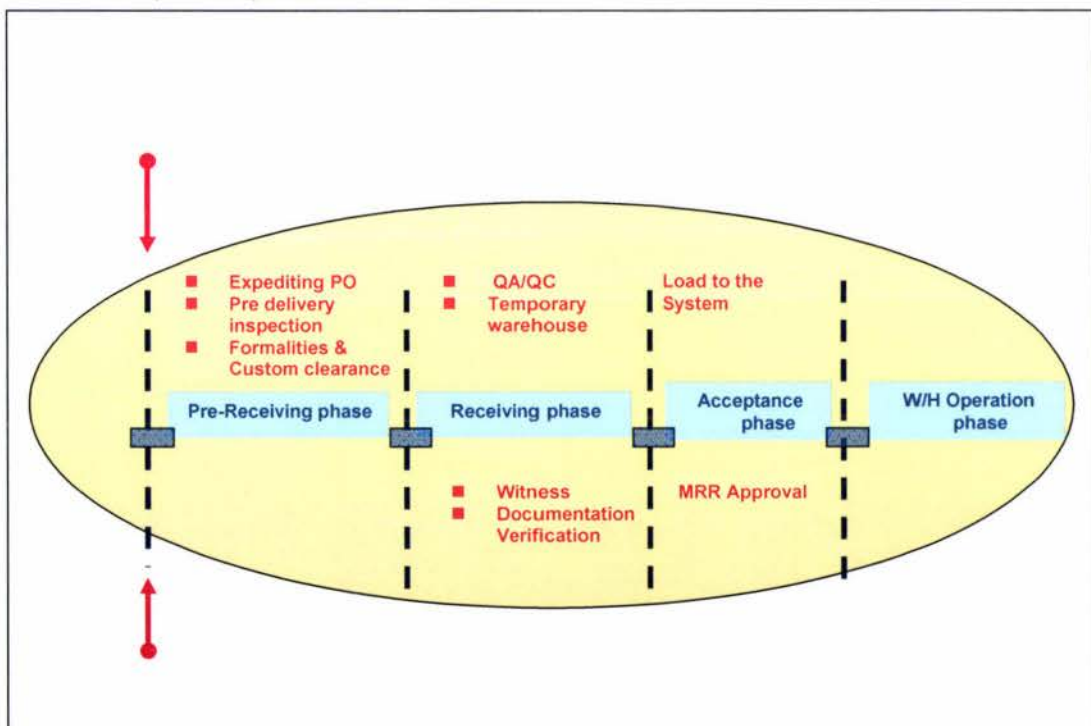


Figure 4.11. The scope of previous warehouse operation (Vico Indonesia, 2007a)

Pre-Receiving Phase

In pre-receiving phase, the scope of warehousing operations include expediting the Purchase Order (PO) process, pre-delivery inspection as the first inspection process of incoming material; and formalities and customs clearance processes.

Receiving Phase

The next phase in the scope of warehousing is the receiving phase. In this phase, further inspection of quality control and quality assurance is conducted. A witness of the inspection process is required for this phase. All documents of received material are verified by authorised persons. The last function of this phase is providing a temporary warehouse for the transit material accepted.

Acceptance Phase

In the acceptance phase, the required information of accepted materials is loaded into system. The information are material quantity, material storage location and other required administrative information. Material Received Report (MRR) is generated as a documented record of received material approval.

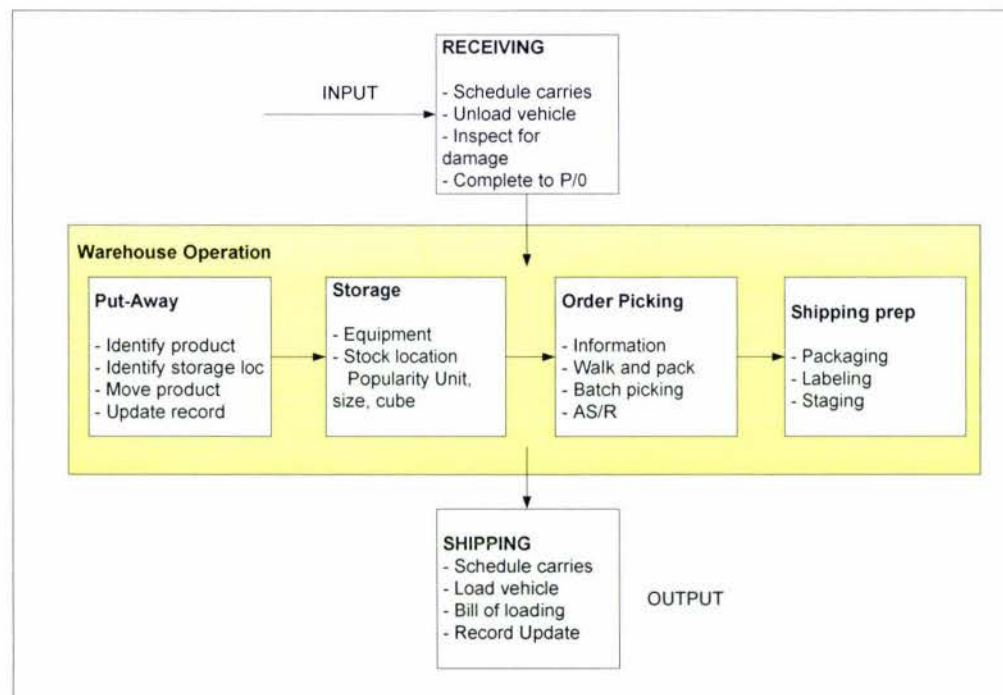


Figure 4.12 Warehouse operation phase (Mulcachy, 1994)

Warehouse Operation Phase

The final phase in the scope of warehousing is the warehouse operation that includes the put-away process, storing, order picking, and shipping preparation. This is shown in the figure 4. 12. The put-away process is a process where materials are placed in their location based on the information that appears in the system. This company applies the direct put-away method.

Material storage location is managed by a system that makes the put-away process easy. Another activity in this phase is storage function. This function is important due to its impact on material stock and product protection (Rushton et al., 2000). The next activity is the picking process that brings material together in the warehouse to meet the customer's needs (Rushton et al., 2000). The effectiveness of order picking has a significant impact on customer services, such as completeness and accuracy of filling the order and completion of orders. Picking lists are created based on user demand.

Warehousing work flow

Work flow of warehousing processes is presented in the figure 4.13. Warehousing processes begin with the receiving process where materials come together with copy of a Purchase Order (PO) document. The process is continued with the verification and inspection process. The verification process includes customs clearance processes, while the inspection process is conducted for all incoming materials. However, in special cases, there are some materials that do not need to be inspected and they are accepted directly. The rejected materials are returned back to the vendors. Vendors are responsible for replacing it.

All materials that have passed the inspection process are accepted and recorded in a Material Receive Report (MRR) document. Meanwhile, materials that do not meet specifications are returned back to the vendor to be replaced with new material. Next, materials are stored in the warehouse and will be issued as per material request.

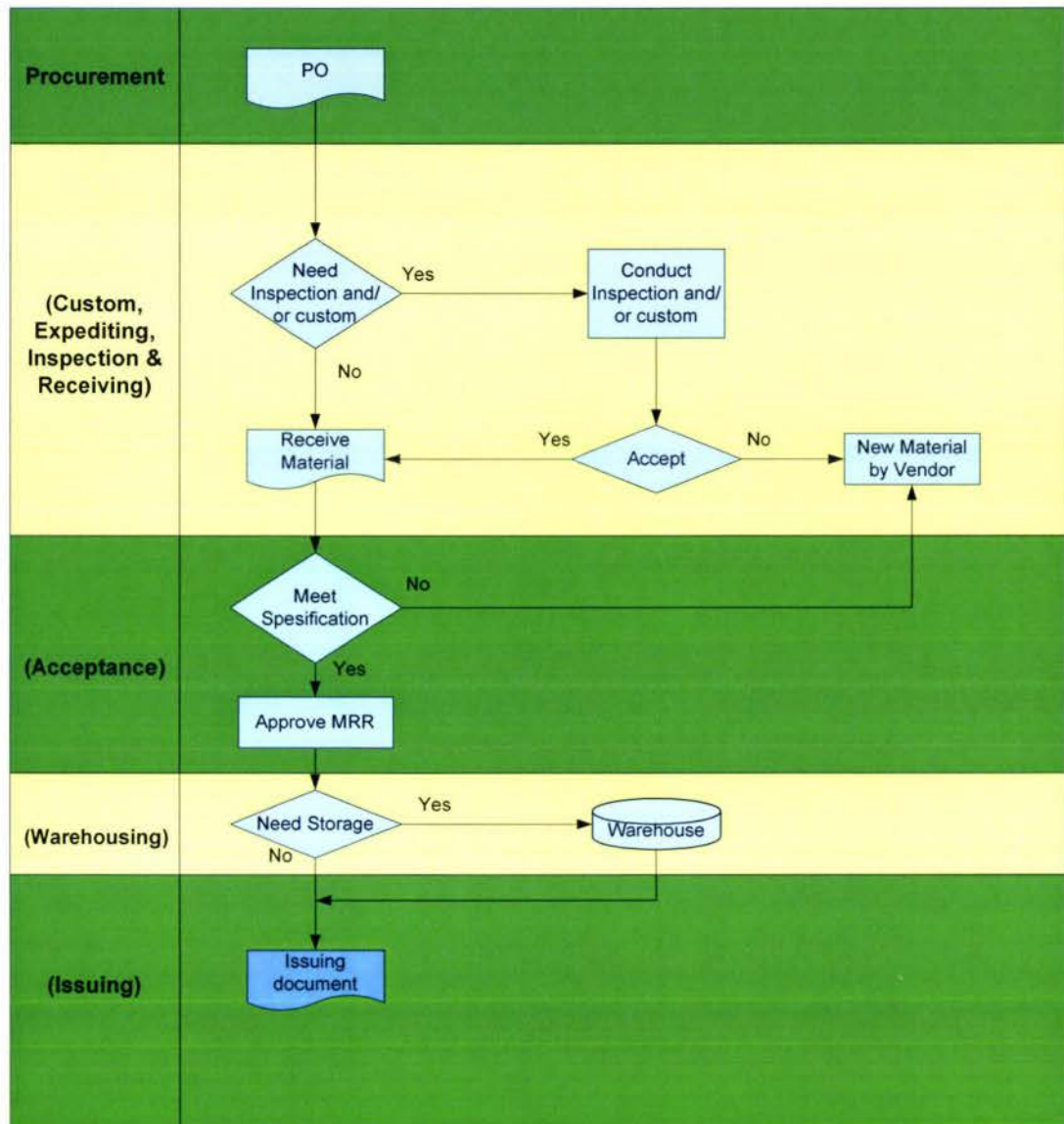


Figure 4.13. Warehouse work flow (Vico Indonesia, 2007a)

Previous Warehousing Contract

In the previous system, warehousing functions were run under six contracts. Unfortunately, they were not integrated very well, hence, the company had to give extra effort to maintain all of these contracts. The six contracts are as follows:

1. **Field Materials Support Services:** this is the manpower contract to run all daily warehousing operations such as expediting material, shipping, customs clearance, receiving, storing and issuing, procurement and inventory.
2. **Handling Material's Shipments & Customs Clearance:** To assist VICO-SCM in receiving or shipping the materials including customs clearance matters.

3. **Heat Treatment of Tubing and Threading Inspection:** To ensure that tubing is supplied or stored in complete compliance with the applicable standards/codes and all required specifications.
4. **Fuel Handling & Transportation:** To handle and transport VICO's fuel from Pertamina to VICO Saliki/Galendrong.
5. **Treatment and Disposal of Waste B3:** To assist VICO-SCM in handling, treatment and disposal of hazardous waste (B3).
6. **General Materials Contract:** A contract to support VICO-SCM in providing the general materials required by field users.

4.3.2. Decision making process of IWS

This section presents a decision making process of IWS as a new concept in warehousing operational practices. Outsourcing decisions can lead to benefits of lower costs, access to knowledge, and at the same time, it can cause a decrease of motivation among in-house-staff, increased level of dependency on external organisations and other pitfalls (Greaver, 1999). Therefore, the decision to outsource is not always a good one and it must be evaluated carefully. The purpose of this section is to review the practice of the outsourcing decision making process.

The decision making process of IWS is divided into three steps. The first step focuses on the reason for the company to outsource or to build an in-house capacity. The second step is concerned with warehousing activities that are decided to be outsourced. The third step is choosing an outsourcing partner.

In the organisational structure, the first phase of the outsourcing decision making process is made at managerial the levels of the company. The decision in the second phase is made at the mid-level. The decision in the last phase is a specific decision and may therefore be made at the lower level of this company.

IWS Reason's for Outsourcing

IWS has four reasons for outsourcing warehousing. The reasons are:

1. The Supply Chain Management (SCM) department of this company ran all warehouse daily activities and maintained six different types of warehousing contracts. Outsourcing these activities leads to a considerable reduction in operating costs.
2. There is a continuous decrease in the company's warehouse personnel due to normal attrition that directly causes loss of manpower and knowledge. This results in the need to replace these losses in order to operate daily warehousing activities. Outsourcing minimises these problems.

3. With the need to remain competitive in today's business environment, the company was encouraged to shift the handling of the logistical operations to the professionals. Outsourcing provides the expertise to help company to achieve their goal.
4. Companies are under pressure to focus on their core business. Outsourcing provides a service to manage the company's non-core business.

By considering these reasons, the managerial level decided to outsource some of its warehousing operation. The transferred responsibilities and scope of work of the IWS are stated in the contract.

Warehousing functions that are included in the IWS

The second phase of the outsourcing decision making process is focusing on the decision to choose warehousing functions that are included in the scope of the IWS. There are six warehousing activities that were decided to be outsourced. They are Warehouses operations (Nilam, Badak/Project), Fuel Handling operations (Badak, Saliki, Galendrong), Formalities/Custom Clearance, Materials Expediting, Inspection and Receiving, Waste handling and Tubular Inspection & Maintenance.

