A STUDY OF THE APPLICATION OF ELECTRONIC BILL OF LADING: THE CASE OF FREIGHT FORWARDER COMPANY IN BANGKOK

By

AREERAT LERTKITCHA

A Final Report of the Six-Credit Course
SCM 2202 Graduate Project

Submitted in Partial Fulfillment of the Requirements for the degree of
MASTER OF SCIENCE IN SUPPLY CHAIN MANAGEMENT

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ABSTRACT

Bill of lading has for hundred of years facilitated international trade. They system allows goods to be traded, while in transit, many times before they reach their destination. Today merchants are increasingly using information technology in trade transactions, and many believe that electronic application is very close to reality. The paper examines to facilitate the use of electronic bill of lading by saving time and cost of delivery.

In this part, the root causes will be found by using the fishbone diagram. First, it starts by drawing a diagram by team leaders and then asks for assistance from the concerned staff to find the main cause of problems. Also process development is used in this project and compares time between non electronic bill of lading and electronic bill of lading is included all component costs are calculated to study the value benefit of using electronic bill of lading. As the result, by using electronic bill of lading can be shorter from 170 minutes to 50 minutes with efficiency and improvement is 70.59% of total current process time. Besides saving cost for a company is reduced by 4,099,942 baht for over 5 years with return on investment of 35.24%

Finally, electronic bill of lading is recommended to arrange internal and external evaluation in order to study the problem and use to improve work efficiency and effectiveness of the company.

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Areerat Lertkitcha
Assumption University
November, 2009

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CHAPTER I
GENERALITIES OF THE STUDY

Nowadays, there is very high competition in logistics and freight forwarding business. Each company is trying to build new tactics or create some value added in service to get the company competitive advantage and respond to customer's need correctly. Freight forwarder is a company that provides a full range of services and specializes in shipping cargo and preparing all necessary documents, provide trucking service, warehousing and freight negotiation. At present they also provide cargo insurance to customers and filing of insurance claims for customers. Freight forwarders are usually able to issue their own bills of lading (called house bill of lading). Bill of lading is a very important document which it signed by a transporter of goods (carrier) and issued to the shipper of goods (exporter) for evidence as the receipt of goods for shipment to a specified person. When international trade has expanded quickly, bill of lading is not only the document that specifies the list of goods, but it is the right document that the receiver endorses by valuable compensate and it's still a document that the bank and the financial institution might give the credit to the holder. The company will provide documents (shipping particular) to exporter for booking/reserving the vessel space before loading the cargo once all consignments are confirmed from exporter and sent back to the company for approval. Then the company will send it to carrier/liner for issuing ocean bill of lading to the company. The company also issues a document to exporter called house bill of lading

1.1 Background of the Study

AAA Co., Ltd. has been established since 1991. The company handles all the shipment starting from the beginning process to the end process of International transportation, custom clearance, inland transport, warehouse & inventory management, distribution management etc. AAA Co., Ltd. as the holding company

of the group companies, provides a full type of logistics services, such as air/sea freight services, Project cargo handling and customs clearance services. It is a certified internationally acclaimed ISO 9000 (version 2000) company which provides services in both local and global marketplaces.

AAA Co., Ltd. provides full range of services, including air and sea and has a worldwide network in many countries such as USA, UK, Singapore, Hong Kong, Taiwan, China, Japan, etc. They also have inbound cargo, outbound cargo and transit cargo. For sea freight, the company provides services as; FCL (Full Container Loaded). The company offers services in all continents and more than 250 countries around the world with much type of containers provided and LCL (Less than Container Loaded). The company offers consolidation services to all major countries worldwide. For air freight the company also provides direct flights, flights in transit and airport to airport services.

Now Thailand has about 300 – 500 freight forwarder companies which are separated into;

- Members of Thai International Freight Forwarders Association TIFFA 155 companies
- Small entrepreneurs 82 companies
- Medium entrepreneurs 36 companies
- Large entrepreneurs 12 companies

The top five companies who occupy the highest market share (all companies are international company franchise)

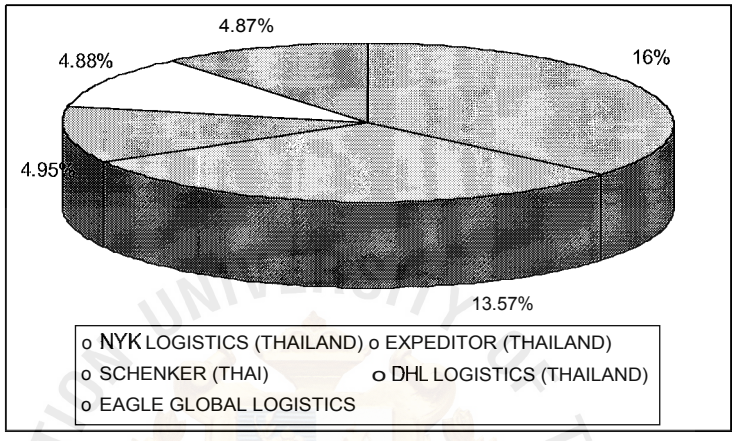
1) NYK Logistics (Thailand) Co., Ltd. (Japanese company's franchise) occupied 15.75 %
2) Expeditor (Thailand) Co., Ltd. occupied 13.57 %

3) Schenker (Thai) Ltd. 4.95 %

4) DHL Global Forwarding (Thailand) Ltd. 4.88 %

5) EGL Eagle Global Logistics (Thailand) Ltd. 4.87 %

Figure 1.1: Proportion of highest market share in freight forwarding company



Source: Adopted from Thailand Development Research Institute, TDRI

1.2 Statement of Problem

The case study is based on a theme that the company experiences with delay in delivery. The company tries to provide fast service to customer. They found that the staff who is responsible for issuing documents to customer still has operating time problems since they have too many internal processes in issuing the original bill of lading and it affects another departments, such as the delivery department. The delayed in issuing the document, the delivery staff will deliver bill of lading to the customer late. In case of short distance transit time such as the shipment from Bangkok to Hong Kong, the transit time is five days and the original bill of lading must be delivered to the shipper/exporter before the vessel departure or within the day of departure date. Once the shipment arrives at destination while the original bill of lading is still on the way, the consignee cannot release the cargo and consignee must be waiting for the messenger to deliver the original bill of lading. In addition, while the cargo stays at the port, the demurrage charges still increase which also affect to

consignee cost. Secondly, the total cost of delivery will still high since the company has to delivery the document to customer.

Duty and tasks for the export department

1. Receive shipment booking from customer by customer service department.
2. Send the job to the operation staff to input the detail in system to create shipping particular document.
3. Send the details to a liner for booking the vessel space.
4. Print draft bill of lading and send it to customer for checking and approving.
5. Print original bill of lading by operation staff.
6. Send original bill of lading to manager for approval.
7. Send a complete set of documents back to customer service department.
8. Customer service prepares the job order for the messenger to deliver the complete set of documents to customer.

For the entire process the company spends around 170 minutes for prepare documents. The result is that more time spent for preparing the document, the more time delaying for delivery of the document. Also some customer's office is located outbound and in other provinces which may take 1-2 days for bill of lading. In case, to be delivered the customer would like to revise some details in the original bill of lading while the delivery staff is on the way to customer visit, the delivery staff must go back to the office to get a revision original of the bill of lading and then deliver it to the customer again which it the cause of the late delivery for another job. We have to hire outsourced messengers to deliver new documents to customers and this also increases the cost of delivery:

1.3 Project Objectives

The objectives can help frame the project by which the company can determine deliverables needed to achieve the objectives. Also it helps to identify the overall project scope, helps company identify risks and allows them to provide estimates on effort, duration and cost. The primary objective of the project is to study the company service improvement by using electronic bill of lading. The finding can enhance business performance in terms of applying electronics application to be incorporated with the company policy in the case study through the following objectives:

1) To study of how to implement and start the electronic bill of lading (E-B/L) project
2) To understand the relevant persons/department in E-B/L processes
3) To explore the possibility of project success in terms of financial value, time benefit, etc.

1.4 Scope of the Research

The project emphasizes on company service improvement by redesigning the company processes with support of electronic application. Only historical data of the past five years are used in computing the result. Also, the electronic bill of lading in terms of time and financial benefit. The study fully emphasizes on the bill of lading issue procedure from start to end, develop time operating by using electronic processes. The amounts of expenses used in this paper are only approximate figures due to limited information disclosure by the company.

1.5 Limitation of research

This project emphasized on processes which still cannot be applied in the company, since the company just began to apply electronic bill of lading at the beginning of this year, 2009 and the information may not be enough in order to be analyzed. Some

information that company will receives is only estimation which it different from the actual data.