1. Warehouses operations (Nilam, Badak/Project)

There are two main warehouses, the Nilam warehouse and the Badak warehouse. Inventory materials are divided into three categories; capital-controllable material, non capital-controllable material and non capital-non controllable material. The Nilam warehouse mostly holds capital-controllable material and non capital-controllable material, where the Badak warehouse holds non capital-non controllable material which consists of general material and spare parts.

2. Fuel Handling operations (Badak, Saliki, Galendrong)

The receiving and distribution process of fuel is outsourced to the service provider. Service provider cooperates with freight forwarding company to ship fuel from Pertamina.

3. Formalities/Customs Clearance

In providing services to handle the customs clearance process, the service provider cooperates with the shipping agent, the Import Tax Collector, the Office of the Directorate General of Customs and Government Offices & Institutions that are related to this service.

4. Materials Expediting, Inspection and Receiving

The material expediting, inspection and receiving functions are also outsourced to the service provider. They are responsible for the risk of delay to material delivery and material quality discrepancies.

5. Waste handling

The responsibility to handle the treatment and disposal of hazardous waste are outsourced to the service provider.

6. Tubes Inspection & Maintenance

The responsibility to ensure that tubes are supplied in complete compliance is outsourced. The provider's services include the treatment of tubes while they are stocked in the warehouse.

Service Provider selection

An organisation is increasingly reliant on providers and must manage them effectively. Outsourcing requires a high level of provider performance. (Kannan & Tan, 2003). Therefore, the selection process of an outsourcing service provider is included in the outsourcing decision making process.

In practice, the provider selection process is divided into several phases and consists of several criteria. The first phase is selecting the provider based on their performance in health, safety and environment. After the providers have passed this phase, the provider's personnel criteria are measured. The qualifications include the personnel's level of education, experience in the related position and required certification. Another criterion is the availability of the provider's transportation, equipment and tools to support the provider's performance. Personal qualifications and the availability of the provider's equipment are included in the second phase of the provider selection process.

Contractor Health, Safety and Environmental Management System (CSMS)

The first phase in the provider supplier selection in this company is the Contractor Health, Safety and Environmental Management System (CSMS). It is designed to improve the company's and contractor's health, safety and environment (HSE) performance. The participation of both company and contractor are essential to achieve this goal. While each party plays its role in ensuring the ongoing safety, there is also an opportunity to have further improvement in partnerships between company and contractor

All activities in the CSMS are managed in an on-line integrated system that is accessible to all relevant personnel, including the management team consisting of Line Managers, Vice President and Senior Manager. This system enables management to monitor CSMS activities which consists of the qualification phase and the field implementation phase. There are six steps in CSMS and they are divided into two groups and presented in figure 4.13.

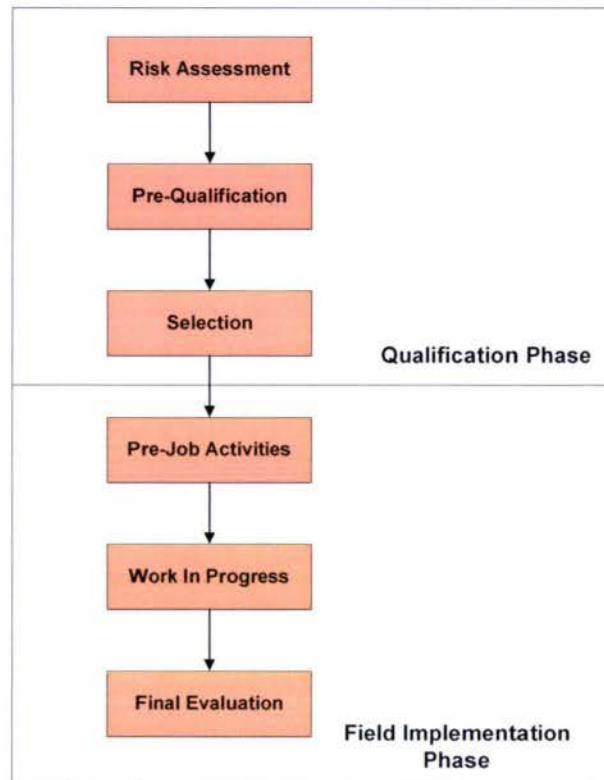


Figure 4.14. CSMS Steps (Vico Indonesia, 2001)

The process of the Contractor Safety Management System (CSMS) begins with the qualification phase which consists of three steps; Risk Assessment, Prequalification and Selection process. The objectives of this phase are to review the level of HSE risk associated with the work and classified in different levels.

1. Risk Assessment

Objective: To describe the work and to assess the HSE risks associated with the work.

Process: VICO is responsible to make an initial assessment of the HSE risks involved in execution of the work. The focus of the assessment is to evaluate the inherent hazards in conducting the work. The company is responsible for conducting the risk assessment prior to initiating the contract. The risks assessed can be characterised as low, medium or high.

2. Pre – Qualification

Objective: To screen the potential contractors regarding their experience and capability to undertake the activities in question safely and have awareness of local community social impacts.

Process: In this process, all contractors will be pre-qualified. Contractors that passed the previous prequalification for the same work are automatically included in the bidder list. Once the contractor passes the initial evaluation, the inspection of contractor's facilities and audit of contractor conformance to the pre-qualification documents are followed.

Contractors that do not pass the pre-qualification process will be given feedback informing them of the reasons why they did not qualify and advise them of corrective actions.

3. Selection

Objective: To assess whether the HSE Plan and the bid evaluation criteria have been met by the selected contractors.

Process: This step is parallel with the bid evaluation process within the procurement process framework and it is considered as part of the technical evaluation. The selection criteria should consider the significant aspects such as costs, technical ability, reputation and the ability to perform the works within the specified safety, time and quality to meet the company's requirements. The bid clarification is required in order to ensure the bidders understanding of the bid requirements, workplace, and applied rules and regulations. The pre-bid and site visit meetings are defined as mandatory for the bidders to participate. Failure to attend the pre-bid and site visit meeting will disqualify the bidder.

Review and evaluation of HSE program undertaken by contractors is required during bid evaluation. The criteria and documents that have been evaluated during the pre-qualification process may be re-evaluated and compared among all bidders. Moreover, site inspections may be conducted to ensure conformance of what the bidders proposed.

The field implementation is the next phase in the CSMS process. The objective of this phase is to ensure compliance of the company's HSE standards prior to, during and after the performance of work. However, the discussion of CSMS methods in selecting the contractors is limited to the qualification phase.

Personnel Criteria

In the second phase, the provider will be selected based on their qualifications and capabilities of each specified job. In performing the services, the provider should assign suitable qualified personnel. A general requirement is that the age of provider personnel is no more than fifty (50) years at time of agreement. The company has the right to reject provider personnel if they do not comply with this requirement. The criteria are assigned for different types of jobs. The personal criteria are provided as follows:

1. Receiving and QA/QC Officer

- Hold minimum Diploma Certificate with minimum of three (3) years of working experience or Senior High School Diploma with minimum of five (5) years working experience in receiving and QA/QC activities;
- Has a good written and spoken English ability; and
- Familiar with oil operating materials (mud & chemicals, tubular and general materials).

2. Material Specialist

- Hold minimum Diploma Certificate with minimum of three (3) years working experience or Senior High School Diploma with minimum of five (5) years working experience in warehousing, shipping, custom clearance, store keeper, data control, issuing material, physical inventory, tubular handling, mud chemical handling and material handling activities.
- Has a good written and spoken English ability; and
- Familiar with oil operating materials (mud & chemicals, tubular and general materials).

3. Expediting Specialist

- Hold Customs Specialist Certificate;
- Understand the Government Customs procedure;
- Hold minimum Diploma Certificate (D3) with minimum of three (3) years of working experience or Senior high School (SLTA) Diploma with minimum of five (5) years working experience in expediting material;
- Has a good written and spoken English ability; and
- Familiar with oil operating materials (mud & chemicals, tubular and general materials).

4. Commodity Specialist

- Hold minimum Diploma Certificate (D3) with minimum of three (3) years of working experience or hold a Senior High School (SLTA) Diploma with minimum of five (5) years working experience in various material matters
- Has a good written and spoken English ability; and
- Familiar with oil operating materials (mud & chemicals, tubular and general materials).

5. Material Assurance Specialist

- Hold minimum Diploma Certificate (D3) with minimum of three (3) years of working experience or Senior High School (SLTA) Diploma with minimum of five (5) years working experience in various material matters;
- Has a good written and spoken English ability; and
- Familiar with oil operating materials assurance (mud & chemicals, tubular and general materials).

6. Senior Heavy Equipment Operator

- Hold minimum a Senior High School (SLTA) Degree with minimum of three (3) years or Junior High School (SLTP) Degree with minimum of five (5) years working experience in operating of heavy equipment;
- Understand instruction given in English;
- Has a valid B2 driving license and SIO MIGAS; and
- Has knowledge of equipment engines.

7. Inspection Supervisor

- Must be fluent in written and spoken English;
- Should have minimum American Society for Non Destructive Testing (ASTN) Level-2 certification (must), certified inspector for Casing and Tubing by MIGAS and other certifications which are required to perform these services;
- Must hold University Degree or equivalent Technical training in an Engineering discipline;
- Must be certified as Level-2 by American Society for Non-destructive Testing (ASNT) TC1A or equivalent in Non Destructive Test (NDT), Magnetic Particle Test (MPT) ultrasonic, and radiography;
- Must have extensive experience in conducting and supervising "in-plant" tubular inspection procedures including thread inspection to API specifications; and
- Must have definite skills in preparing comprehensive reports of inspection result in English, including the statistical analysis.

8. Test House Inspector

- Must be fluent in written and spoken English;
- Must be able to demonstrate thorough knowledge of API and American Society of Testing Material (ASTM) requirements for physical testing; and
- Must have experience in conducting and witnessing House Test Procedures including tensile, flattening, hardness and guided bend tests, as well as metallographic examination to ASTM or equivalent standards.
- Bench, Hydrostatic and NDT Inspector
- Must be fluent in written and spoken English;
- Must be certified as a level 1,2, or 3 by ASNT TC-1A; and
- Must have experience operating and or supervising the operation of equipment using the same basis of inspection as that which is used by mill e.g.: electromagnetic induction, eddy current, X-ray, etc.

9. Mill Audit Inspector

- Must be fluent in written and spoken English;
- Must hold University Degree or equivalent Technical training in an Engineering discipline;
- Posses a broad knowledge in management and technical especially in tubular and valve;
- Inspector should be able to evaluate mill/ manufacture capability in accordance to specifications API 5CT, API 5L, API 6A;
- Must have definite skills in preparing comprehensive reports of inspection result, in English, including statistical analysis of those results;
- Possessed American Standard Non-Destructive Testing (ASNT) minimum level2; and

- Must have ten (10) years experience in tubular and valve inspection.

Provider transportation, equipment and tools

The availability of provider transportation, equipment and tools are other criteria of the provider selection process. To perform the services in accordance with the terms and conditions of the agreement, the provider/contractor should provide the required transportation, equipment, and tools in adequate numbers to perform the provider's services adequately. The equipment is listed below:

1. Station Wagon, 4 Wheel Drive (7-Seaters), 2003 model or new up, Complete with Air Bag, ABS (Anti-lock Braking System), Air Conditioning, Right hand drive, Driver, and seat belts, including fuel and maintenance;
2. Scanalog;
3. Analog;
4. Sectalog;
5. Electro Magnetic for the EMI (Electro Magnetic Inspection);
6. Forklift, 5 tons capacity including an operator;
7. Aluminium shelf truck;
8. Hand Truck, 2000 kg capacity;
9. Calliper (one ea graduated in inch and one ea graduated in mm);
10. Drum lifting slings; and
11. Telescopic Wheel Crane 50 Ton including operator and rigger. 1999 model or new up.

Company has the right to inspect the provider's equipment at any time. Contractor should make its tools and equipment available for inspection at any time requested by the company. This condition is included in the agreement between provider and company.

4.3.3. Integrated Warehouse Services (IWS) practices

The practice of the Integrated Warehouse Services is explored in this section. It begins with the description of the IWS objective, followed by a discussion about the scope of IWS work. The comparison between the warehousing work flow prior and after the implementation of the IWS is also provided. Some of the transferred responsibilities from the company to the provider are presented in another part of this section. Considering that the Service Level Agreement (SLA) is important in Contract Management, this issue is discussed in the last part of this section.

IWS objectives

The objective of the IWS is to propose the outsourced warehousing operations in which all warehousing activities are managed by a reputable outsource provider.

Scope of IWS

Figure 4.15 presents the scope of the IWS. Through the five steps of the IWS operation, warehousing functions are transferred to a reputable provider, while the company plays its role in controlling and monitoring the warehouse outsourcing system.

Procurement process phase

Procurement phase is not included in the scope of warehousing functions, but its outcome is necessary for the IWS process. The Purchase Order (PO) document is generated by the procurement sub department. This document is necessarily important in the next phase of the warehousing operation.

Pre-Receiving Phase

In this phase, the risk of a discrepancy in material quantity and specifications is transferred to the provider. Other functions, such as the customs clearance and material expediting are also transferred to the reputable provider. The company's role is issuing work orders for the outsourcing operation as part of the controlling and monitoring action.

Receiving Phase

Significantly different from the previous warehousing system, in the new system, some warehousing activities are outsourced. The activities in the receiving phase include Quality Assurance (QA)/Quality Control (QC) inspection process, temporary warehouse, witness of inspection process and document verification. Controlling and monitoring action is done by the company through their role as witness in the inspection process and their job to approve the received material as the final step in the receiving phase. Previously, all functions above were handled by the company and it had full control over all warehousing activities.

Acceptance Phase

The process continues with the acceptance phase when all materials are fully received with the completed documentation. Materials are accepted by loading the information into the system and generating a Material Receiving Report (MRR) document. In the previous system, both functions were completed by the company. In the new system of warehousing, the responsibility to load the required information of received material is outsourced, while generating a Material Receiving Report (MRR) document is kept in-house. This is part of the controlling and monitoring action of the company.



Figure 4.15.Scope of Integrated Warehouse Services (Vico Indonesia, 2007a)

Warehouse Operation Phase

This is the last phase in the IWS scope. The activities include material storing, maintenance, material issue and physical inventory. Due to some limitations, these functions are outsourced only for Nilam Warehouse, while warehouse operations in Badak Warehouse are still kept in house.

The scope of the IWS is further described by presenting the services provided by the provider as stated in the agreement between both parties. The definition of the services are divided into receiving services, material shipment handling services, customs clearance services, inspection services and Nilam Warehouse operation services.

1. Receiving services

The provider is responsible to provide the following services:

- Conduct receiving activities of company's material and associated supporting documentation;
- Providing tools and equipment to support the receiving process;
- Control and monitor expediting by suppliers;
- Conduct routine checking and follow up on the expediting process by supplier and its problems, e.g. Outstanding Purchase Order (PO), PO late promise delivery date and PO discrepancy. Also, make inquiries of orders from authorised various suppliers; and

- e. Prepare receiving report for VICO Indonesia for all materials which have been received.

2. Material shipment handling service

The provider at its own cost, should be responsible for providing any or all activities and facilities required in performing materials shipment and handling service including the process of documentation handling, as follows:

- a. Monitor shipping activities and associated paper works;
- b. Prepare material packing and handling;
- c. Provide land freight from PT. Badak, Bontang ports to Badak/Nilam Warehouse;
- d. Provide land transportation to transport container from Balikpapan, Botang, Badak-Nilam to Badak / Nilam Warehouse; and
- e. Provide transportation to other places that the company might request.

3. Customs clearance services

To perform this service, the provider should be required to liaise with the related government organisations. After receiving a Work Order (WO) document from company, relating to customs clearance matters, provider is responsible to collect the entire supporting documentation, process and obtain all required approval with regards to Government regulations. Provider is expected to review and ensure the accuracy of all the documents that have to be signed by Company's Representative, and Contractor shall be held responsible for any mistakes or confusion caused both now and in the future.

4. Inspection Service

The provider is responsible for processing the Mill & Loading Surveillance, Drill Pipe Inspection and Tubular Coal Tar Enamel Coating Inspection to ensure that the materials meet with the standard specification and to monitor the various processes of manufacturing and quality control that is carried out by tubular goods manufacturers as designated by the company.

5. Nilam Warehouse Operation Service

The provider is responsible for providing support to daily activities in the operation of the company's warehouse at Nilam. Provider should be responsible to provide the following service:

- a. Conduct routine up keeping and maintaining materials, tools and equipments which has been stored in the warehouse;
- b. To arrange the materials as required by the company and meet with Safety and Environmental regulations;
- c. Conduct routine reports about warehousing conditions to update the company;
- d. To keep and maintain company's equipment in a serviceable condition;

- e. Operate company's heavy equipment/ forklift to assist issuing, receiving and tubular maintenance;
- f. Prepare company's equipment daily service and usage report;
- g. To conduct the daily operation of mud, chemical and construction material requirement;
- h. To perform store keeping services; and
- i. To perform property services.

The transfer of warehousing responsibilities

Table 4.5 presents the list of activities in the warehouse that are outsourced to a reputable provider. In the previous system, all warehousing functions were handled by company (VICO). The company is responsible for all potential risks that might happen in the warehousing operation. In the current system, through the implementation of the IWS, the company transferred most of its warehousing operations to a reputable provider together with their potential risks. However, some warehousing functions are kept in-house in order to control the outsourcing activities and warehouse performance.

No	WH Operation	Previous	Current		Remark
		VICO	VICO	IWS	
1	Receiving at point	X		x	
	Badak	X		x	
	Balikpapan/Samarinda/Galendrong	X		x	
	Batam	X		x	
	Jakarta	X		x	
	Country of Origin	X		x	
2	Inspection to the incoming Material	X	X	X	VICO technical clarification
3	Receipt Material as Field Returned	X		X	
4	Receipt Materials from other PSC	X	X	X	VICO for approval
5	Receipt Materials from suppliers	X	X	X	VICO for approval
6	Receiving Raw Materials for Civil Construction	X		x	
7	Receiving for Hi-Tec/Specific Materials	X	X	X	VICO for technical clarification
8	Receiving of line pipes and OCTG	X		X	
9	Receiving sec. conduct monthly closing thru MAXIMO	X		X	
10	Shipping & Packaging	X		X	
11	Customs Clearance Process	X	X	X	VICO for monitoring
12	Storing	X		X	
13	Generate Monthly & Annual Report	X		X	

	for Storing					
14	Inventory Maintenance	X			X	
15	Store Keeping Inspection	X			X	
16	Store Keeping Physical Inspection Report	X			X	
17	Issuing Documents	X		X	X	Signed and approved by VICO
18	Pre-issuing Preparation	X			X	
19	Issuing Process	X			X	
20	Physical Inventory (Optional)	X		X	X	VICO for approval
21	Physical Inventory Stock Adjustment Report	X			X	
22	Warehouse Planning & Control	X			X	
23	Physical Inventory Reports (Optional)	X			X	
24	Write off and Disposal (Optional)	X		X	X	VICO for approval
25	Project Materials	X			X	
26	Surplus Materials from Projects	X			X	
27	Materials on Loan from other PSC	X		X	X	VICO for review and approval
28	Purchase of Material from other PSCs	X		X	X	Based on user request
29	Repair and Return Materials	X		X	X	VICO for review and approval
30	Inter AFE Materials	X			X	
31	Filing	X			X	

Table 4.5. Shift of responsibilities of Integrated Warehouse Services (Vico Indonesia, 2007a)

The specific responsibilities of each party are described in the next part in this section. The objective is to give a deep understanding of the IWS practices. These are stated in the contract agreement between company and provider.

Provider Responsibilities

To conduct the services, provider should have the following responsibilities:

1. Expedite and monitor all progress of Purchase Order (PO) to ensure on time delivery. Any problems that cause late delivery should be reported within twenty four (24) hours to the company for solution;
2. Obligation to meet material specifications as required by the company. Incorrect materials or damaged materials received are part of the provider's responsibilities and the provider is obligated to replace these materials;
3. Keep and maintain all the materials and equipment in Nilam Warehouse within the company's standard procedure. These materials and equipment should always be in good condition and ready for use at any time;

4. Provider should return the company facilities upon completion of the Agreement in good condition;
5. Provider should be responsible for repairing Nilam Warehouse if damaged by provider without interruption to services;
6. Have capable expediter which will coordinate with the company's personnel to supervise and control the process of buying the materials;
7. Have commodity specialist and material assurance specialist to supervise and control the specification of materials as company's required;
8. The provider's representative, who will be responsible for the services operation, must be available by phone for 24 hours a day, 7 days a week;
9. Maintain company's materials in good condition while transporting;
10. Provide good work conditions so that services can be performed effectively and efficiently;
11. Maintain excellent performance in order to meet company's objectives;
12. Providing services under this Agreement in accordance with the company's safety standard; and
13. Provide hardware and software which need to be compatible with the company's software.

Company's Responsibilities

In the implementation of the IWS, the company is responsible for controlling and monitoring the outsourcing activities and warehousing performance. The company's responsibilities in the practice of Integrated Warehouse Services are as follows:

1. Provide overall direction of services, work programs, priorities to provider through provider's representative;
2. Perform regular inspections of services rendered by provider;
3. Perform supervision and evaluation of provider's performance;
4. Issue the Work Order (WO) to provider based on provider's requirement;
5. Coordinate with provider in terms of issuing Work Order (WO) especially for delivery time and location of materials received;
6. Give information related to the buying process of materials including name of suppliers and suppliers' locations;
7. With no obligation, provider can use company's equipment which is in the company's area, to support these services with no cost to provider;
8. Provide overall direction of the services, work programs, and maintenance schedule of company's warehouse area to provider;
9. Provide office, warehouse and supporting equipment for provider's use in Nilam Warehouse; and
10. Company reserves the right to perform audit, using internal auditor or third party on this Services.

Integrated Warehouse Services (IWS) Work Flow

There is a slightly different warehousing work flow after the implementation of IWS. The work flow of warehousing begins with the issuing process of a Work Order (WO) for every outsourcing task in the Integrated Warehouse Services. A Work Order (WO) document is generated based on the information appearing in the Purchase Order (PO) document and Material Requisition (MR) document for every incoming material. All services of provider should be performed based on the Work Order (WO) document. This document is issued by the company and approved by the company's representative as part of the company's control and monitoring action of the outsourcing practices.

Next, the warehousing work flow continues by verifying the Purchase Order (PO) document and determining if there is a need for material inspection and/or customs clearance process. The inspection and customs clearance process is outsourced to the provider, and they are responsible for its every potential risks. The warehousing work flow continues further, with all received material that meets specifications being approved by the company. All accepted materials are recorded in a Material Receipt Report (MRR) as part of the company's responsibility.

On the other hand, those materials that do not meet the specifications should be replaced with new material. Significantly different from the previous warehousing system, the responsibility to replace the rejected material is transferred to the provider. The new materials will proceed through all steps in the new warehousing system. The next step is to store the material into the warehouse, and as presented in the figure 4.16, this process is part of the provider's responsibility. Issuing material is the last process in the warehousing work flow and the company is responsible for this process and the related documentation.

Service Level Agreements (SLA)

Service Level Agreements (SLA) is frequently used to clarify the Scope of Work (SOW) by specifying in detail the responsibilities of each party for specific activities, events and tasks. It also has been used to describe the minimal level of work (Cavinato et al., 2006). However, in the practices of Integrated Warehouse Services, the Service Level Agreement (SLA) only covers some particular functions. As stated in the contract agreement, service level agreement (SLA) includes the shipping process and the duration of processing customs clearance documentation for material.

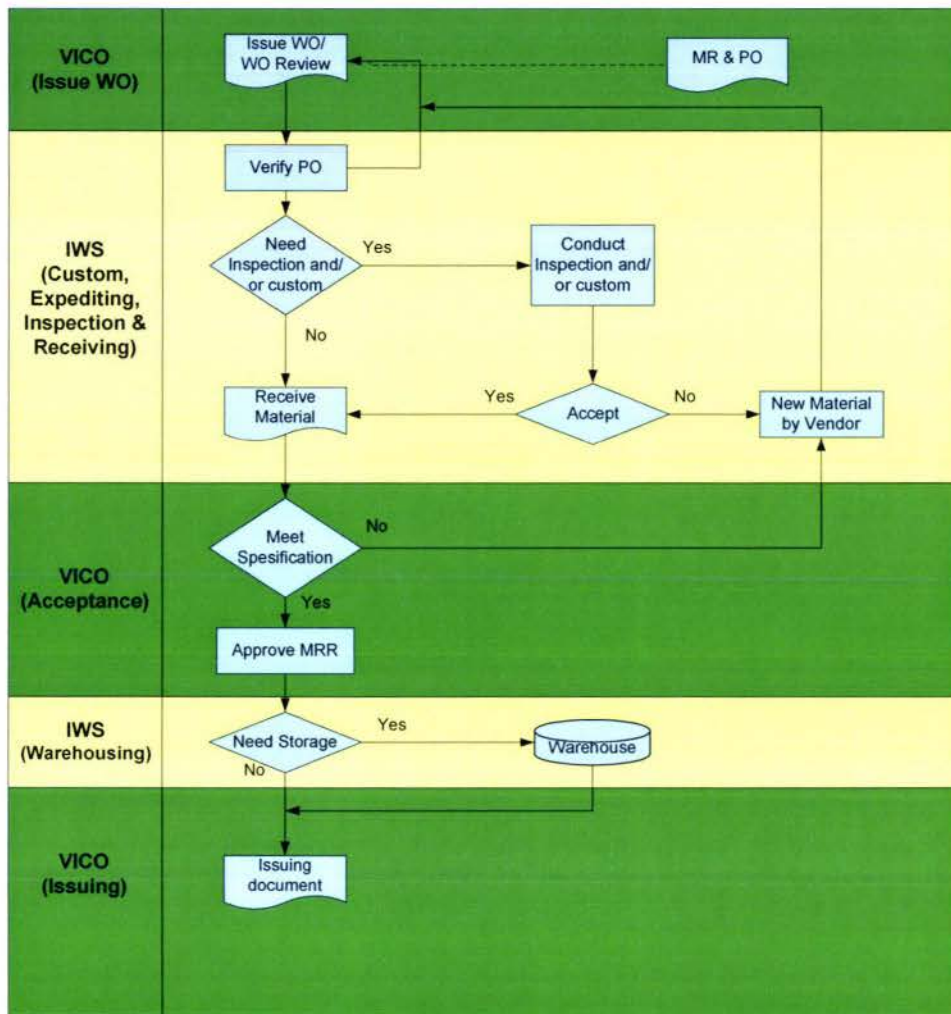


Figure 4.16. Integrated Warehouse Services workflow (Vico Indonesia, 2007a)

Chapter Five: ANALYSIS OF INTEGRATED WAREHOUSE SERVICES PRACTICES AND ISSUES

5.1. Introduction

The analysis of Integrated Warehouse Services practice is carried out in two ways, qualitative and quantitative data analysis. Through the Grounded Theory method, the qualitative data is analysed. This qualitative analysis forms the hypothesis that is tested through the quantitative research. It provides the measurement for questionnaire development. The quantitative research is done through the survey questionnaire that has been distributed to all warehouse personnel including the managerial team. The feedback from the questionnaire is used to analyse and investigate the respondent's perspective on the practices, issues and improvement opportunities of Integrated Warehouse Services.

5.2. The qualitative data analysis

The qualitative data analysis is carried out based on The Grounded Theory method. The process of The Grounded Theory was discussed in the research methodology chapter. In order to analyse the results of participant observation and unstructured interviews, this research has two sections in its analysis. They are the analysis of outsourcing strategic planning and the analysis of outsourcing implementation strategy. These concepts are divided into several categories and they are analysed by discussing the relationship between categories. The outcome of this process forms the hypothesis for the quantitative research.