1.6 Significance of the Study

The expected benefits from this research can be beneficial to both the company and customers which are;

- **High customer satisfaction**
  - To enhance service quality in terms of customer convenience
  - To differentiate service from local competitors
- **Excellent working process & system**
  - To prepare on IT revolution project
  - To reduce cost and processing time
- **Healthy group of companies**
  - To create business opportunity in increasing revenue and excelling to our competitors
  - To reduce cost of B/L delivery in either transportation or mail

1.7 Definition of Terms

- Freight Forwarding Services means services of any kind relating to the carriage, consolidation, storage, handling, packing or distribution of the goods as well as ancillary and advisory services in connection therewith, including but not limited to customs and fiscal matters, declaring the Goods for official purposes, procuring insurance of the Goods and collecting or procuring payment or documents relating to the Goods.
- Freight Forwarder means the person concluding a contract of Freight Forwarding Services with a Customer.

- Carrier means any person actually performing the carriage of the Goods with his own means of transport (performing Carrier) and any person subject to carrier liability as a result of an express or implied undertaking to assume such liability (contracting Carrier).
- Shipper means someone who prepares goods for shipment, by packaging, labeling, and arranging for transit, or who coordinates the transportation of goods
- Consignee is the person to whom the shipment is to be delivered whether by land, sea or air.
- Customer means any person having rights or obligations under the contract of Freight Forwarding Services concluded with a Freight Forwarder or as a result of his activity in connection with such services.
- Goods mean any property including live animals as well as containers, pallets or similar articles of transport or packaging not supplied by the Freight Forwarder.
- Ocean Bill of lading (OBL). The document issued on behalf of the carrier describing the kind and quantity of goods being shipped, the shipper, the consignee, the ports of loading and discharge and the carrying vessel.
- House Bill of lading (HBL). Issued by a freight forwarder to a shipper as a receipt for the goods being shipped with other cargo as one consignment. Its similar to ocean bill of lading.
- Container means any container, flat, pallet or other form of cargo carrying unit or equipment referred to on the face hereof or in or on which any goods may be unitized or otherwise packed or stored either when received by the Carrier for carriage hereunder or at any subsequent time prior to delivery
- Port of loading means place where shipments are loaded and secured aboard a vessel.
- Letter of credit (L/C) means written commitment to pay, by a buyer's or importer's bank (called the issuing bank) to the seller's or exporter's bank (called the accepting bank, negotiating bank, or paying bank). A L/C guarantees payment of a

specified sum in a specified currency, provided the seller meets precisely-defined conditions and submits the prescribed documents within a fixed timeframe.

- Demurrage charge means a charge required as compensation for the delay of a ship or freight cargo beyond its scheduled time of departure

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CHAPTER II
REVIEW OF RELATED LITERATURE

This chapter describes a literature review of definitions and role of activities in freight forwarder business. The advantage and disadvantage affect the traditional bill of lading. It also mentions information technology management concerned in electronic bill of lading. All aspects of this research have the same objective, which is to reduce processing time and cost of delivery.

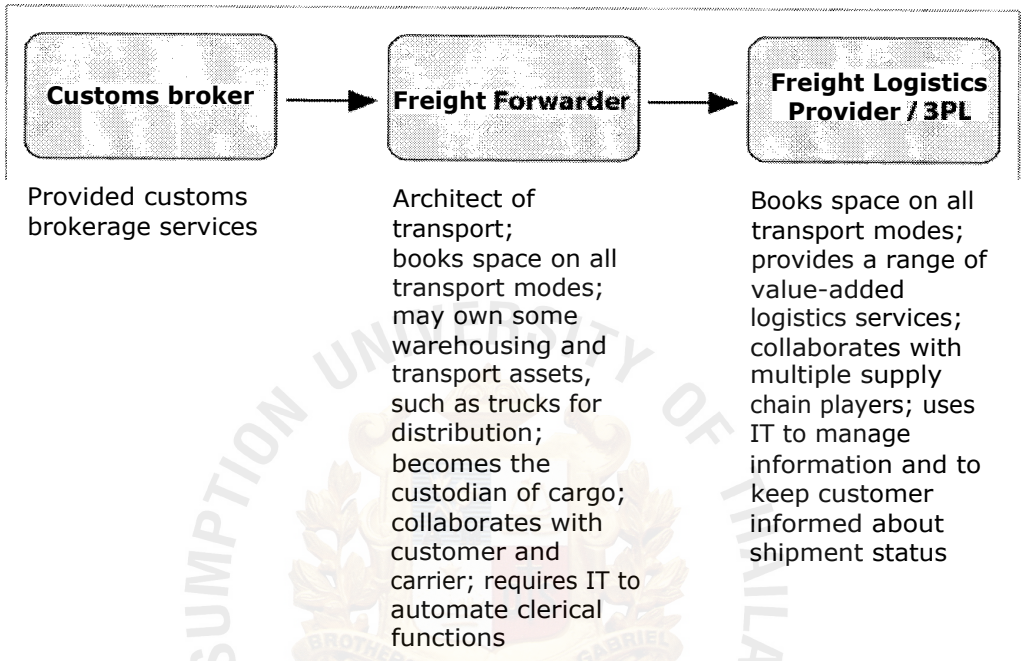
2.1 Introduction to the freight forwarding

During the 13th century in the time of the Venetian Republic merchants called brokers for the organization of carriage of the goods. The first origin of the modern freight forwarding then began from the 18th century. They are a logical consequence of the world trade development and need for the organization of distribution of goods to another destinations. From this time comes the first nomination of specialists for organization of goods distribution named freight forwarders. The real expansion of freight forwarding, as known today, arises from the 2nd half of 19th century with the development of various means of transportation. The rebirth and renaissance of the freight forwarding began from the time after the 2nd world war, when the organization of moving goods by specialized business companies became necessary due to difficulties of getting trough different international conventions, national legislation and transportation modes.

The freight forwarders in practice are absolutely not just "on account of other persons", nor just "making a carrier by ship transported goods", nor "for remuneration" in the process only. At most times freight forwarder act as a common carrier they able to use their own name to issue bill of lading and take responsibility of the whole carriage to get the need of carriers (Wang, 2005). Moreover, one freight

forwarder can accept the consignment from another freight forwarder as customers, not only from consignor directly.

Figure 2.1: The Freight Forwarder's Evolution



Source: Adopted from Baluch, 2003

As Balush, 2003 stated that traditionally, the role of the freight forwarder was to act as a transportation company on behalf of exporting companies. After that time, they have to provide an additional logistics service to compete with their competitors. The key role for most freight forwarders is export transportation process, documentation advice, storage which many forwarders now have their own distribution center and warehouses which provide the service to exporters. There are many reasons for exporters to use freight forwarder's warehouse, but the main reason is that some exporters do not have enough room to keep their stock or the need more warehouse to keep the goods for waiting to export later. Also some companies use freight forwarder's warehouse to consolidate and distributed the goods to their customers.

The freight forwarder has become more involved with the customer's goods and processing to ship the goods by helping the exporter and importer in their sorting, packing and labeling either before shipping or at the time of receiving. Freight forwarders are now full logistics service providers being involved in the comprehensive supply chain management of the customer's product. Freight forwarders have responsibilities to choose the mode and means of delivery, storage and carrying of goods. They also provide legal activities and financial, port administration, customs clearance and insurance function to customers. The freight forwarder companies give advises to their customers by providing them with the useful information related to the transportation costs including import or export as well as the customs duties. The freight forwarder also provide their customers about the necessary documents to clear the goods e.g., shipping particular, packing list, invoice, certificate of origin and advise about procedures of authentication and legalization of these documents, contacts with the carrier agents to find the best way of deliver the goods with lowest costs.

2.2 Leveraging IT to manage transport logistics

Information technology is one of the most powerful ways of enabling the company to rapidly change the way in operates. Each evolution step in technology from the telephone, to the fax and now the Internet has a major impact not just by the way the company conduct its business, but by the role of the company itself. Information technology enhances the value which it is not measured by performance level, but enhances delivery and service time. Bakos and Brynjolfsson (1993) mention that IT reduce the cost of complexity and produce competitive advantage in economy of scale. Sauvage(2003) argued time and technology becomes an important factor which it is the tool to make a company differentiate itself from others in the point of logistics services. With real time communication and information sharing capabilities, track and trace capabilities and the electronic competent can approach the customer to use company services. Stough, 2001 state that to improve customer service level, the

company has forced concern in real time information and data accuracy of the entire shipment to support their planning capacity. The use of specific technological tools may simplify more effective integration across companies in the Information and communications technology supply chain. The 3PLs, IT and communications technology can enhance the rapid customization of products and maintain competitive lead-times. 3PL must be flexible and provide a variety of services based on the customer's demand. The result is that competitive advantage in the 3PL industry will create value added activity to customers either in direct or indirect ways on IT application (Crowley, 1998).