5.2.1. Outsourcing strategic planning

Outsourcing is being considered as a strategic plan to achieve competitive advantage. It has been proven that outsourcing processes are relevant as a strategic option for companies to focus on their core competencies (Bettis, Bradley, & Hamel, 1992; Hamel & Prahalad, 1994; Dobler & Burt, 1996; Hines & Rich, 1998).

One of the potential pitfalls of outsourcing is the poor planning of outsourcing strategy. This is related to bad employee morale (Lonsdale & Cox, 1998). Outsourcing potentially impacts on negative employee reactions. Another potential risk is the loss of cross-functional contact between the outsourcing partner and in-house employees. In order to specify the basic agreement of outsourcing, the company must know exactly the knowledge and skills that are required for the particular scope of outsourcing. It is necessary to understand whether companies are equipped with the necessary skill and knowledge to outsource the particular in house activities (Sangam, 2004).

The analysis of outsourcing strategy planning is divided into several categories. They are outsourcing decision making process, the scope of outsourcing, provider selection process and personal criteria.

Outsourcing decision making process

In the decision making process to use the Integrated Warehouse Services (IWS), it has been confirmed that the major aspects which influence this process are core competencies, loss of manpower and knowledge and inefficient contract management (Vico Indonesia, 2007a).

The decision to use Integrated Warehouse Services is made by considering the benefits and risks of outsourcing. Other important decision factors, such as cost, personnel knowledge, asset availability, flexibility must also been considered. The unstructured interview was conducted with the managerial team. It has been found that there are many important factors that have not been considered in the current outsourcing decision making process. One of them is the interaction between provider and company organisation. Lack of strategic planning in organisational interaction potentially causes poor cross functional management and performance of the service. Therefore, there is a need for companies to analyse the strength, weaknesses, opportunities and threats of the outsourcing concept before implementation.

The scope of outsourcing work

The scope of work in the Integrated Warehouse Services (IWS) is analysed in order to have a clear understanding of the warehousing functions. The misinterpretation of the scope of outsourcing activities may cause a failure in outsourcing implementation (Greaver, 1999).

As stated in the literature review, outsourcing activities are divided into three different levels. They are transactional, tactical and strategic activities. In the implementation of Integrated Warehouse Services, generally, the warehousing activities in the strategic level and some warehousing activities in the tactical level are managed in house, while the transactional activities are outsourced. Warehousing activities in the strategic level are kept in house in order to control and monitor the warehousing operation in the transactional and tactical level which is normally done through an outsourcing provider.

However, from the information gathered through the unstructured interviews with the warehouse section head and manager, it has been found that the company has not distinguished the activities in the strategic, tactical and transactional level. Consequently, some activities in the transactional level, such as put-away, storing, order picking and issuing material are kept in house due to some limitations in the internal warehousing system. It makes the outsourcing process of warehousing functions difficult. It has been suggested to expand the scope of

Integrated Warehouse Services in the future, to include all transactional and tactical activities, so the company can fully focus on strategic activities that will optimise the warehousing operation and its performance.

The clarification of scope of work is frequently specified in detail in the Service Level Agreement (SLA) as stated in the contract (Cavinato et al., 2006). SLA has been used to describe the minimal level of work. However, the SLA in the current contract of Integrated Warehouse Services only covers some particular outsourcing functions, such as, storing and shipping process, legalisation of customs clearance documents and the duration of processing customs clearance documentation for material. Unclear service level agreement impacts on the difficulty to measure the performance of Integrated Warehouses Services.

The provider selection process

The success of outsourcing implementation is increasingly reliant on supplier performance, thus, the selection process of service provider is categorised as part of strategic planning of outsourcing. It is necessarily important for companies to have a right provider selection process. Therefore, in this section, the provider selection process is analysed and compared to the theoretical framework in order to have the guidance to improve the provider selection process.

In the implementation of Integrated Warehouse Services, the provider is selected through particular steps. This has been described in the previous section. In the first step, a provider is selected through the Contractor Health, Safety and Environmental Management System (CSMS) in order to improve the company and provider performance with regard health, safety and the environmental management. The next step is selecting a provider based on the personnel criteria and the availability of transportation, equipment and tools.

It has been recognised that there is a limitation of the application of CSMS method in provider selection process. CSMS method only focuses on the criteria that are related with health, safety and environmental (HSE) issues, such as the provider's experience and capability in conducting safety activities; commitment to HSE through leadership; policy and strategic objectives of health and safety, cost, etc.

The other criteria in the provider selection process are personnel criteria and the availability of the provider's transportation, equipment and tools. The personnel criteria consist of their qualifications, the amount of experience in the related position and the certification of required skills. These criteria measure the quality of service provider in delivering value to the warehousing operation, flexibility in running the warehousing functions and the ability for a strategic partnership between the company and provider. Moreover, the availability of provider's

transportation, equipment and tools also has been considered as the measurement of provider's flexibility in running the warehousing operation.

5.2.2 The Implementation of outsourcing strategy

An implementation process is a process of translating planning concepts into practice (Sangam, 2004). There are some important points that need to be considered in the analysis of the implementation of outsourcing in this company. They are outsourcing control and monitoring strategy, cross functional system between the company and its provider and the measurement of provider performance in addressing services.

Control and monitoring strategy

By keeping the strategic activities in house, the company is able to control and monitor the warehousing activities in the transactional level which have been outsourced to the provider. It has been discussed in the previous chapter. For example, issuing the warehousing work order documents is kept in house, so that company is enabled to control every task of the outsourcing job. Another example is the approvals of some documents are handled by the company. By keeping this process in house, the company is able to control the quality and quantity and of incoming material quality as well as the specification in the acceptance phase.

Based on the findings from participant observation, the researcher found that the strategy of the control and monitoring system is not designed properly. There is unclear Standard Operation Procedure (SOP) of Integrated Warehouse Services. In some cases, the company is still involved in running the warehousing activities at the transactional level. Further data collection through unstructured interviews was conducted in order to investigate the main cause of this issue. Lack of implementation strategy and the limitation of understanding and knowledge about the outsourcing concept from both parties are the root causes of the difficulty to implement the outsourcing concept.

Cross functional system

The implementation of outsourcing requires a coordination and cooperation from all elements in the warehousing system. The implementation of Integrated Warehouse Services (IWS) requires an integration of some other logistical functions, such as procurement, inventory and transportation. Moreover, the implementation of outsourcing also needs an effective cross function between the company and its outsourcing provider. The researcher is concerned about this issue in the practices of Integrated Warehouse Services.

Based on the information gathered from observation and interview, poor cross function integration between the company and service provider is caused by the paradigms that

outsourcing always relates with the fear of losing company control and the fear of change in the company. Then, it impacts the personnel behaviour to carry out the outsourcing activities. Inadequate knowledge about the outsourcing concept and the company's objective in doing outsourcing cause the misunderstanding of outsourcing itself. These people do not realise that the success of outsourcing is a result of cooperation between both parties. This issue forces companies to have a personal development in outsourcing knowledge and practices.

Sharing of Information and Technology Activity

Another issue that related to cross function between the company and its outsourcing provider is the information and technology sharing in the implementation of outsourcing. Information and technology sharing is necessarily needed in outsourcing. The flexibility to access the required information from the company's internal system helps service providers to be more flexible in providing the services.

In the practices of Integrated Warehouse Services, the sharing of information and technology is poor. The access into the company's internal system is limited for the provider. Consequently, the company have to provide information every time the information is needed by the provider. This makes the outsourcing process slow and impacts on the performance of the provider in addressing the services. The interview with the warehouse section head was conducted regarding this issue. It has been found that lack of trust between the company and the provider creates the limitation in information and technology sharing.

The measurement of provider performance

The provider performance in addressing services in the particular outsourcing area is significantly important to be measured. The purpose is to define, describe and measure the specific requirement that need to be met by outsourcing providers. It is also useful as a baseline for planning and improvement provider management (Chin et al., 2006). The development of performance measurement has also been defined as one of the most critical tasks during the implementation phase of outsourcing (Sangam, 2004). The initiative to design the measurement should come from the company as logistical service user. Lack of efficient performance measurement system will contribute to the downfall of outsourcing initiative (Sangam, 2004).

The measurement of provider's performance is known as Key Performance Indicator (KPI). The focus of the measurement criteria is based on the agreement between the company and its provider as stated in the Service Level Agreement (SLA). The performance should be reviewed periodically which provides an ideal opportunity for both parties to discuss the current problem in the outsourcing practices and achieve a success of outsourcing. Another

objective of the provider performance measurement is not only to measure the provider's performance, but also to initiate the corrective action of negative performance and have a continuous improvement.

In the practices of Integrated Warehouse Services, the provider's performance is measured based on the reduction in the warehousing operational cost, the completion of customer orders and the discrepancy of material quality and quantity. Most of the performance measurements are stated in the Service Level Agreement (SLA) although some of them are not.

The measurements and the key performance indicators include the measurement of shipping process and the duration of customs clearance documentation process material. However, the efficiency of the warehousing operations is not measured by the company.

5.2.3. The correlation between categories

There are two types of relationships in the qualitative data analysis. They are explanatory and chronological relationships. The explanatory relationship is formed through the process where the relationship of each category is analysed. While, chronological relationship shows the chronology in particular processes (Dey, 1993).

The explanatory relationship of the Integrated Warehouse Services limitation is explained in the figure 5.1. It shows the relationship between each individual category in the qualitative analysis. Each category has already been discussed individually in the previous section and divided into two main sections. They are the analysis of outsourcing strategic planning and the implementation of outsourcing strategy. Some categories are related to each other as cause and effect.

As presented in the figure 5.1, unclear Service Level Agreement (SLA) and Key Performance Indicator (KPI) of the provider, resulted in unclear scope of outsourcing activities and inefficient provider performance measurements. These have an impact on the success level of outsourcing practices. Another analysis of the provider selection process found that the limitations of provider selection criteria cause an incapable provider. It directly affects the outsourcing and company performance.

Another correlation between categories from the analysis is the correlation between lack of personnel knowledge about outsourcing and the poor performance of outsourcing. Inadequate knowledge of outsourcing causes fear of losing control and organisational changes. It makes the organisational functions between the company and its provider to be inadequate and the process of outsourcing activities is slow.

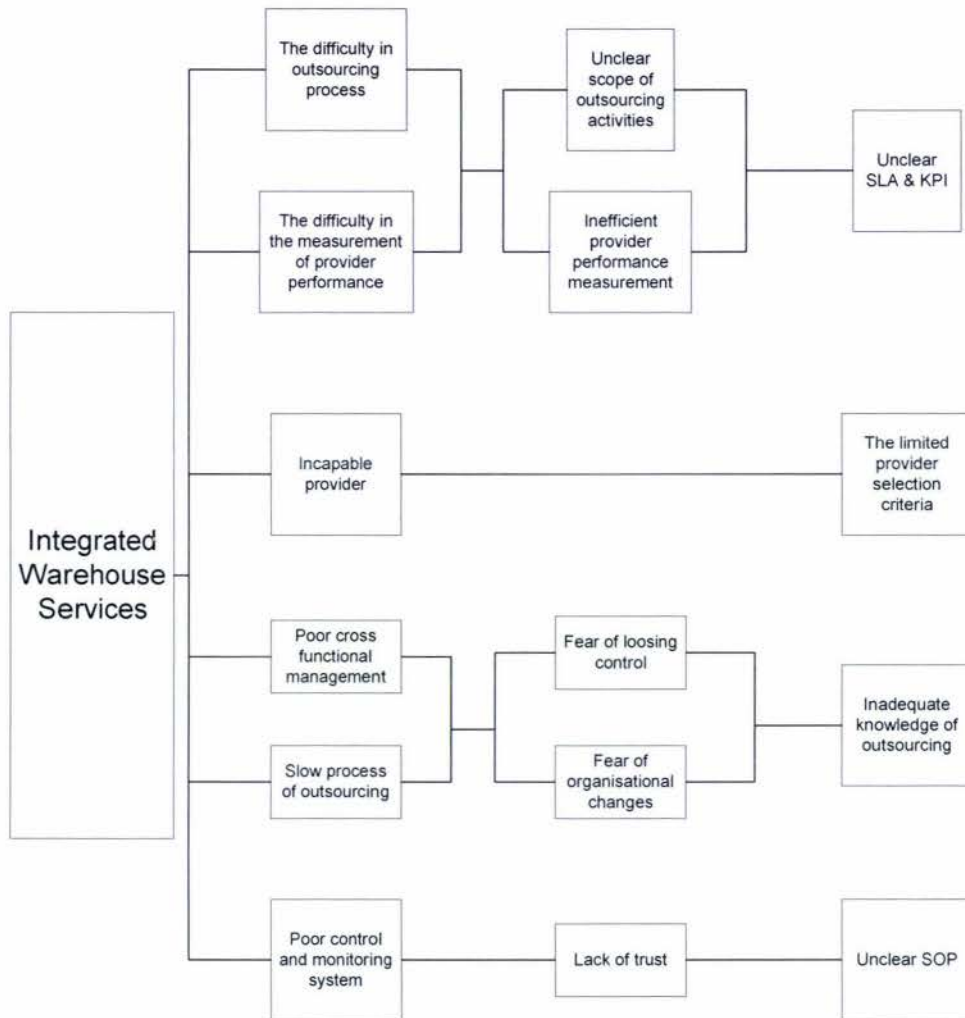


Figure 5.1. The explanatory relationship of Integrated Warehouse Services (Source: Own)

Moreover, the implementation of outsourcing requires a control and monitoring action from the company. However, in the practice of Integrated Warehouse Services, control and monitoring strategy is inefficient due to unclear Standard Operation Procedure (SOP) of outsourcing activities. Lack of trust between each party also contributes to the inefficient performance of control and monitoring system.

A further observation was conducted to investigate the correlation between each category above. It results in the hypothesis that personnel qualification has an important correlation with the issues of Integrated Warehouse Services. Another unstructured interview with all level of warehouse personnel was conducted to get further understanding towards this hypothesis. The description of the analysis finding is provided in the next section.