2.3 Bill of lading history

There is unclear evidence for emerging of bill of lading (McLaughlin, 1925). In the time of Greek-Roman period, a merchant had a notebook for recording the details of goods that was loaded to a vessel. In the 11th century, begining from the practice in Italy with the law of "Maritime Ordinance of Trani of 1063", all vessels must have a vessel clerk who writes down all details of goods that were loaded in the vessel. The 14th century, the customs of the sea has regulated that vessel clerks must have a registered book and a merchant should notify the clerks about the goods otherwise, the vessel owner will be responsible for the damage to the goods. These documents include an account, receiving goods and payment, destination port. In this century, there was evidence in the document instead of agree of words among a merchant and a vessel clerk. The history of bill of lading began with a merchant who must travel with goods which was inconvenient. The merchants then to find a way not travel with their goods by duplicating document from the register book with the signature of the vessel owner and the specified conditions of transportation of goods.

In general the bills of lading have the three functions. First, it is the certified document that the goods have been received (received for shipment bill of lading) or the goods shipped by the carrier (shipped bill of lading) (Schmitthoff, 2000) Second,

it is evidence of a contract of carriage. The bill of lading not only mention the condition of the goods, but also mentions the weight, and shipping marks, number of packages, and the on board date and the date of issuing bill of lading. Finally, it is a transferable document of title. Therefore, the ownership of the cargo may be transferred by the endorsement of the bill of lading which the carrier's obligation to deliver is tied to the possession and presentation of the bill of lading. The transfer of the bill of lading serves as a transfer of the possession of the goods, It is not necessary to transfer the property of the goods. Traditionally, bills of lading are issued in sets of three or more originals. To release the cargo, the ship owner must be requested to present the first original bill of lading to clear the cargo (Schmitthoff, 2000). Original bills of lading do not need to be present when both parties have negotiated or there is no problem in payment between each other. However, a bill of lading is necessary when there are a lot of re-sales shipments, when payment is by documentary credit, or when the seller needs the security of a document of title. In the case of bill of lading does not reach the consignee before the goods arrive at the destination, the consignee may be able to use the letter of indemnity as a temporary substitute for the original bill of lading.

Nowadays, computer and IT application has attempted to incorporate the three functions of the bill of lading (receipt of goods, contract of carriage, and document of title) into telecommunicated messages. Zekos (1999) state that a negotiable document of title is valuable collateral, as it allows quick, easy and inexpensive possession and release of the cargo. The national reports Todd (1986) showed that seaway bills use to substitute for traditional bill of lading. A seaway bill is a non negotiable document that shows evidence of the contract of carriage and of the receipt of goods by the carrier. It is not a document of title and it cannot be used to transfer ownership of the goods. Consignee do not need to be presented with the bill of lading for taking delivery of the goods, The carrier delivery to the consignee needs only prove of his identity. Seaway bills have advantages over the traditional bill of lading since they avoid complex documentary processes and reduce the risk toward the

consignee. However, they have also disadvantages because seaway bills are not negotiable paper and are not accepted by banks for documentary credit. Also it does not support the security as traditional bill of lading provides. A buyer who has paid for the goods before shipment departure may face the risk that the seller may change the consignee while the goods are in transit.

2.4 The advantages and disadvantages of bill of lading

The national reports of Greece, Pampouki (2000) discussing of the advantages of the traditional bill of lading that it is the bill of lading as commercial paper that makes the easy transfer of rights of goods, especially by endorsement and delivery of the bill of lading has some disadvantages. Transfer of the bill of lading and the right to release the cargo may take some time. The arrival of shipping documents may be delayed which means that the goods have arrived at the destination port before arrival of the shipping documents. Also the arrival of documents at the port of discharge is usually delayed to a bank along the way for the purpose of documentary credit. Todd (1990) states that the primary problem of using traditional bill of lading is that it can crate additional costs of delay because at the port of discharge relative to the custody and insurance of the goods can also increase cause total transportation cost. High cost is also another disadvantage of the paper bill of lading due to issuing and processing of documents. Amelia (1991) argues that the total transportation cost of company may rise from 10% to 15% which may be caused by the delay involved in their issuances. The replacement of bills of lading with seaway bill is not always possible because some traders and banks prefer to use the original bill of lading that has more security. Legal problems also arise because the laws remain limited to the paper bills of lading.

Table 2.1: Benefits and concerns of using electronics bill of lading

Item	% of respondents
*Tick the three most important benefits of using **eBOLs***	
They offer	
Speedier documentation processes	78
Better management information	51
Saving on postage	47
Improved accuracy	28
Business integration opportunities	26
Easier access to change data	18
Reduced dumurrange costs	16
Reduced risks	12
Data storage savings	8
Improved asset utilisation	2
*Tick your three most important concerns about using **eBOLs***	
Security of data	92
Legal integrity	78
Technical support	41
Speed of access	24
Government policy	22
Costs of training	8
Difficult to use	8
Costs of equipment	4
*If you chose to use **eBOLs** instead of traditional **BOLs** which service would you choose?*	
EDI	53
Establish my own web site	20
A third-party network provider	16
A business partner's web site	10

Source: Adopted by Mei & Dinwoodie, 2005

Figure 2.1 indicates works conducted in Shanghai, China's premier port and logistics hub, headquarters for half of China's shipping lines, logistics companies and branches of most international shipping lines. There are three most important benefits of using electronic bill of lading, which can be confirmed from data collected 78% of respondent agree in using electronic bill of lading and they accept that electronic bill of lading offers better information management to 47% save on postage and they perceive capability to overcome traditional excessive paperwork. Also the respondents prefer EDI systems because it reliability, confidence and trust in perception of the respondent.

2.5 EDI systems

There is an increase in the use of electronic communication at an international and commercial in recent years. E-commerce helps information in travel quickly and efficiently, reducing paperwork and saving costs. Communications among computers are a common way of contact between parties. Computers are used to communicate with other parties or such as customers, suppliers, transporters and banks from the companies. The term of electronic data interchange (EDI) is the interchange of commercial data structured by approved standard messages among computer systems in predetermined formats (Boss, 1991). Moreover, EDI support international transactions of distance and time differences through instantaneous transmission of data. The use of EDI application is rapidly increasing due to advantages of time saving by speeding up the processes of the document and information transfer. Kelly (1992) state that EDI helps the company to do easy business in terms of long distance which involves the reduction of cost in business transaction, and also decrease the amount of middlemen needed. The use of EDI system also increases accuracy and causes the standardization of business communication. Among the working group, the company can use close EDI by which all partner companies who already know one another. Communicate can transfer the standardized format data to each group of partners. Closed EDI provides point to point communication among the internal group of companies. Hence, open EDI system are considered to be publicly available, and the data can be remotely accessible. EDI system is a technology that is used to replace the paper transfer procedure and it has standard formats and interchange of information. The company can get advantages of using EDI in both direct and indirect ways, mostly by increasing internal efficiency such as an enhanced flow of business activities, and improvement in the time that documents need to be transmitted.

Table 2.2: Quantifying the benefits of electronic commerce

	Sending Orders Electronically			
Cost Area	**Current Cost**	**Potential Saving**	**Likely Savings**	**Value**
Staff time printing and mailing orders	Man hours per month	80%	Time saved man hours per month	per month
Paper and postage of fax costs		50%		per month
Reduced Stockholding Costs	No. of days stock held	5 days	Monthly stockholding cost	per month
Reduced incorrect deliveries	Cost of incorrect deliveries	80%		per month
Improve Customer Service	Potential value of 100% stock availability	% of this achievable **		er month

** The potential value of 100% stock availability may the easy to estimate if records are kept of business lost. Altenatively an estamate of the business lost or competitive advantage to be gained may be possible.

Source: Adopted from GE Information Service, 1996

EDI allows the company to collect the data in a speedy and efficient manner. The way in which you integrate EDI into the company business will determine the company's long term success. Table 2.2 indicates that EDI can give benefits to the company by saving more time in printing, mailing and also faxing cost. EDI also reduces incorrect deliveries while improving the company's customer service.

Nowadays, banks also use EDI system to support their communication among branches. Formerly, most letters of credit communications between banks and beneficial were still communicate by paper based between banks themselves. But now the letter of credit messages shifted from paper communications to teletransmissions. To communicate through EDI, the data have to be uniform and standardized, and, all data that is received does not have to be retyped. Electronic procedure replaces the paper work in international trade. Money electronic funds transfer is the most efficient way for goods and services payment in international trade. IT development enhances cheaper and faster transfer service because the cost of paper payment is higher than electronic payment. EDI system for banking called

"SWIFT" (Society of Worldwide Interbank Financial Telecommunications) is used in international commerce by the banking industry for the communication of commercial letters of credit between banks worldwide. SWIFT was established to simplify the transmission of bank to bank financial transaction messages (Kozolchyk, 1992). These millions of transactions take place every day in a legal vacuum. However, the success SWIFT is experienced in processing of letters of credit, proves the feasibility of transferring ownership of large sum of money electronically.

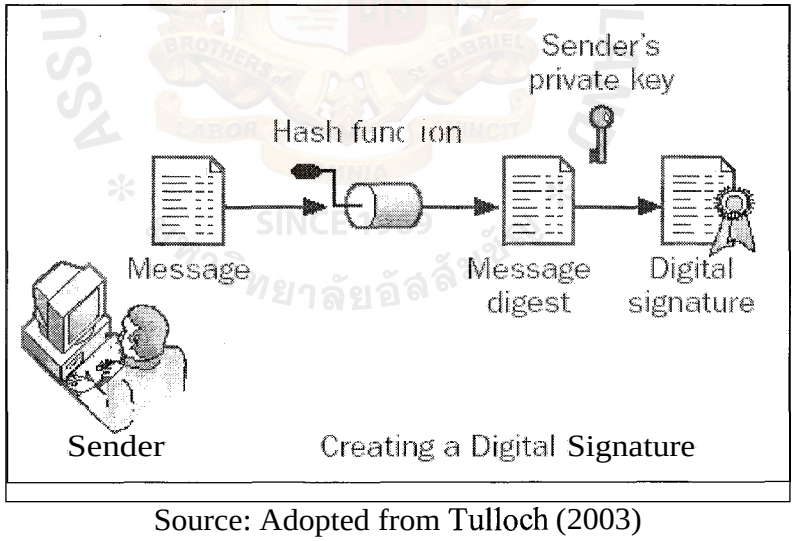
Electronic communication has transfer of ownership during transit. When the company receives the original paper bill of lading from the shipper they will issue a pass code to the shipper. When the shipper has negotiated the bill of lading, they will notify the company by computer and give the buyer a portion of the pass code. The buyer will also notice to company. Then after receiving and testing both messages the company records in the registry the name of the buyer as the new owner. The company also records this information on the original paper bill of lading in its possession. When the goods arrives at the destination, the company will transmit a code to the carrier and to the last owner of the record. The code allows the owner to claim delivery of the goods. Also the text of a sea waybill may be electronically transmitted to the port of destination and the consignee may receive the goods from the carrier without presentation of the original bill of lading. (Merges and Reynolds, 1986). The bill of lading data are transmitted electronically but for informational purpose only.

2.6 Digital Signature

Digital Signature was first proposed in 1976 by Whitfield Duffle, at Stanford University. A digital signature transforms the message that is signed from one person to another person. The digital signature uses a secret key (private key) to send messages and a public key to verify them. The message translated by the private key can only be verified by the public key. The sender is the only person who has to

create the signature and also has to use a private key to create the signature. The application of digital signature is called the "one-way hash" which allows people to know one digital who send the message and it also blocks for copying the signature to another message. Therefore, it is guaranteed that the signature is original (see figure 2.1). Also in legally, written signature can show the signer's identity. Hence, handwriting signature and written documents enhance securing the documents and information. Digital signatures are created and verified by cryptography. Digital signatures are used as a public key cryptography by using two different related keys, one for creating a digital signature and another key for verifying a digital signature. The risk of digital signature is that some sender may know the public key and use it to verify sender's signature. However, Digital signatures are accepted in several countries and international standards are developed in co-operations that are accepted by many like, banks and governing agencies.

Figure 2.2: Creating a digital signature



Source: Adopted from Tulloch (2003)

Trust in electronic commerce is an important factor because it involves visible processes for identification, secure technology and reliablity. Wilson (1997) mentions that security on paper work is more confident than electronic paper. The company can know the origin of paper if the company signed in the letter head and it can be

sure that the document is the original document. Also the details or information of the original paper cannot be changed while it is on the way to its destination. But the original paper cannot be canceled while it is sent to its destination. The hand-written signature is the evidence in the court to hold what signer has made. The security on paper is more confident and is usually provided by sealing the letter inside an envelope.

2.7 Business Process Development

A competitive market requires companies to manage multiple information and continuous organization flow to support shorter processing time, lower cost and delivery with the best quality. Now the advance in IT and communication has increased the use of electronic commerce. Many companies widely accept operations the Internet & WWW because it able to provide specific transaction to all parties (Isakowitz, Bieber and Vitali, 1998). It is difficult for achieving success in business process development if the company dose not uses an IT. The development of IT application such as databases, imaging, and Internet technologies can enable process change through reducing physical coupling. IT application may improve communication and collaboration among different functions that are involved in a business process (Grover and Malhotra, 1997). From the point-of-view of information technologies as Jackson and Andy (2007) remark that the development of technology including **EDI** systems is able to improve the company's business processes. In this way, technology developments are created to support the company's communication and determine the impact on the organization. This means that developing or re-engineering of the process can improve efficiency and effectiveness of company itself. Due to a mismatch between the company's current processes and the standards of new technological systems, current systems should be redesigned to achieve alignment with the new business process (Lyons, 1997). Electronic Bill of Lading project has demonstrated the potential and the feasibility of applying business process redesigns to plan legacy information systems for e-logistics. Business process

development not only supports a systematic approach to e-logistics implementation, but it's also helps the company to understand the core competency and leverage its businesses. IT application can used for company's business process redesign; it is allowing firms to break long process business flow (Hammer and Champy, 1993). The company can reduce the cost of services, improve coordination process and information by using new IT application (Earl and Kuan 1994). According to Hammer and Champy (1993) business process reengineering (BPR) is, "The fundamental rethinking and radical redesign of business processes to bring about improvement in critical, contemporary measures of performance, such as cost, quality, service, and speed". The principle for BPR is that a company can improve performance through the redesign of its business processes. The company can use business process mapping tools for the overall organization department. The main purpose of the process improvement is to eliminate waste such as rework, scrap, cost of warranties, returned goods, settling customer claims, and other redundant activities (Juran, 1989). In general, process improvement initiatives are grouped under three categories: defect prevention, improvement actions, and cost of quality deficiencies (Crosby, 1979; Deming, 1986; Juran, 1992). Defect prevention refers to avoiding mistakes in the first time of running the process flow. The companies tries to create products or services with zero defects. While the company prevents the defect they have to improve their processes by continuously upgrading the quality standards in company's business processes, which means not only prevent errors from occurring in the first place but also try to reach new standards of quality by upgrading their capabilities in process improvement. Another way to improve the process according to Crosby, 1979 is to reduce excess cost of services which means that the company must reduce all kinds of waste. The company must begin to reduce the number of steps and handoffs in carrying and completing its tasks. Lead time is an important factor that shows the problem in the specific flow. Once there is longer lead time, the company has to be concerned in reduce the longest lead time to improve overall process flow so, the activities that do not add value to the customer should be

eliminated. Thus, a reduction of lead times can be improve the supply cycles, in the internal process or speed up delivery cycles to customers.

2.8 Legal and Technology challenges to the implementation of electronic bill of lading

The United Nations Commission on International Trade Law (UNCITRAL) has identified the laws for the requirement of the documents that have to be written and signed. The traditional writing cannot be changed without leaving a trail of the change. In contrast, most electronic data can generally be changed or erased (Whitaker, 1991). Computerized records that are made in the ordinary course of business can satisfy the statute of frauds writing requirement because of the intent of the party to record the transaction and this can confirm that a contract exists (Williams, 1991). A question to electronic transaction is who will bare the liability for error messages, failures in communication, and system breakdowns. Liability must be in a fair and predictable manner and the parties are liable for direct damage caused by failure to follow the rules, except when the failure is an unexpected situation beyond a party's control.