Personnel function criteria

As part of outsourcing strategic planning, it is necessary to understand whether the company is equipped with the necessary skills, mind set and understanding of the outsourcing concept both for the company and its outsourcing partner. A previous research found that the most serious problem in the implementation of outsourcing is the fear of change in the company which is caused by inadequate training and skill in managing outsourcing activities (Elmuti & Kathawala, 2000).

Many problems occur in the implementation of outsourcing due to lack of knowledge about outsourcing. This issue causes the difficulty in the implementation of outsourcing. Inadequate understanding of the outsourcing concept makes company fear loss of control and delimits the relationship with their outsourcing partner. The most obvious impact is on the staff morale due to staff reduction. Outsourcing might also undermine employee loyalty and leads to a fear of failure in fulfilling corporate responsibilities in order to preserve their jobs.

A lack of understanding of the company's goals causes an unclear reason in doing outsourcing for both parties. Therefore, the objective of outsourcing is necessary to be communicated to all related personnel from the beginning of outsourcing implementation.

The relationship between each category results in a need to measure the understanding of the outsourcing concept related to logistical outsourcing practices, issues and its improvement opportunities for both parties with respect to the implementation of Integrated Warehouse Services. Therefore, a survey questionnaire was distributed to measure the perception of some outsourcing issues as related to the Integrated Warehouse Services. The questionnaires were distributed to all warehouse personnel including the managerial level of both parties. The questions are divided into several parts. The knowledge about supplier selection process and the importance of partnership in outsourcing were being asked to the respondent. In the last part of the questionnaire, the respondents were asked questions regarding logistical outsourcing issues and its improvement opportunities.

5.2. Quantitative Data Analysis

The quantitative data was carried out through a survey questionnaire. It was distributed to all warehouse personnel at all levels. The response rate of this questionnaire is 53%. The questions were developed from the qualitative analysis, participant observation and unstructured interview. There are 71 questions and they have been classified into 8 categories.

Category 1: The reasons for outsourcing logistical activities

Factors	Very Important	Important	Neither important nor unimportant	Unimportant	Very Unimportant
Pressure to reduce cost	26.32%	47.37%	15.79%	10.53%	0.00%
Pressure to improve customer service	73.68%	26.32%	0.00%	0.00%	0.00%
Market expansion	15.79%	57.89%	21.05%	5.26%	0.00%
Upskilling of techniques and expertise	42.11%	47.37%	10.53%	0.00%	0.00%
Globalisation	21.05%	73.68%	5.26%	0.00%	0.00%
Focus on core competencies	10.53%	73.68%	15.79%	0.00%	0.00%
Technology	36.84%	52.63%	10.53%	0.00%	0.00%

Table 5.1. The reasons for outsourcing logistical activities

The questionnaire is analysed to measure the respondent's perspective of basic outsourcing knowledge, practices, issues and the improvement opportunities of outsourcing. Most of respondents felt all reasons for outsourcing the logistical activities were at least important.

Firstly, respondent were asked about the reasons for outsourcing logistical activities from their perspective. As presented in table 5.1, 73.86% of respondents viewed that pressure to improve the customer services is a very important reason for companies to outsource their logistical activities. Other important reasons that also need to be considered in making an outsourcing decision are pressure to reduce costs, market expansion, upskilling of techniques and expertise and expertise, globalisation, the need to focus in core competencies and technology. Surprisingly, pressure to reduce cost is no longer a priority as a reason to outsource activities. 73% of respondents viewed globalisation and the need to focus on core competencies as important reasons to outsource the company's logistical activities.

Category 2: The reasons for not outsourcing logistical activities

Criteria	Very Important	Important	Neither important nor unimportant	Unimportant	Very Unimportant
Control would be diminished due to outsourcing	26.32%	26.32%	10.53%	21.05%	15.79%
Service commitments would not be met	36.84%	31.58%	0.00%	31.58%	0.00%
Costs would not be reduced	31.58%	36.84%	10.53%	21.05%	0.00%
Have adequate in-house skills & resources	26.32%	47.37%	5.26%	21.05%	0.00%
Logistics is too important to outsource	15.79%	15.79%	36.84%	31.58%	0.00%
Outsourcing is too complex	10.53%	36.84%	15.79%	36.84%	0.00%

Table 5.2. The reasons for not outsourcing logistical activities

In the next category, the reasons not to outsource were being asked of respondents. The objective is to measure the respondent perspective of factors that might influence other companies to decide against outsourcing their logistical activities. 26.32% of respondents agreed that company control would be diminished due to outsourcing. This factor has been viewed as a potential to influence a company's decision not to outsource their logistical activities. A higher percentage of respondents have chosen that "service commitment would not be met in outsourcing" as a very important reason for companies not to outsource. The fear that cost would not be reduced in logistical outsourcing practices has been viewed as a criterion that influences companies against the decision to outsource.

Adequate in-house skills and resources is believed to be another important reason against outsourcing. It had a response rate of 47.37%. Nevertheless, the last two reasons are not considered as important as other reasons to not outsource. Most respondents chose that the reason to not outsource due to "logistics as being too important to outsource" as being "neither important nor unimportant". The final reason that "outsourcing is too complex" was chosen by most respondents as being an unimportant reason for companies to not outsource. There are only 31% of respondents felt that logistics was too important to outsource and the majority of respondents did not think that the complexity of outsourcing was unimportant reason for not outsourcing logistical activities.

Category 3: The benefits of logistical outsourcing

Respondent were asked the importance of the benefits of logistical outsourcing. The benefits of logistical outsourcing as perceived by the respondents include, increasing services reliability and consistencies, reduced costs, enhanced flexibility and shorten lead time.

Benefits	Very Important	Important	Neither important nor unimportant	Unimportant	Very Unimportant
Increased service reliability and consistency	36.84%	57.89%	5.26%	0.00%	0.00%
Reduced cost	31.58%	42.11%	21.05%	5.26%	0.00%
Enhance flexibility	31.58%	63.16%	5.26%	0.00%	0.00%
Shorten delivery lead time	31.58%	57.89%	10.53%	0.00%	0.00%
Increased productivity	52.63%	42.11%	5.26%	0.00%	0.00%
Improved visibility across logistics and supply chain	36.84%	47.37%	15.79%	0.00%	0.00%
Give access to techniques and expertise	31.58%	47.37%	21.05%	0.00%	0.00%
Improve space and capacity utilisation	21.05%	73.68%	5.26%	0.00%	0.00%
Give access to up to date technology	21.05%	36.84%	42.11%	0.00%	0.00%
Assess new markets	36.84%	57.89%	5.26%	0.00%	0.00%

Table 5.3. The benefit of logistical outsourcing

Most of respondents felt all benefits of logistical outsourcing were important except the benefit of access to up to date technology. There are only 57% of respondents who think that this benefit was important. Increased productivity is considered as the most important benefit of outsourcing by the respondents. The outsourcing benefit of improving space and capacity utilisation had high response rate of 73.68%. Fifty percent of respondents considered the ability to increase the service reliability and consistency, shorten the delivery lead time, enhance flexibility and assess new market criteria as important benefits of outsourcing. Other benefits, such as reduced costs, improving visibility across the logistics and supply chain and access to techniques and expertise have also been viewed as important benefits of outsourcing. However, they are considered less important than other benefits. Forty two percent of respondents considered the benefit of access to up to date technology due to outsourcing as neither important nor unimportant.

Category 4: Provider Selection

In achieving success through provider performance, it is essential to select the right providers. Based on the qualitative analysis, it seems that there is a need for companies to specify their provider criteria in the provider selection process. Therefore, further research has been done in order to gather information about the respondent's perspective of the importance of each criterion to select the right provider.

The majority of respondents felt that all the criteria were important to be measured in the provider selection process. The quality of tactical and operational logistical services is chosen as the most important criteria in provider selection. The mutual consideration and trust between companies and provider, and prices are equally the second important criteria in the provider selection process. The third factor that needs to be considered is the provider's financial strength. At 47.37% response rate, the respondents have placed the information and technology in the very important criteria.

The range of provider's value added to the logistical services, the availability of provider's strategic logistical services, the globalisation and the provider's knowledge and service on supply chain innovation and improvements are important criteria in provider selection. However, the level of criteria importance is lower than other criteria.



Criteria	Very Important	Important	Neither important nor unimportant	Unimportant	Very Unimportant
Quality of tactical, operational logistical services	68.42%	26.32%	5.26%	0.00%	0.00%
Range of the availability value added of logistical services	31.58%	57.89%	10.53%	0.00%	0.00%
Availability of strategic logistical services	42.11%	52.63%	5.26%	0.00%	0.00%
Financial strength (staying power)	57.89%	31.58%	10.53%	0.00%	0.00%
Globalisation	26.32%	52.63%	21.05%	0.00%	0.00%
Information technology	47.37%	36.84%	15.79%	0.00%	0.00%
Price (cost of service and discount)	63.16%	15.79%	21.05%	0.00%	0.00%
Mutual consideration and trust	63.16%	31.58%	5.26%	0.00%	0.00%
Knowledge and advise on supply chain innovation and improvement	31.58%	52.63%	15.79%	0.00%	0.00%

Table 5.4. Provider Selection

Category 5: Logistical outsourcing agreements and relationships

Factors	Very Important	Important	Neither important nor unimportant	Unimportant	Very Unimportant
Transaction-by-transaction based agreement	42.11%	57.89%	0.00%	0.00%	0.00%
Formal contract of at least 1 year length	42.11%	36.84%	5.26%	15.79%	0.00%
Partnership with benefit and risk sharing for agreed period	31.58%	57.89%	10.53%	0.00%	0.00%
Partnership with formal sharing of relevant information	52.63%	47.37%	0.00%	0.00%	0.00%

Table 5.5. Logistical outsourcing agreements and relationships

In the next part of the questionnaire, respondents were asked to what extent they think about the categories that best describe the agreement between the company and its provider in the Integrated Warehouse Services practice.

All of the agreements and relationships were considered to be important by the majority of respondents in the practices of IWS. The "formal contract with minimum one year length" and

"partnership with formal sharing of relevant information" is best described in the agreement between the company and the provider. They have been described as very important categories to be considered in logistical outsourcing practices. Meanwhile, "transaction-by-transaction based agreement" and "partnership with benefits and risks sharing for agreed period" considered as important factors but not as important as "formal contract with minimum one year length" and "partnership with formal sharing of relevant information".

Category 6: Information Technology

Information and communication technology are necessarily needed in the practice of outsourcing. Respondents were asked about the importance of these criteria. The most important category of information and communication technology in the practice of logistical outsourcing is Electronic Data Interchange (EDI). It is used for connecting the company with the supplier/customers. In the smaller response rate, integrated logistical information technology and the application to connect with supplier/customer were also viewed by the respondents as very important in logistical information and technology.

Technologies	Very Important	Important	Neither important nor unimportant	Unimportant	Very Unimportant
EDI to connect with suppliers/customers	57.89%	26.32%	15.79%	0.00%	0.00%
Integrated logistics IT applications	47.37%	47.37%	5.26%	0.00%	0.00%
Internet to connect with suppliers/customers	36.84%	47.37%	10.53%	5.26%	0.00%
Application to connect with IT facilities	21.05%	52.63%	21.05%	5.26%	0.00%
Application to connect with suppliers/customers	42.11%	36.84%	15.79%	5.26%	0.00%
Non-integrated IT applications	10.53%	26.32%	42.11%	15.79%	5.26%

Table 5.6. Information Technology

The other technologies, such as internet facilities to connect with supplier and customer and application to connect with IT facilities were viewed less important than other criteria. The last criterion is non-integrated IT application was considered neither important nor unimportant in the practice of logistical outsourcing. There are only 33% of the respondents felt that non integrated IT application was important in the implementation of logistical outsourcing.

Category 7: Logistical outsourcing issues

The questions to measure the logistical outsourcing issue is presented in two sections. In the first section, respondents were asked about their concern for their current logistical outsourcing performance with regard to Integrated Warehouse Services. The questions are designed from findings of participant observations and unstructured interviews.

More than 45% of respondents strongly agreed that "service level commitments were not realised" as well as "time and effort spent in logistics were not reduced" in the current performance of Integrated Warehouse Services. Other issues such as "technology capabilities are not delivered", and "cost reductions are not realised" were respondents' concern of the logistical outsourcing issue. At 52.63% response rate, the respondents had concerns about the lack continuous ongoing improvement service in Integrated Warehouse Services practice.

The implementation of logistical outsourcing causes the control over the outsourced functions to diminish. The respondents viewed that the practice of Integrated Warehouse Services lack management skills, lack continuous ongoing improvement and lack consultative knowledge-based skill. Thirty one percent of respondents agreed that price increase began after the implementation of logistics outsourcing. Another concern is the misunderstanding between company and provider.

Issues	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Service level commitments were not realised	47.37%	36.84%	10.53%	5.26%	0.00%
Cost reduction were not realised	15.79%	57.89%	15.79%	10.53%	0.00%
Technology capabilities were not delivered	15.79%	63.16%	15.79%	5.26%	0.00%
Time and effort spent in logistics were not reduced	47.37%	36.84%	10.53%	5.26%	0.00%
Control over the outsourced function(s) to diminish	26.32%	42.11%	15.79%	15.79%	0.00%
Lack of strategic management skills	26.32%	47.37%	21.05%	5.26%	0.00%
Lack continuous ongoing improvement in service	26.32%	52.63%	15.79%	5.26%	0.00%
Lack consultative knowledge-based skill	26.32%	47.37%	21.05%	5.26%	0.00%
Cost increase after relationship began	26.32%	31.58%	31.58%	10.53%	0.00%
Misunderstandings/disagreements between company and provider	31.58%	36.84%	21.05%	10.53%	0.00%

Table 5.7. Current logistical outsourcing issues

To conclude, most of the logistical outsourcing issues were considered to be the respondent's concern in the practices of IWS. However, there is only 55% percent of respondents agreed that cost issue need to be considered in the implementation of IWS.

Questions in another section were asked about the importance of the following concerns in relation with the practice of Integrated Warehouse Services. Based on the analysis of participant observations and unstructured interviews, it has been identified that there are the five concerns in the practice of Integrated Warehouse services. In this survey questionnaire, the respondents were asked about their point of view of the importance of each criterion.

Concerns	Very Important	Important	Neither important nor unimportant	Unimportant	Very Unimportant
Uncertainty of logistical service quality	26.32%	68.42%	0.00%	0.00%	5.26%
Cost of outsourcing	47.37%	36.84%	10.53%	5.26%	0.00%
Uncertainty of provider's service capability	42.11%	42.11%	10.53%	5.26%	0.00%
Uncertainty of cultural fit of your company with providers	15.79%	31.58%	42.11%	10.53%	0.00%
Potential loss of direct control of logistical activities	26.32%	42.11%	26.32%	5.26%	0.00%

Table 5.8. The concern of logistical outsourcing

Most respondents are concerned about the cost of outsourcing and the uncertainty of provider's service capability in the practice of Integrated Warehouse Services. While, other criteria, such as the uncertainty of logistical service quality and the potential loss of direct control of logistical activities were viewed as less important than the first two criteria. However, there is less than 50% of respondent felt uncertainty of cultural fit of the company and the provider was important. It seems that this issue has been viewed as not important as other criteria.

Category 8: Logistical outsourcing improvement opportunity

Statement	Excellent	Very Well	Average	Low	Insufficient
Improved customer service	47.37%	36.84%	10.53%	5.26%	0.00%
Reduced product/service cost	15.79%	68.42%	10.53%	5.26%	0.00%
Improved productivity	26.32%	57.89%	10.53%	5.26%	0.00%
Improved information sharing	26.32%	47.87%	21.05%	5.26%	0.00%
Reduced response time	15.79%	68.42%	10.53%	5.26%	0.00%
Improved capacity/space utilisation	26.32%	57.89%	10.53%	5.26%	0.00%
Increasing training/development of employee	47.37%	31.58%	15.79%	5.26%	0.00%
Increased marketing efforts	5.26%	10.53%	31.58%	47.37%	5.26%

Table 5.9. The company emphasis to improve the logistical performance

The last category in this questionnaire is the logistical outsourcing improvement opportunities with regards to Integrated Warehouse Services. The questions in this category were divided into two sections. In the first section respondents were asked to indicate their company effort to improve the logistical performance through the outsourcing strategy in the future.

The respondents viewed that the company has an excellent emphasis to improve the customer services through outsourcing. They are very optimistic that the company will have an improvement in employee training and development through outsourcing in the future. Conversely, the company's emphasis to increase the marketing efforts is very low. The other criteria, such as reduced product and service costs, improved productivity, improved production sharing, reduced response time and improved space utilisation through outsourcing are expected to be increased in the future by the respondents.

Most respondents were very optimistic that the company has very well emphasis to develop all of the improvement opportunities, except the marketing effort. There was only 15% of respondents felt that company will have an emphasis to have an improvement in marketing effort through the outsourcing strategy in the future.

In the second section in this category, respondents were given some statements about the improvement opportunities of Integrated Warehouse Services. These statements were designed based on the theoretical framework of successful logistical outsourcing and also the participant's observations and unstructured interviews with all levels of warehouse personnel.

The respondents strongly agree that company needs to have an improvement in the provider selection process with relation to the practices of Integrated Warehouse Services. The company needs the provider to be more sophisticated in order to provide solutions to supply chain problems. In addition, the improvement of the provider's ability to provide international supply chain and logistical basic activities also has been suggested by respondents.

Moreover, the respondents agree that information technology capability is a major competitive advantage of service provider. Another improvement to use management consultants in the Integrated Warehouse Services is necessarily needed for the company. Overall, the respondents agreed that Integrated Warehouse Services has achieved the successful level in terms of reduced logistical costs.

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Information technology capability is a major competitive advantages of service provider	31.58%	57.89%	10.53%	0.00%	0.00%
The use of management consultants is necessary in the outsourcing process	10.53%	47.37%	42.11%	0.00%	0.00%
Logistical outsourcing service (IWS) provider need to provide international supply chain solutions	26.32%	47.37%	26.32%	0.00%	0.00%
Logistical outsourcing service (IWS) providers need to be more sophisticated and provide solutions for supply problems	57.89%	31.58%	10.53%	0.00%	0.00%
Logistical outsourcing service (IWS) providers need to provide the logistical basic activities	36.84%	52.63%	10.53%	0.00%	0.00%
Success in outsourcing has been achieved in our company in terms of reduced logistical costs	15.79%	52.63%	21.05%	5.26%	5.26%
Overall, we view our logistical outsourcing initiatives as successful	10.53%	68.42%	21.05%	0.00%	0.00%

Table 5.10. Improvement opportunities of logistical outsourcing

Most respondents agreed for all statements of successful logistical outsourcing in order to improve the IWS performance. However, there were only 50% of respondents who agreed that the company need to use the management consultant in the outsourcing process.

Furthermore, the analysis was carried out through the descriptive analysis to discover where in the scale 1 to 5 each logistical outsourcing issue categories falls under (1=very Important/strongly agree/excellent, 2 = important/agree/very well, 3 = neither important nor unimportant/neutral/average, 4 = unimportant/disagree/low, 5 = very unimportant/strongly disagree/insufficient). Table 5.11 depicts the result of descriptive analysis.

The reasons for outsourcing logistical activities	1.835
The reasons for not outsourcing logistical activities	2.509
The benefit of logistical outsourcing	1.830
Provider Selection	1.643
Logistical outsourcing agreements and relationships	1.697
Information Technology	1.956
Logistical outsourcing obstacle	2.032
Logistical outsourcing improvement opportunity	1.968

Table 5.11. Descriptive statistics for Logistical Issue

The mean results (presented in the table 5.11) show that the respondents agree that provider selection and logistical outsourcing agreements and relationships are the major concern in the practices of Integrated Warehouse Services. The other concerns are the logistical outsourcing benefit and the reason for outsourcing logistical activities that have been considered at least important in the practices of IWS. Meanwhile, the rest of the logistical outsourcing issue categories perceived as neither major nor minor issues to the practices of logistical outsourcing.

CHAPTER SIX: RECOMMENDATIONS AND CONCLUSION

6.1. Introduction

This chapter provides the conclusions of the investigation into the practices of Integrated Warehouse Service based on the research objectives. There were three objectives in this research that are discussed. Next, recommendations for the company and its provider, as well as for future research, are provided based on the results in this research.

6.2. Research objective

The primary objective of this research was to investigate practices and issues of IWSs as an implementation of logistical outsourcing and to identify the improvement opportunities of logistical outsourcing. The investigation has been carried out with the focus on the following secondary objective as follow:

- Objective 1: To investigate the factors affecting the logistical outsourcing decision making process.
- Objective 2: To investigate outsourcing arrangements and to identify advantages and opportunities, as well as the pitfalls.
- Objective 3: To identify the success level of IWSs as current outsourcing logistical activities.

6.3. Conclusion

6.3.1. Objective 1: To investigate the factors affecting the logistical outsourcing decision making process

In the practice of IWSs, the outsourcing decision making process is effected by several factors. These factors are the company's reason for outsourcing, the warehousing activities that need to be included in the outsourcing and the outsourcing provider selection process.

The decision to outsource a warehousing function is made by considering the benefit, risk, personnel knowledge and the provider's flexibility. Therefore, in this process, the outsourcing decision making process is divided into three phases. In the first phase, the decision is made at the managerial level, in the second phase, the mid-level management has the authority to make this decision, and in the third phase, the decision is made at the lower level in this company.

The reason for outsourcing warehousing

The outsourcing benefits and potential pitfalls have been considered by the company when they make the decision to outsource the warehousing functions as their non-core business. The company has four reasons for outsourcing their warehousing functions. The first reason is that outsourcing offers a considerable reduction in warehouse operating costs. The second reason is the need to replace the manpower losses due to normal attrition in order to still operate daily warehousing activities, and outsourcing minimises these problems. Another reason is the need to remain competitive in today's business environment, which encourages a company to transfer their logistical operations to the experts. By outsourcing these functions, the experts help the company to achieve their goal. The last reason for outsourcing warehousing is that outsourcing provides a service to manage the company's non-core business. Thus, the company is able to focus on their core business.

However, based on the data collection and analysis, it has been found that there are many important factors that have not been considered in the practices of the decision making process of whether or not to use the IWS. For example, the ability of outsourcing provider to perform the cross functions at relationship with the company. From the further information gathered from the questionnaires, most respondents felt that reasons for outsourcing such as pressure to reduce cost, pressure to improve customer service, market expansion, upskilling techniques and expertise, globalisation, focusing on core technology and technology, also need to be considered in the outsourcing decision making process.

Outsourced warehousing functions

The second phase of outsourcing decision making process focuses on the decision to select the warehousing activities to be outsourced. There are six warehousing activities that were decided to be outsourced. They are Warehouses operations (Nilam, Badak/Project), Fuel Handling operations (Badak, Saliki, Galendrong), Formalities/Custom Clearance, Materials Expediting, Inspection and Receiving, Waste handling and Tubular Inspection and Maintenance. Most of these functions are included in the transactional and tactical level of outsourcing activities.

The investigation into outsourced warehousing functions has led to the discussion of the scope of work in the IWSs. The objective is to have a clear understanding of the warehousing functions. As outsourcing activities are divided into three different levels, it is necessary to classify the company's warehousing activities into these levels. However, the company has not distinguished the warehousing activities in the strategic, tactical and transactional level. Consequently, there is unclear scope of work in the practice of IWSs.

Outsourcing provider selection

Since the company's performance is reliant on providers, the selection process of outsourcing a provider should be included in the outsourcing decision making process. In the practice of IWS, the provider is selected through two steps. In the first step, the provider is selected based on their performance in health, safety and environment, and in the second step, the personnel criteria, such as personal qualifications, experience and certification are required. Moreover, the second step of provider selection includes the availability of the provider's transportation, equipment and tools to support the provider's performance.

Through the data analysis of data, it has been recognised that there is a limitation in the application of CSMS method. This method only selects a provider based on their performance in health, safety and environment. The other criteria for the provider selection process are personnel criteria and the availability of the provider's transportation, equipment and tools. These criteria measure the quality of the outsourcing provider in delivering value to the warehousing operation, flexibility in running warehousing functions and the ability for a strategic partnership. In addition, the availability of the provider's transportation equipment criteria has been considered to provide the flexibility in running the warehousing operation.

Furthermore, based on the information gathered from the questionnaire, the quality of tactical and operational services is chosen as the most important criteria in the provider selection process, followed by mutual consideration and trust between the company and provider. The descriptive statistics show that the respondents agree that provider selection issues are a major concern in the practices of the IWS.

In summary, the company's reason for outsourcing, the selection of the activities to be outsourced and the outsourcing provider selection process is affecting the outsourcing decision making process. The reason for outsourcing is mainly driven by the need to remain competitive in today's business environment through reduced cost and transferred the company's non-core business to the experts. The company's outsource most all their warehousing functions except the warehousing strategic planning and control. However, in the practice of IWS, there are limited criteria in provider selection process. The criteria of provider's health, safety and environment are measured in the first step, while provider personnel criteria and the availability of provider's transportation, equipment and tools are included in the second step.

6.3.2. Objective 2: To investigate outsourcing arrangements and to identify the advantages and opportunities, as well as the pitfalls

Outsourcing arrangement

Previous warehousing functions were run under six contracts, including field material support services, handling shipment of materials and customs clearance, heat treatment of tubing and threading inspection, fuel handling and transportation, treatment and disposal of waste B3 and general material contract. However, they were not integrated very well.

In the practices of IWS, all of the six previous warehousing contracts are integrated into one contract. Therefore, the warehousing functions are only outsourced to one provider. This agreement identifies the scope of services to be provided by the provider together with its service level, the responsibilities of the company and the provider, the partnership between two parties, the provider's personnel qualifications, provider's required equipment, terms of payment, penalty and methods for contract adjustment. The contract also includes additional items, such as the service level for material replacement, the provider's participation in Health, Safety and Environment and the domestic content requirement. The term of this agreement is for one year.

However, in the practice of the IWS, the Service Level Agreement (SLA) only covers some of outsourcing functions. Another issue is the inefficient provider performance measurement. Currently, provider's performance is measured based on the reduction in the warehousing operational cost, the completion of customers' orders, the discrepancy of material quality and quantity, while the efficiency of the warehousing operation itself is not measured by the company. Some of these measurements are not stated in the SLA. Unclear SLAs and performance measurement result in an unclear scope of outsourcing activities and inefficient provider performance measurements. These impact on the success level of the IWS practices.

Outsourcing benefits

The benefits of outsourcing in the implementation of the IWS are identified in several categories. Firstly, since the SCM department ran all warehouse daily activities and maintained six different types of warehousing contracts, the company had a high warehouse operating cost. Logistical outsourcing, through the implementation of IWS leads to a considerable reduction in operating cost. Secondly, outsourcing minimises the problem in the continuous reduction of the company's warehouse personnel. The IWSs provide the expertise to handle warehouse daily activities.

In today's business environment, the company is encouraged to transfer the logistical operation to the expert. Another benefit of outsourcing is that it provides the expertise to help the

company achieve their goal and gives them a competitive advantage. By outsourcing the company's non-core business, the companies are enabled to focus on their core business.

Based on the information gathered from the survey questionnaires, the respondents identified that increased productivity is considered the most important benefit of outsourcing. On the other hand, the benefit of accessing to up-to-date technology is considered as neither important nor unimportant in outsourcing technology.

Outsourcing pitfalls

Despite the benefit of outsourcing, IWSs also have several pitfalls and potential problems in their implementation. The pitfalls of IWS's implementation were stressed from various perspectives. These are unclear standard operation procedures of outsourcing activities, an unclear SLA and performance measurement, poor selection of outsourcing partners and inadequate knowledge of outsourcing.

Unclear SLAs and provider measurement result in an unclear scope of outsourcing activities and inefficient provider measurements. This causes difficulty in the outsourcing process because it may cause a failure in outsourcing implementation (Greaver, 1999). Another outsourcing pitfall is poor selection of a provider due to the limited provider selection criteria, which may cause poor performance of outsourcing through an incapable provider. Inadequate knowledge of outsourcing is identified as another pitfall in the implementation of IWSs. It includes the lack of understanding of the company's objective in implementing outsourcing. This issue causes a fear of the company losing control and the fear of changes in a company, including fear of job loss. This issue has been identified as the most serious potential problem in the implementation of the outsourcing concept (Elmuti & Kathawala, 2000).