There are many barriers to paperless trading that exist because of the divergent documentary practices of carriers, bankers, and shippers. In an electronic environment, the challenge is to preserve the marketability of electronic records that replicate paper data, in particular by securing their authentic, unique, and confidential electronic system (Frisch and Gabriel,1995). Now in the international business, the companies do not widely support and have confidence in the electronic bill of lading because they are concerned about security and the authority of documents. Legally, the transfer of ownership from seller to the buyer must be done by delivery of goods. However, the use of electronic bill of lading is a business rather than a legal decision. The law that applies to electronic bill of lading may provide the function in the same way and must have same effect as the traditional bill of lading. However,

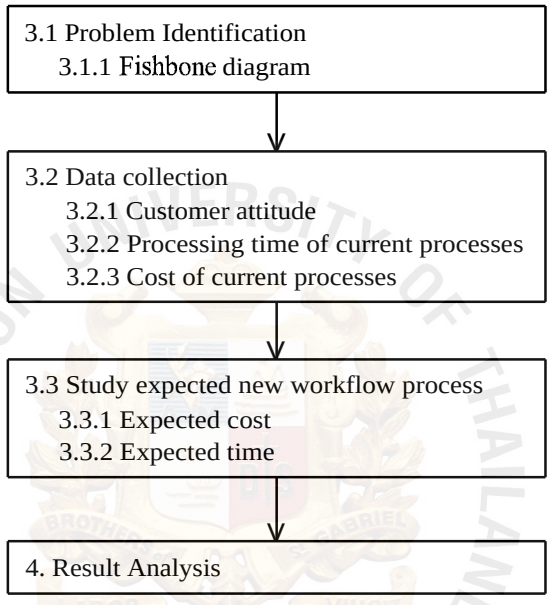
the use of electronics bill of lading is more concerned with accuracy, privacy of information, for security of transactions and acquisition. It is concerned with technology rather than legal solutions.

Due to commercial international growth increase, trading between countries is increasing. Some business lead computer system can be applied in work systems. Also in current business situation push is the company to use technology. Modern technology system is of help in sendind and receiving data between parties. The liners begin to use Internet system to support customer services a customer can check the vessel schedule and cargo status from the company's Website. At present in Thailand, the use of bill of lading is increasing, but there is no specific law on this matter. The applied law does not cover all aspects of carriage of goods by sea and in some cases differs from international accepted rules or customs. Because of this application, the parties cannot ascertain their rights and liabilities especially on the effects of the bill of transfer in regard to the transfer of ownership or contractual rights and liabilities and the protection of transferee. This practice creates uncertainties and confusion. On some occasions the result is against the parties' will. This uncertainty adversely affects the national economy. The Draft Carriage of Goods by Sea Act which is now under a legislative process and can clarify the law on part of the carriers' rights and liabilities. However this draft does not cover all aspects of the effects of the transfer of bills of lading. There is still need for future interpretation. Nonetheless, this draft will provide a firm basis for the Thai legal system on sea carriage and will be one big step in the process of legal evolution.

CHAPTER III
RESEARCH METHODOLOGY

This chapter presents a research methodology, as demonstrated in Figure 3.1

Figure 3.1 Research Methodology Flowcharts



The scope of this project is to study the cost and process in using electronics bill of lading for freight forwarding company and the advantages in using electronics bill of lading.

1) Analyze the cause of problem and way to solve problem

2) Study to normal & electronics process of issuing bill of lading for freight forwarder company in term of time consume

3) Study the cost in issue process of bill of lading before and after applying the electronic bill of lading

This project aims at new trends of using technology concerned electronic bill of lading and identify internal and external factors that are important to achieving the

objective and matching the firm's resources and capabilities to the competitive environment in which it operates (Table 3.1). SWOT analysis is a tool that can be used for understanding a business's niche relative to the marketplace and also helps understand internal conditions of the company. SWOT will help the organization to accomplish company's objectives or it can be used to determine a weakness that the company must overcome or minimize to achieve desired results.

Table 3.1: Company's SWOT Analysis

Strengths	Weaknesses
• Ready technology infrastructure • Strong team in this industry of all management, sales, marketing, IT people, affiliated software-house company • Existing customer base • Have own software supporting E-b/1 project development, consisting of CFSP, existing web-based BL printed and company website, all of these can be selective, modified and applied to serve customers	As a local Freight Forwarder it is hard to be accepted by Bankers, because of comparing is on with Multinational Liners Staffs skill and awareness Using several formats of HBL forms, so leading us to have several standards. Difference from liners that they have using only one BL format
Opportunities	**Threats**
• A few service providers offer E-b/l, most of them are liners but not freight forwarders • Future trend is moving to electronic signature • Company that gets HB/L with electronic signature, acceptable by Bankers and Public cities, such	■ E-signature Law is not widely acceptable in public. • Not many case studies of crime incurred, related to E-BL service • Confidence levels of both customers and sales team ■ Other well-known liners such as Maersk, NYK, Safmarine, and APL

company will be able to leave competitors behind because it would take a period of time to follow. ■ Have more opportunities to attract SML exporter and affiliated companies to use our service because, during economic turmoil in Thailand, most exporters might need to get paid as fast as possible.	have offered these services to customers for more than two years, they are very successful. Therefore, there must be some barriers behind.

3.1 Problem Identification

The problem of this project is about delay in service which is one of the problems that occur due to internal company processes is related to issuing bill of lading. It affects the cost of other departments. The company applies the method of fishbone diagram to study all the possible reasons why a process is beginning to have problems and why a process is not effective in obtaining the desired results.

3.1.1 Fishbone Diagram

It starts by drawing a diagram by the team leader and then asking for assistance from the concerned staff in order to determine the main cause of a problem. Kaoru (1968) supports the fishbone diagram because easy to read, it is also show the relationship between cause and effect and also encourages the group members to participate in the project which can be increase knowledge of processes by helping everyone learn more about the related factors and how they related. The information helps the company understand the problem as follow;

Figure 3.2: Analyzes of the problem by using Fishbone Diagram

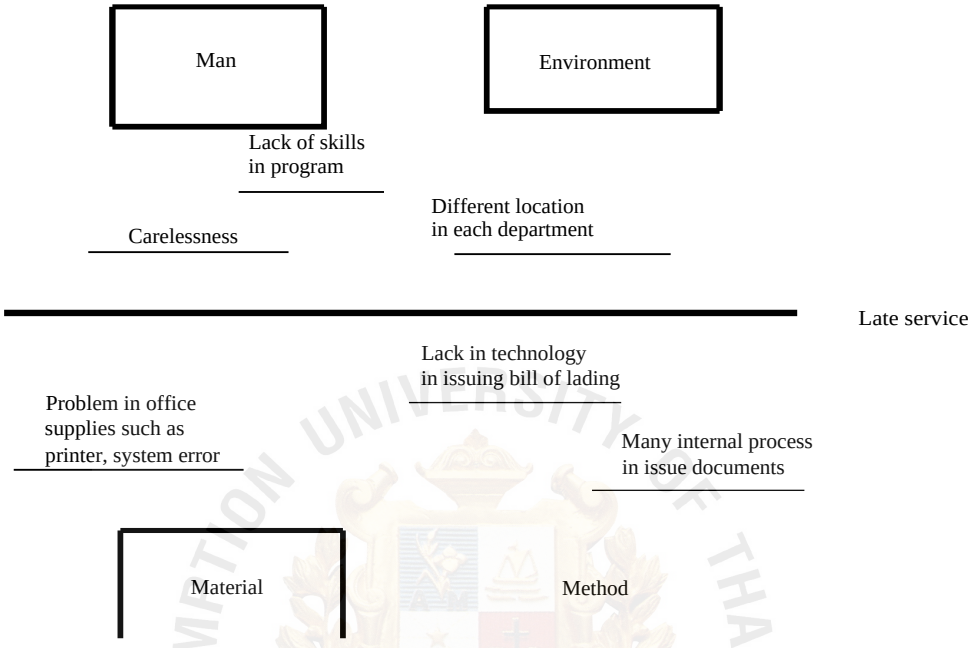


Figure 3.2 indicates a fishbone diagram that is used in finding the cause of problems and collecting data from staff in a company. They found that there are many internal steps in issuing bill of lading which starts from customer call in a company till the end of process which take too much time. To complete total steps the document has to pass through many persons such as customer service, sales, operation staff, and managers. If problems occur for example, a customer would like to change the details in bill of lading, the process will be stuck and it must be solved before passing the document to another person or the document must be returned to the previous person to correct a mistake which may take time to solve problem.

3.2 Data Collection

This project is a case study where information is obtained from current customers to study their expectations in using electronic bill of lading. Also the record obtaining

by asking concerned staff can be useful information to support this project which notifies the problem in each process. Secondary data is obtained from textbooks, academic journals and academic projects.

3.2.1 Customer Attitude

Survey is one tool by which a company can study about customer attitude towards electronic bill of lading and also customers behavior in using technology. They use surveys for support in decision making not for finding the answer. The questions explored the respondent's role and use of bill of lading and other corporate information. (See Appendix A for survey). The company survey was sent out to 27 companies which are VIP customers who have the shipment of at least 100 containers per month. Also all surveys were sent to the concerned persons who have responsibility of export shipment.

3.2.2 Processing Time

Process improvement in this project is concerned with what the company considers improving current workflow and the overall process of issuing bill of lading by drawing current workflow process (Figure 3.3). As Morehouse and Capezio (1993) mention that it is a systematic approach to analyze and improve tasks and task sequences to ensure that they meet or exceed customers' requirement. The advance of new process and development are widely recognized as an important source of competitive advantages (Owen, 2004)

The company's current process of issuing bill of lading would start from customer call in to booking the shipment. The customer service staff will then pass the job to operation staff to input the detail of the program. The staff print the draft bill of lading and sends it to customer to check and approve. Once the customer approves, the operation staff will have to print the original bill of lading and send it to manager

for approved and signing again. Then, they will create a job order and give it to the messenger to deliver it to customers. However, in the current process to issue the bill of lading (customer call in until input the data into system) the company spends 30 minutes. Then the process of issuing bill of lading takes 120 minutes and after issuing the bill of lading (pass job order to messenger) another 20 minutes is spent in this current process they use 3 persons (1 customer service, 1 documentation staff and 1 messenger)

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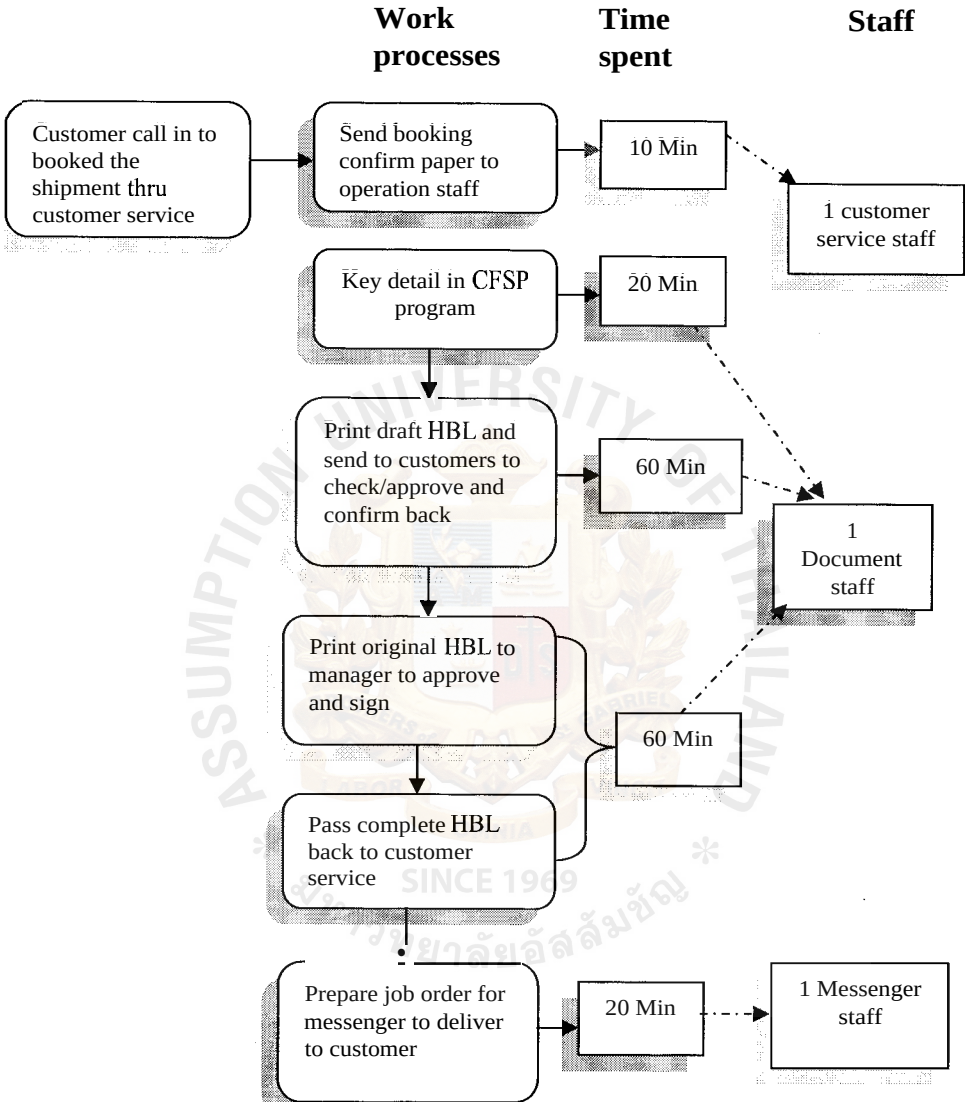
Figure 3.3: Current process in issuing bill of lading of company



Total work time = 170 Minutes

Total staff = 3 Persons

3.2.3 Cost of current processes

For the cost of current process is the company made use of average data for past three years from 2006 -2008.

Cost of issuing bill of lading

- Telephone expense (3 baht/time in Bkk and flexible price for other provinces)
- Fax expense (3 baht/time in Bkk and flexible price for other provinces)
- Postal expenses (25 baht/time for customers who located at other provinces only)
- Delivery expense (60 baht/job)
- Bill of lading form
- Other expenses (such as A4 paper, fax paper, ink, etc)

Figure 3.4: Average cost in issue bill of lading

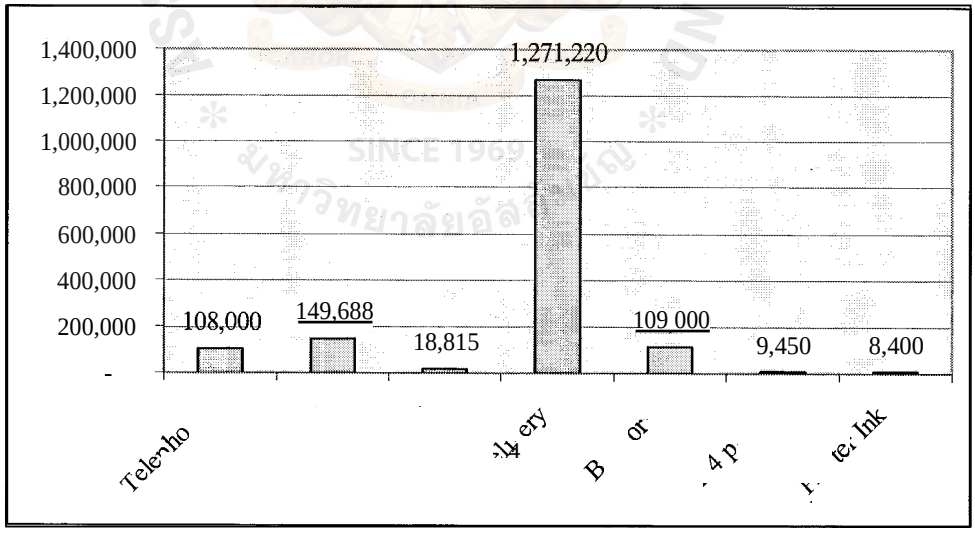


Figure 3.4 indicates that the company has to pay for delivery expense approximately the most (1,271,200 bath) when compared to another expense. So, the company considers using electronic process for issue bill of lading to eliminate this cost. The

cost of issue bill of lading cannot be fixed an amount because it depends on the of work that is rendered on each day. The cost will be increase if serve more customer in each day.