Moreover, poor control and monitoring strategies are identified as another potential problem in the implementation of IWSs. This happens due to unclear standard operation procedures of outsourcing activities. Lack of trust between the company and its outsourcing provider also impacted on the inefficiency of control and monitoring system. Lack of trust issue is related with inadequate personnel knowledge of outsourcing concept especially for the partnership issue. In practices, most warehouse personnel do not equipped with the concept of relationships between companies and the outsourcing provider. Hence, they do not understand how important the partnership to achieve the success of outsourcing. To conclude, it seems that adequate knowledge and training of outsourcing concept are necessarily important in the practices of logistical outsourcing.

IWS improvement opportunities

In order to investigate the IWS improvement opportunities, the respondents from both parties were asked about their concern for IWS performance. Service level commitment, time and effort spent in logistics activities are considered the major concerns in the IWS improvement. The other improvements have been identified as technology capabilities, control over the outsourced functions, the strategic management skills, consultative knowledge-based skills and misunderstandings between company and provider.

There are some important criteria to be measured both by the company and its provider to improve the performance of IWS. The criteria of the cost of outsourcing and the uncertainty of the provider's service capability need to be considered as another important criterion in improving the IWS performance. Moreover, there are other criteria that are measured as important, such as uncertainty of logistical quality and potential loss of direct control of logistical activities.

Based on this information, the improvement opportunities in the practice of IWS have been identified in several points. The first point is the improvement in designing outsourcing scope of work and also the Standard Operation Procedure (SOP) of outsourcing activities. The scope of work should cover all activities in the outsourcing practices and the SOP should be designed for each outsourcing activity. Secondly, control and monitoring system is identified as another improvement opportunity. Control over the outsourced functions is necessary to be conducted by the company. Thus, the company's success through its outsourcing system is easily to be achieved. Another improvement opportunity is identified as employee development by increasing training about outsourcing knowledge and related outsourcing functions.

Briefly, the SLA in the IWSs agreement needs to be improved to cover all of outsourcing functions and including the measurement of provider performance. The implementation of IWS has addressed some benefits for the company, such as reduced operating cost, minimised the problem in the company's warehouse personnel reduction and help company to focus on their core business. However, the practice of IWS also accompanied by the pitfalls of outsourcing and they have been identified as unclear standard operation procedures of outsourcing activities, an unclear SLA and performance measurement, poor selection of outsourcing partners and inadequate knowledge of outsourcing. This results the room for improvement opportunities for IWS practice. They are improvement in outsourcing scope of work, company's control and monitoring system and employee development through the training about outsourcing knowledge and practices.

6.3.3. Objective 3: To identify the success level of IWS as a current logistical outsourcing activity

The success level of IWS is measured through the survey questionnaire. The respondents were asked to indicate the success level of IWS and the company's effort to improve the logistical performance through the outsourcing strategy. IWS has been viewed as a success strategy to improve customer service, reduce production cost, improve productivity, improve information sharing, reduce response time and improve space utilisation. Furthermore, in the future, the respondents view that company has an excellent emphasis to undertake an employee training and development through Integrated Warehouse Services.

Through the qualitative analysis, the practice of IWS has achieved success in improving the customer services by delivering material in the right quality and quantity to the end user. The inspection process has minimised the stock material discrepancy. The decreasing of late material delivery also contributed to the improvement of warehouse customer service. These performances also contribute to the improvement of warehousing performance.

To conclude, the practices of IWS has achieved its success through the improvement in customer services and warehousing performance.

6.4. Recommendations

The recommendation of the practice of IWS provided is divided into two main sections: outsourcing strategy planning and outsourcing implementation strategy. The researcher give the recommendations for outsourcing strategy planning that include the suggestions in the outsourcing decision making process, IWS scope of work and the outsourcing provider selection process.

Moreover, the recommendations for the outsourcing implementation strategy covers the suggestions in having a proper outsourcing implementation plan, the development of skills and outsourcing knowledge for all employees and improving the partnership between both parties.

6.4.1. Outsourcing Strategy Planning

Outsourcing the logistical functions can help the company to focus on the company's core competencies. Outsourcing strategies should be thought and carefully measured when it compared to in-house capabilities. It is recommended that the company applies the SWOT analysis in their outsourcing decision making process. SWOT analysis helps them to clearly understand about the strengths, weaknesses, opportunities and threats of outsourcing strategies compared to in-house capabilities. Therefore, the decision fully considers all the possibilities in the implementation of outsourcing and it also helps the company in deciding on the particular business function to be included in the outsourcing activities.

Furthermore, support from top management in the outsourcing decision making process should be given the most consideration (Kujawa, 2003). Therefore, in making a good outsourcing decision, it is suggested by the researcher to educate management about the outsourcing concept. In the IWS practices, management needs to be convinced about the benefits of outsourcing for company.

In terms of outsourcing the scope of work, as discussed in the analysis chapter, it is suggested that the company needs to distinguish warehousing activities into different activity levels as strategic activities, tactical activities and transactional activities. Moreover, it has also been recommended to expand the scope of outsourcing activities in the future, to include all transactional and tactical activities, so that the company can fully focus on strategic activities that will optimise the warehousing operation and its performance.

Warehousing activities included in the strategic level are warehousing operation planning, while tactical activities include inspection processes, custom clearance, expediting, document verification and approval of materials received. Activities included in the transactional activities are warehouse operations, material maintenance, material field return, issued material and physical inventory as shown in the table 6.1.

Strategic activity level	Warehousing operation planning
Tactical activity level	Inspection process
	Custom clearance
	Expediting
	Document verification
	Approval of materials received
Transactional level	Warehouse operations
	Material field return
	Issued Material
	Physical inventory

Table 6.1. Outsourcing activity levels of Integrated Warehouse Services (Source: Own)

The SLA should be designed for each outsourcing function and cover all activities in the scope of the IWS. Hence, the performance of outsourcing activities and processes is more easily measured. All of this information needs to be stated in the contract agreement between the company and its outsourcing partner.

The recommendation of outsourcing strategic planning continues with the provider selection. It has been analysed that the criteria in the provider selection process is limited. Therefore, the researcher suggests expanding the provider criteria in terms of their capability in running the warehousing functions. Based on the information gathered from the questionnaires, it has been

suggested by the respondents that the outsourcing provider needs to provide international supply chain solutions and the basic logistical activities. Another recommendation is that providers need to be more sophisticated and provide solutions for supply problems.

In terms of the provider selection process, it is recommended to use a management consultant or specialist in this area, to assist the selection process and recommend a suitable service provider. Furthermore, a site visit and interview with one of the existing customers of the outsourcing provider are a very important part in the provider selection process. The purpose is to gather information and conduct a reference check in order to select the suitable provider company.

6.4.2. Outsourcing implementation strategy

Although the responsibility of the warehousing performance is transferred to the outsourcing provider, the company also plays a critical role in achieve the success of outsourcing. Lack of outsourcing implementation strategies will negate the benefit of outsourcing (Sangam, 2004). Therefore, it is recommended to have detailed implementation strategy plan prior the implementation of IWS. This makes the implementation process of IWS easier for both the provider and the company. The outsourcing implementation strategy plan should be designed by a team that consists of members from both parties.

The outsourcing strategy should be taught to all people involved in the outsourcing implementation. The knowledge of outsourcing and the company's objectives for outsourcing are important to be shared to all warehouse personnel. The outsourcing implementation needs to be equipped with adequate skills, understanding and knowledge of the outsourcing concepts and particular business activities of the company outsourcing. Moreover, the involvement of human factors cannot be underestimated in achieving IWS success. It is recommended to involve the warehouse personnel in the implementation of outsourcing. These people must be given an opportunity to prove how valuable they can be. All people involved must be kept informed about the process of the outsourcing implementation.

Another issue in the implementation of IWS is a lack in cross functions activities. It is caused by the paradigms that outsourcing is always related to the fear of losing company control and the fear of changes in the company. Inadequate knowledge about the outsourcing concept and the company's objective in doing outsourcing causes a misunderstanding of outsourcing itself. Thus, all people involved in the outsourcing activities, need to undergo training and development of employee skills in the particular business function in the scope of outsourcing activities. In the case of IWS practices, employees from both parties need to undergo skill development in the warehousing operation.

Moreover, cross function management issues occur due to a lack of communication between both parties. It might be caused by the lack of trust in their partnership. Communication is essential for the coordination of internal company functions and outsourced logistical activities. Every step in the transitioning phase of IWS implementation should be communicated between the company and its provider. The key success of a change in management is communication and preparing staff members for the change (Kujawa, 2003)

Another issue in the implementation of the outsourcing strategy is identified as unclear Scope Operation Procedure (SOP), which causes poor control and monitoring action from the company. It would be ideal to develop SOP for all functions and processes that are included in the scope of outsourcing activities. This would minimise any gaps in the understanding of the company's expectations.

Establishing operating standards and monitoring performance are critical factors in making outsourcing work (Richardson, 1990). In the practice of IWS, unclear SLA and KPI causes inefficient provider performance measurement, and directly contributes to the downfall of the outsourcing initiative. The initiative to design the performance measurement supports the company's business goals in their outsourcing strategy. The provider performance and outsourcing activities need to be measured from both the perspectives of efficiency and effectiveness (Sangam, 2004). Efficiency defines the economical use of resources, while effectiveness reflects the success level of the process in achieving business goals. Therefore, it is suggested that the qualitative measurement effectiveness and quantitative measurement be identified.

Performance measurement needs to be viewed not only as a measurement of performance, but also as an initiative for corrective action in order to have continuous improvements. Periodical performance measurements are also recommended as an ideal strategy for the company and its providers to discuss and communicate effectively in order to achieve the success of outsourcing.

6.5. Further research

In depth investigation of the personnel function criteria need to conducted in further research in order to investigate the correlation between the personnel education background and experience, and the level of knowledge of outsourcing and the company's objective in outsourcing. Another recommendation for further research is to consider the main risks in outsourcing as perceived by the company and what they believe creates business success. The impact of outsourcing on business successes and risks can be identified by gaining a better understanding of the actual influence of the decision factors on performance. One of the

examples is the investigation into the extent of Integrated Warehouse Services influence on the warehouse performance or warehouse operational cost.

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APPENDICES

APPENDIX A

PARTICIPANT INFORMATION SHEET

Title: An investigation into Practices, Issue and Improvement Opportunities of Logistical Outsourcing: a study of Integrated Warehouse Services

My name is Novianti Rachmayani, and currently a student in the Master of Applied Science in Logistics and Supply Chain Management degree programme at Massey University. This research is supervised by Dr. Norman. E. Marr. Through some exploratory research of secondary data and academic resources, I identified that logistical outsourcing is becoming an important strategy in gaining competitive advantage, but, however, unsuccessful outsourcing can lead to sub-optimal performance, lack of morale, and loss of business opportunities. Outsourcing of logistical functions is accompanied by success stories as well as potential pitfalls and problem. Thus, there is plenty of room for logistical outsourcing growth. This research aims to investigate practices, issues and improvement opportunities of logistical outsourcing with regards to the practices of Integrated Warehouse Services.

You are invited to participate in my research. I would be grateful if you could spend the time to do the interview or to fill the attached questionnaire; however, you are no obligation to do so. Completion of the questionnaire is an informed consent of participants and once the questionnaire is completed and returned, no information can be withdrawn. The questionnaire will take about 15 minutes to complete. You can complete the questionnaire electronically through email.

If you have difficulty in answering the questions, please pass this letter and questionnaire to the person in your company best suited to answer the question or alternatively send a question email to the researcher.

The data obtained from the questionnaire will not be used in any way to identify with you and your company. Under no circumstances will your individual responses be made available to anyone. Information from the interview and survey will be compiled into overall research report consisting of aggregated result from many companies. The result may be published at a later time in aggregate form only. Please remember, individual responses will not be a part of these reports and will not be available to anyone except the researcher. The questionnaire and interview transcripts will be retained initially by my supervisor at the Massey University. If you request, a copy of the executive summary of the survey result will be sent to you.

Thank you very much for your time and help in making this study possible. If you have any queries with regard to this study, you are most very welcome to contact me or my supervisor, Dr. Norman. E. Marr, whose contact details have been provided below

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My Supervisor is:

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APPROVED BY THE MASSEY UNIVERSITY HUMAN ETHICS COMMITTEE on

13 July 2007

INTEGRATED WAREHOUSE SERVICES

The reasons for outsourcing logistical activities

1. Please rate the extent to which you think the following factors affect the decision to outsource logistical activities (IWS) in your company?

Factors	Very Important	Important	Neither important nor unimportant	Unimportant	Very Unimportant
Pressure to reduce cost					
Pressure to improve customer service					
Market expansion					
Access to up to date techniques & expertise					
Globalisation					
Focus on core competition					
Technology					
Other					

If other, please specify:

The reasons for not outsourcing logistical activities

2. Please rate the extent to which you think the following factors influence other companies to decide against outsourcing their logistical activities?

Criteria	Very Important	Important	Neither important nor unimportant	Unimportant	Very Unimportant
Control would diminished by outsourcing					
Service commitments would not be met					
Costs would not be reduced					
Have adequate in-house skills & resources					
Logistics is too important to outsource					
Outsourcing is too complex					
Other					

If other, please specify:

The benefit of logistical outsourcing

3. To what extent do you think the outsourcing process (IWS) can help to improve your logistical performance?

Benefits	Very Important	Important	Neither important nor unimportant	Unimportant	Very Unimportant
Increase reliable and consistence service					
Reduce cost					
Enhance flexibility					
Shorten delivery lead time					
Increase productivity					
Improve visibility across logistics and supply chain					
Give access to techniques and expertise					
Improve space and capacity utilisation					
Give access to up to date technology					
Assess new markets					
Other					

If other, please specify

Provider Selection

4. To what extent do you think the following criteria are important when selecting a logistical outsourcing service (IWS) provider?