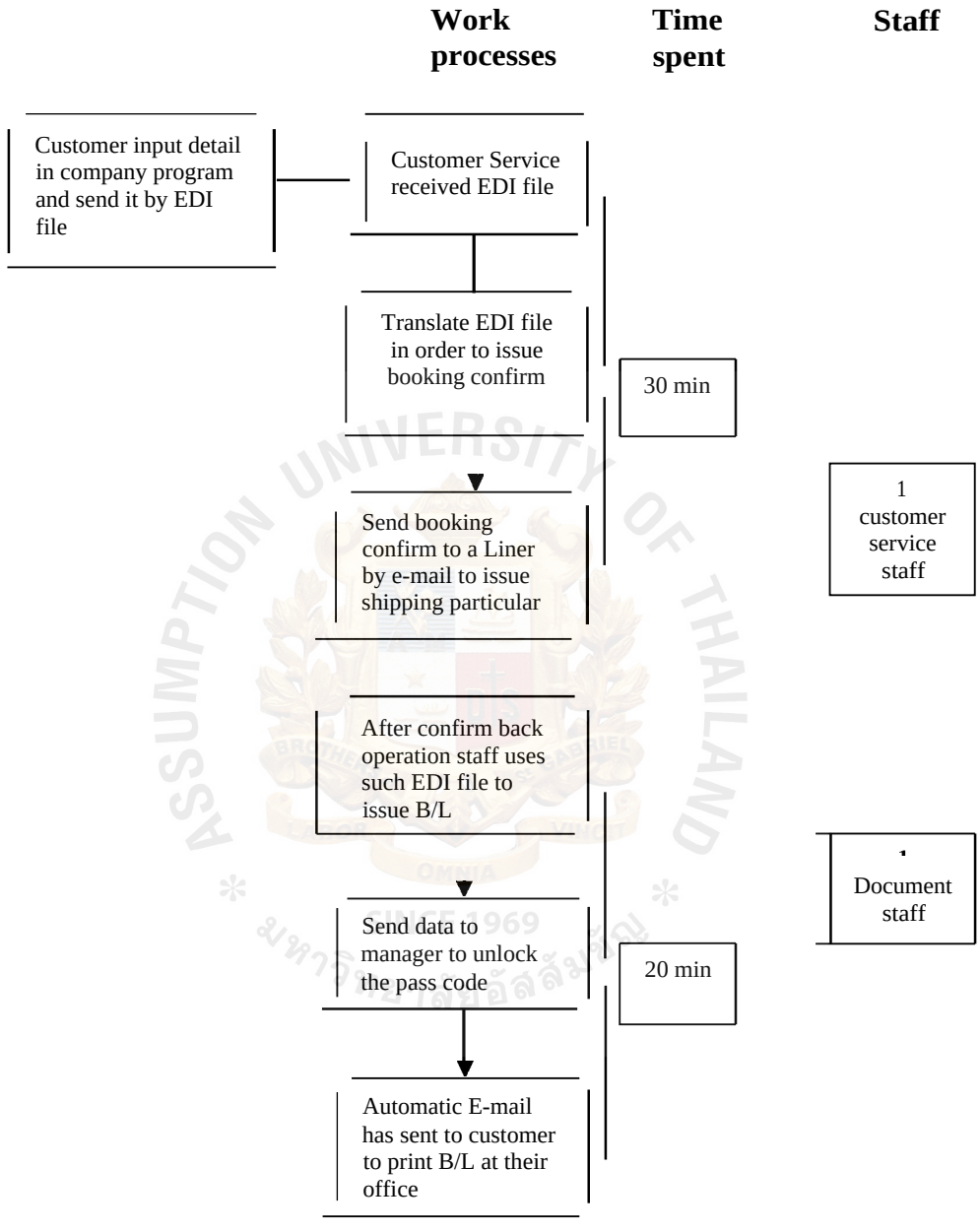
3.3 Expected new electronic process

Due to the problem of cost and time process, the company began to apply electronic application to improve current processes. This company's project is still not complete because it is on testing period, so we still not get the accurate results and numbers that we may get after project completion. We have started to collect the data since 2009 and we plan to fully apply this project by the end of year, 2010.

3.3.1 Expected Time of electronic processes

The overall current processes of issuing bill of lading is in Figure 3.3 Company notifies that they should have applied electronic application at the beginning of the process. Figure 3.5 indicates that a company use EDI system to transfer the data from customer to company and one department to another department. The customer were able to input required details in specific software and send it to company via EDI system. With EDI system the operation staff can send details to the liner immediately without retyping the details. Also expected total time for using electronic bill of lading would take 50 minutes to finish the process.

Figure 3.5: Issuing bill of lading process by electronic application



Total work time = 50 Minutes

Total staff = 2 Persons

3.3.2 Expected Cost of electronic bill of lading

To applied new electronic application the company has to consider different cost because the company has to invest in a new system. The company uses excel spreadsheet to compare the cost. Referring to electronic application the company is able to eliminate delivery expense, postal expense and also reduce telephone and fax expense. However, the company has to invest in another expense such as IT staff, Internet expense and Website development.

Estimate cost of issuing electronic bill of lading

- The cost of website development (program and database)
- Internet expense (lease line)
- Company domain name fee
- IT staff & Software/application specialist (outsource)
- Operating cost: system maintenance
- Bill of lading form

The cost of issuing by electronic bill of lading is not fixed by number of customers served. Once customers are served increases, the cost will be stable in each month.

3.3.3 Project Implementation

In this project many departments are concerned with implementing of different functions in each process. We have divided into 4 stages and 2 different developments (Technology and Marketing)

<u>Stages no. 1:</u> Pre-Development (Research and Data Collection)

1. Feasibility of Project & Conclusion	
People	Project team
Process	1. Conduct survey on customer needs 2. Customer analysis to see type of BL use 3. Study digital Laws in Thailand 5. Study technology appropriate for the project
Technology	No.
Organization	No.

<u>Stages no. 2:</u> Development (Technology and Marketing-Prepared)

- **Section of Marketing-prepared Development**

1. Make HBL acceptable to Bank and Public	
People	Marketing Manager
Process	1. Request Thai Chamber of Commerce to get a certified letter from C/O department 2. Contact banks to be accepted on HBL with e-signature
Technology	No.
Organization	No.

2. Create contact of liability for customers to sign in	
People	Marketing Manager
Process	1. Consult a lawyer 2. Write up the master of contact based on International law
Technology	No.
Organization	No.

3. Create BL Blank form for customers	
People	IT people
Process	Determine the format of blank form
Technology	No.
Organization	No.

- **Section of Technology Development**

4. Develop software and gateway to allow customers to print out HBL	
People	Software/application specialist
Process	1. Determine processes of document flow based on requirement 2. Determine technicians to develop electronic BL features 3. Develop electronic BL features 4. Testing before being provided to pilot customers
Technology	Website for electronic BL
Organization	No.

<u>Stages no. 3:</u> Testing & Training (Technology)

1. Pilot project testing	
People	Software specialist, Sales people, Operation supervisor
Process	1. Find a customer to use this program for pilot testing (might be the company's affiliated companies) 2. Correct all problems found during testing 3. Test electronic BL with bank to see if usable
Technology	Website for electronic BL
Organization	No.

2. Train all concerned staff	
People	Electronic BL team
Process	Training, demonstrating, practicing
Technology	Electronic BL program on computer
Organization	Open mind to learn

<u>Stages no. 4:</u> Implementation (Marketing)

1. Promote electronic BL service to customers	
People	Marketing
Process	PR on magazine, Notification letter
Technology	No.
Organization	No.

2. Put forward electronic BL service to customers	
People	Marketing team, sales people
Process	Customer analysis, presentation, internal & external promotion
Technology	No.
Organization	No.

3.4 Advantages and Disadvantages of applying Electronic Bill of Lading

By using electronic bill of lading there are benefits for many parties such as the company, customers and banks

(i) Benefits for the company is as follows;

• Save the cost for B/L delivery. Costs the company has to pay each month will be eliminated because the documents can be printed at customers office, so it is not necessary to use messengers to send the documents.

• Enhance quality of service. Since all processes are done by electronic systems from origin to end, the customer is the person who inputs the necessary details and sends it to company via EDI system. The company's staff are able translate the data and to put it in a B/L format without retyping any details. As the result, the error in issuing B/L will be eliminated.

• Differentiate from competitors. Electronic bill of lading service is now applied by main liners such as APL, Mearsk, NYK and Safmarine. For the freight forwarder business. The company considers this as value added service. Also AAA Co., Ltd. is the first company who provides this service to customers. The benefits of these services encourages the customer to use and compare another company who is still not providing this kind of service.

(ii) Benefits to customers is as follows;

- Convenience receiving the bill of lading. Customers do not wait of company's staff to deliver the bill of lading but they can print the bill of lading at their office immediately after being confirmed from company. They can save the time to send this documents to their final customer at the destination as well.
- Easy bill of lading tracking. Customers are ble to trace their past record. They can trace the B/L number and the date that it was printed. Also they able to check the departure date, destination port of their shipment through the company's website.
- Apply to bank to get money faster. Since the AAA Co., Ltd. has affiliated with Kasikorn Bank, they support the customers who have sold the letter of credit with Kasikorn Bank. The bank can approve faster because the details will be sent to bank after the B/L is issued. The customers can sell L/C to the bank after the goods were exported.