Criteria	Very Important	Important	Neither important nor unimportant	Unimportant	Very Unimportant
Quality of tactical, operational logistical services					
Range of availability value added logistical services					
Availability of strategic logistical services					
Financial strength (staying					

power)					
Globalisation					
Capability if Information technology					
Price (cost of service and discount)					
Mutual consideration and trust					
Knowledge and advise on supply chain innovation and improvement					
Other					

If other, please specify:

Logistical outsourcing agreements and relationships

5. To what extent do you think the following categories best describe the agreement between company and its logistics outsource service (IWS) provider(s)?

Factors	Very Important	Important	Neither important nor unimportant	Unimportant	Very Unimportant
Transaction-by-transaction based agreement					
Formal contract of at least 1 year length					
Partnership with benefit and risk sharing for agreed period					
Partnership with formal sharing of relevant information					
Other					

Information Technology

6. To what extent do you think any of the logistics information and communication technologies is important?

Technologies	Very Important	Important	Neither important nor unimportant	Unimportant	Very Unimportant
EDI (Electronic Data Interchange) to connect with suppliers/customers					
Integrated logistics IT applications					
Internet to connect with suppliers/customers					
Connected facilities IT application					
Application connecting to suppliers/customers					
Non-integrated IT applications					
Other					

If other, please specify:

Logistical outsourcing issues

7. To what extent are the following issues of concern for your company in its current logistical outsourcing (IWS) performance?

Issues	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Service level commitments not realised					
Cost reduction not realised					
Technology capabilities not delivered					
Time and effort spent in logistics not reduced					
Control over the outsourced function(s) in diminished					
Lack of strategic management skills					
Lack of continuous ongoing					

improvement in service					
Lack consultative knowledge-based skill					
Cost creep/price increase after relationship started					
Misunderstandings/disagreements with provider					
Other					

If other, please specify:

8. Rate the importance of the following concerns in relation to the provision of outsourced logistical services (IWS)?

Concerns	Very Important	Important	Neither important nor unimportant	Unimportant	Very Unimportant
Uncertainty about logistical service quality					
Cost of outsourcing					
Uncertainty about service capability of logistical providers					
Uncertainty about cultural fit of your company with logistical providers					
Potential loss of direct control of logistical activities					
Other					

If other, please specify:

Logistical outsourcing improvement opportunities

9. Indicate your company's emphasis to improve overall logistical performance through the outsourcing strategy in the future

Statement	Excellent	Very Well	Average	Low	Insufficient
Improve customer service					
Reduce product/service cost					
Improve productivity					
Improve information sharing					

Reduce response time					
Improve capacity/space utilisation					
Increasing training/development of employees					
Increase marketing efforts					
Other					

If other, please specify:

10. To what extent do you agree with the following statements?

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Information technology capability is a major competitive advantages for a logistical outsourcing service provider					
The use of management consultant is necessary in the outsourcing process					
Logistical outsourcing service (IWS) provider need to provide international supply chain solutions					
Logistical outsourcing service (IWS) providers need to be more sophisticated and provide solutions to supply problems					
Logistical outsourcing service (IWS) providers need to provide the basic logistics activities and we will provide the integration (we will manage our supply chain)					
Success in outsourcing has been achieved in our company in terms of reduced logistics costs					
Overall, we view our logistical outsourcing initiatives as successful					

If other, please specify:

-THANK YOU-

APPENDIX B

LEMBAR INFORMASI PESERTA

Title: An investigation into Practices, Issue and Improvement Opportunities of Logistical Outsourcing: a study of Integrated Warehouse Services

Nama saya Novianti Rachmayani, mahasiswi Master of Applied Science in Logistics and Supply Chain Management di Massey University. Penelitian ini disupervisi oleh Dr. Norman. E. Marr. Melalui research dari data sekunder dan *academic resource*, saya mengidentifikasi bahwa *outsourcing* logistik sudah menjadi strategi yang sangat penting dalam mencapai *competitive advantages*, tetapi masih banyak hal-hal yang menjadi hambatan dari perkembangan *outsourcing* logistik ini. Sebagai bagian dari thesis ini, saya melakukan investigasi untuk *trend*, permasalahan dan praktek dari *outsourcing* logistik melalui studi terhadap Integrated Warehouse Services (IWS) dan mengidentifikasi improvement untuk system tersebut.

Partisipasi anda sangat di harapkan di dalam research ini. Saya akan sangat berterimakasih atas ketersediaan waktu anda untuk mengisi kuesioner berikut. Pengisian kuesioner ini tidak akan memakan waktu lebih dari 10 menit, dan jumlah pertanyaan tidak lebih dari 10 pertanyaan. Hasil dari pengisian kuisisioner dapat dikirimkan melalui email ke alamat email novianti.rachmayani@gmail.com.

Data yang didapatkan dari kuesioner tersebut tidak akan digunakan dalam cara apapun untuk mengidentifikasi anda. Hasil dari research ini akan di publikasikan dalam bentuk *aggregate* saja. Perlu diperhatikan bahwa, bentuk respon secara individual hanya akan diperbolehkan di akses oleh peneliti saja. Berdasarkan permintaan, copy dari ringkasan dari hasil survey ini akan diberikan kepada anda.

Terimakasih atas waktu dan bantuan yang membantu mensukseskan penelitian ini. Jika ada pertanyaan sehubungan dengan penelitian ini, silahkan menghubungi saya atau pembimbing saya, Prof. Norman. E. Marr.

Novianti Rachmayani

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Untuk pertanyaan yang berhubungan dengan permasalahan *ethics*, silahkan hubungi:

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13 July 2007

INTEGRATED WAREHOUSE SERVICES

Petunjuk: berilah tanda centang (v) pada pilihan yang anda pilih

Alasan untuk melakukan outsourcing pada aktivitas logistik

1. Menurut anda, seberapa berpengaruh faktor-faktor berikut ini yang mempengaruhi keputusan dalam melakukan *outsourcing* untuk aktivitas logistik pada perusahaan anda?

Faktor	Sangat Penting	Penting	Antara penting dan tidak penting	Tidak Penting	Sangat Tidak Penting
Adanya tekanan untuk menurunkan biaya					
Adanya tekanan untuk meningkatkan <i>pelayanan terhadap konsumen</i>					
Pengembangan pasar					
Akses untuk memperbaharui teknik dan keahlian					
Globalisasi					
Fokus pada persaingan					
Teknologi					
Lain-lain					

Lainnya, sebutkan jika ada:

Alasan untuk tidak melakukan outsourcing pada aktivitas logistik

2. Menurut anda, seberapa besarkah pengaruh faktor-faktor berikut ini bagi suatu perusahaan untuk menolak keputusan melakukan *outsourcing* untuk aktivitas logistik pada suatu perusahaan?

Kriteria	Sangat Penting	Penting	Antara penting dan tidak penting	Tidak Penting	Sangat Tidak Penting
Kontrol operasional perusahaan akan dikendalikan oleh <i>outsourcing</i> (kontraktor)					
Pelayanan tidak sesuai					

dengan kesepakatan yang diharapkan					
Biaya tidak akan berkurang					
Memiliki cukup kemampuan dan sumberdaya sendiri					
Logistik merupakan bagian yang terlalu penting untuk dikerjakan oleh pihak lain					
<i>Outsourcing</i> terlalu rumit					
Lain-lain					

Lainnya, sebutkan jika ada:

Keuntungan dari Outsourcing Logistik

3. Menurut anda, seberapa pentingkah proses outsourcing (IWS) dapat membantu mengembangkan kemampuan layanan logistik perusahaan?

Keuntungan	Sangat Penting	Penting	Antara penting dan tidak penting	Tidak Penting	Sangat Tidak Penting
Meningkatkan kepercayaan dan konsistensi layanan perusahaan					
Menurunkan biaya					
Meningkatkan fleksibilitas					
Mengurangi tenggang waktu pengiriman					
Meningkatkan produktivitas					
Memperjelas visi dari konsep logistik dan supply chain					
Memberikan akses untuk memperbaharui teknik dan keahlian					
Meningkatkan manfaat dari kapasitas dan ruang aktivitas logistik					
Membuka jalan terhadap pangsa pasar baru					
Lain-lain					

Pemilihan Supplier

4. Menurut anda, seberapa pentingkah faktor-faktor dibawah ini dalam proses pemilihan kontraktor outsourcing (IWS)?

Kriteria	Sangat Penting	Penting	Antara penting dan tidak penting	Tidak Penting	Sangat Tidak Penting
Kualitas dalam pelaksanaan layanan logistik					
Ketersediaan dari nilai tambah layanan logistik					
Ketersediaan strategi untuk layanan logistik					
Kekuatan keuangan perusahaan					
Globalisasi					
Kemampuan dalam informasi dan teknologi					
Harga					
Kepercayaan					
Kemampuan dalam inovasi pengembangan <i>supply chain</i> dan logistik					
Lain-lain					

Lainnya, sebutkan jika ada:

Kesepakatan dan hubungan dalam outsourcing logistik

5. Menurut anda, seberapa penting kategori-kategori di bawah ini yang menggambarkan perjanjian antara perusahaan anda (VICO Indonesia) dengan Kontraktor outsourcing logistik (IWS)?

Faktor	Sangat Penting	Penting	Antara penting dan tidak penting	Tidak Penting	Sangat Tidak Penting
Setiap Transaksi dilaksanakan berdasarkan pada kesepakatan					
Perjanjian resmi minimal dalam jangka waktu 1 (satu) tahun					

Kerjasama dengan berbagi keuntungan dan resiko sesuai dengan kesepakatan yang telah disetujui					
Kerjasama dengan saling berbagi informasi					
Lain-lain					

Lainnya, sebutkan jika ada:

Information Technology

6. Menurut anda, seberapa pentingkah teknologi informasi dan komunikasi bagi kelangsungan proses outsourcing logistik (IWS)?

Teknologi	Sangat Penting	Penting	Antara penting dan tidak penting	Tidak Penting	Sangat Tidak Penting
EDI (<i>Electronic Data Interchange</i>) sebagai penghubung dengan supplier					
Aplikasi IT yang terintegrasi					
Internet sebagai penghubung dengan supplier					
Segala fasilitas yang berhubungan dengan IT					
Aplikasi teknologi yang menghubungkan supplier					
Aplikais IT yang tidak terintegrasi					
Lain-lain					

Lainnya, sebutkan jika ada:

Permasalahan Seputar Outsourcing Logistik

7. Seberapa pentingkah pengaruh permasalahan-permasalahan berikut ini terhadap hubungan Kontraktor outsourcing (IWS)?

Permasalahan	Sangat Penting	Penting	Antara Penting dan Tidak penting	Tidak penting	Sangat Tidak Penting
Layanan yang diberikan tidak tercapai sesuai dengan					

kesepakatan yang telah dibuat					
Pengurangan biaya tidak tercapai					
Kemampuan Teknologi tidak tepat sasaran					
Tidak dapat mengurangi waktu dan usaha dalam proses logistik					
Berkurangnya control terhadap fungsi logistik yang dikerjakan pihak lain					
Kurangnya strategi dalam kemampuan manajemen logistik					
Kurangnya pengembangan terhadap layanan yang sifatnya berkelanjutan					
Kurangnya masukan pengetahuan yang berdasarkan keahlian					
Biaya meningkat sejalan dengan dimulainya kesepakatan					
Terjadinya salah pengertian dengan pihak kontraktor					
Lain-lain					

Lainnya, sebutkan jika ada:

8. Seberapa pentingkah hal-hal berikut ini dalam kaitannya dengan syarat diputuskan penggunaan Kontraktor logistik (IWS)?

Hal-hal yang menjadi perhatian	Sangat Penting	Penting	Kurang Penting	Tidak Penting	Sangat Tidak Penting
Ketidaktentuan mengenai kualitas layanan logistik.					
Biaya <i>outsourcing</i>					
Ketidaktentuan mengenai kemampuan Kontraktor logistik					
Ketidaktentuan mengenai					

kecocokan budaya perusahaan saudara dengan Kontraktor logistik					
Potensi kehilangan pengendalian langsung terhadap aktivitas logistik.					
Lainnya					

Lainnya, sebutkan jika ada:

Kesempatan Pengembangan *outsourcing* Logistik

9. Sampai sejauh manakah penekanan perusahaan saudara dalam usaha meningkatkan prestasi dibidang logistik melalui strategi *outsourcing* dimasa mendatang?

Pernyataan	Sangat Kurang	Kurang	Rata-rata	Baik	Baik Sekali
Meningkatkan pelayanan terhadap konsumen					
Mengurangi biaya produksi/jasa layanan					
Meningkatkan produktivitas					
Meningkatkan pertukaran informasi					
Mengurangi waktu respon					
Meningkatkan kapasitas pemanfaatan					

Lainnya, sebutkan jika ada:

10. Apakah saudara setuju dengan pernyataan-pernyataan berikut?

Pernyataan	Sangat Tidak Setuju	Tidak Setuju	Netral	Setuju	Sangat Setuju
Kemajuan Teknologi Informasi akan memberikan keuntungan bagi Kontraktor <i>Outsourcing</i> logistik.					
Peggunaan suatu Manajemen Konsultan diperlukan dalam					

proses <i>outsourcing</i>					
Kontraktor <i>outsourcing</i> logistik (IWS) perlu menyediakan suatu solusi tata rantai yang bersifat internasional.					
Kontraktor <i>outsourcing</i> logistik (IWS) perlu lebih berpengalaman dalam memberikan solusi terhadap masalah penyediaan barang/jasa.					
Kontraktor <i>outsourcing</i> logistik (IWS) perlu menyediakan suatu aktivitas logistic mulai dari yang mendasar hingga yang bersifat kompleks					
Kesuksesan <i>outsourcing</i> di dalam suatu perusahaan dikatakan tercapai apabila biaya logistic sudah berkurang.					
Ditinjau secara keseluruhan, <i>Outsourcing</i> logistik dipandang sebagai salah satu kunci kesuksesan					

Lainnya, sebutkan jika ada:

-TERIMAKASIH -