(iii) Benefits to the bank is as follows;

- Bank will not provide this service to only AAA Co., Ltd. but also apply to other freight forwarders or exporters in the future. It would be the new service for Bank to attract customers. To launch this project, it's encouraging for more exporters to use their service, which supports and provides convenience to exporters who open the L/C.

Additionally, not only benefits are received, but there are also limitation in using the electronic bill of lading which is;

- Since the customer have to log in to company's website for printing the bill of lading, there should be some problem with the server and the customer cannot print it until the server was fixed.
- Each company uses different printer models and the format of the details of one company may be different from another. So, the company staff has to set up a format for each printer model.

CHAPTER IV
PRESENTATION AND CRITICAL DISCUSSION OF RESULTS

Chapter 3 mentions the current processes and time of issuing bill of lading and also expected result once electronic application is used in the workflow. Chapter 4 presented the expected result possibility of project success in term of financial value, and time benefits. In this study, the researcher has compared the cost before and after applying electronic bill of lading and shows the difference in cost.

4.1 Time saving

By applying electronic application the company is able to reduce the time consumed in issuing the bill of lading. Bill of lading can be separated in 3 stages 1) Before issuing the bill of lading (From receive the bookings confirm to print draft bill of lading to customer) 2) Issuing the bill of lading (Process of issue bill of lading to pass complete set of bill of lading to the customer service department) 3) After issuing the bill of lading (Prepare job order for the messenger). The company found that with the electronic bill of lading they are able to save of time up to 120 minutes and efficiency also improves.

Figure 4.1: Comparing processing time for issuing bill of lading

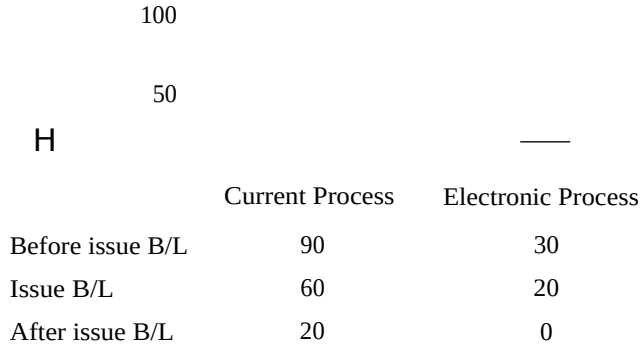


Figure 4.1, shows the comparison between issuing bill of lading of current processes and electronics processes. It is assumed that the electronic process is less complicated and it is able to reduce the time for issuing bill of lading from 170 minutes to 50 minutes and hence the company is able to save 120 minutes. The efficiency improvement is 70.59% of total current process time and also reduction of 1 staff which shows that issuing electronic bill of lading is more efficient than current process of issue bill of lading.

With the same total of 9 staff, they have to work 8 hours per day. By comparing one set of bill of lading the staff spends maximum 170 minute, so that they can issue only 3 sets of bill of lading or 90 sets in a month. With the electronic process, a bill of lading take only 50 minute to issue, so in a day 10 sets or 300 sets in a month, can be issued.

4.2 Comparing cost

Before comparing data between current cost of issuing bill of lading and electronic bill of lading the company has assumptions and parameters of the project as follows;

Assumption;

1. Company has self invested in this project
2. The system will be useful life for 5 years
3. The amount of B/L based on the worst case of economic condition for last 10 years (Internal record)
4. Assume cost for telephone & fax 3 baht/time
5. 10% of customers are not located in Bangkok
6. Use A4 paper 15 rim/month
7. Domain name based on cost of company
8. Internet cost based on dedicated internet from KSC
9. This model based on outbound transaction

10. Discount rate based on MLR 6.5% (BBL Jan 09)
11. 10% of total BL using postal service
12. 1 B/L taking 3 Hr/transaction (AVG)
13. E-B/L taking 1 Hr/transaction
14. Current process 1 BL use Telephone 2 times, fax 3 times, A4 paper 4 pages

Parameters;

1.	Revenue per B/L	800 Baht/B/L
2.	Discount Rate	6.50%
3.	Number of shipment	1,000 shipment/month
4.	Internet lease line	22,000 baht/month
5.	Domain name fee	102 baht/year
6.	IT staff (Salary & other benefit)	35,000 (Avg) baht/month
7.	Staff salary (salary & other benefits)	25,000 baht/month
8.	Maintenance cost	18,000 baht/year
9.	Bill of lading form	12.50 baht/set
10.	Telephone & Fax	3 baht/time
11.	No. of staff (current)	9 persons
12.	No. of staff (new process)	6 persons
13.	Postal charge	22 baht/set
14.	Delivery expense	60 baht/job
15.	A4 paper	0.15 baht/sheet
16.	Ink	0.12 baht/sheet
17.	System cost	300,000 baht

Table 4.1: Cost of non E-B/L & E-B/L

Non Electronic Bill of Lading

	Year0	Year1	Year2	Year3	Year4	Year5	Total
telephone Expense		72,000	72,000	72,000	72,000	72,000	360,000
Fax Expense		108,000	108,000	108,000	108,000	108,000	540,000
Postal Expense		26,400	26,400	26,400	26,400	26,400	132,000
Delivery Expense		720,000	720,000	720,000	720,000	720,000	3,600,000
Human Cost		2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	13,500,000
Bill of Lading form		150,000	150,000	150,000	150,000	150,000	750,000
A4 paper		5,400	5,400	5,400	5,400	5,400	27,000
Printer Ink		4,320	4,320	4,320	4,320	4320	21,600
Total		3,786,12(1	3,786.120	3,786,120	3,786,120	3,786 1 1 0	18,930,600

NPV 15,733,901

Electronic Bill of Lading

	Year0	Year1	Year2	Year3	Year4	Year5	Total
The system cost	300,000		-	-		-	300,000
Telephone Expense		36,000	36,000	36,000	36,000	36,000	180,000
Fax Expense		36,000	36,000	36,000	36,000	36,000	180,000
A4 paper		1,800	1,800	1,800	1,800	1,800	9,000
Printer Ink		1,440	1,440	1,440	1,440	1,440	7,200
Internet expense (lease line)		264,000	264,000	264,000	264,000	264,000	1,320,000
Company domain name fee		102	102	102	102	102	510
Human cost		1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	9,000,000
IT staff & Software/application specialist (outsource)		420,000	420,000	420,000	420,000	420,000	2,100,000
Operating cost: maintain systems		18,000	18,000	18,000	18,000	18,000	90,000
Bill of lading form		150,000	150,000	150.000	150,000	150,000	750,000
Total	300,000	2,727,342	2,727,342	2,727,342	2,727,342	27,342	13,936,710

NPV 11,633,959

Total saving over 5 years 4,099,942 Baht

ROI of electronic System 35.24%

The data above, the costs indicates that the company uses average cost for the next five years. Table 4.1 showes that using E-B/L the company has lower cost than non E-B/ L. By issuing one shipment, the staff has to use telephone 2 times (Call to liner to booked the vessel space for customer and call the customer for receiving confirmation. After sending the draft bill of lading to them), Fax 3 times (Fax booking the confirm the notice to the liner to issue shipping particulars, send draft bill of lading to customer to approve and send copy of the original bill of lading to customer for their reference) and 3 pages of A4 paper (booking confirmation, draft bill of lading and copy original bill of lading), By applying E-B/L, EDI system and E-mail can reduce the telephone, fax and paperwork. The staff uses only the telephone only once, 1 sheet of A4 paper and the fax can be used just once because they use e-mail to

support activities. Normally, for the customer who is located in another province the company has to use register post to send the original bill of lading to the customer since there only 10% of total customers are located the province. The rest of the customers are located in Bangkok and they use a messenger to deliver the original bill of lading to the customer's office. With E-B/L they do not have to use postal sevice since the customer is able to print the original bill of lading at their office. However, the company has self invested in IT system at the cost of 300,000 baht and there are additional expenses for E-B/L since it is run on website. The company has to pay for Internet expenses, domain name fee and also the use IT staff to operate and maintain the system.

Moreover, excel spreadsheet is used for calculation in this project, as the result E-B/L provide benefits to the company. It provides services by issuing bill of lading to the customer at their office. The average total cost of non E-B/L for over 5 years is 18,930,600 baht with net present value (NPV) is 15,733,901 baht and total cost of E-B/L for each year is 13,936,710 baht with NPV of 11,633,959 baht. Then, E-B/L system the company can save 4,099,942 baht for over 5 years. Also return on investment of the company is 35.24%

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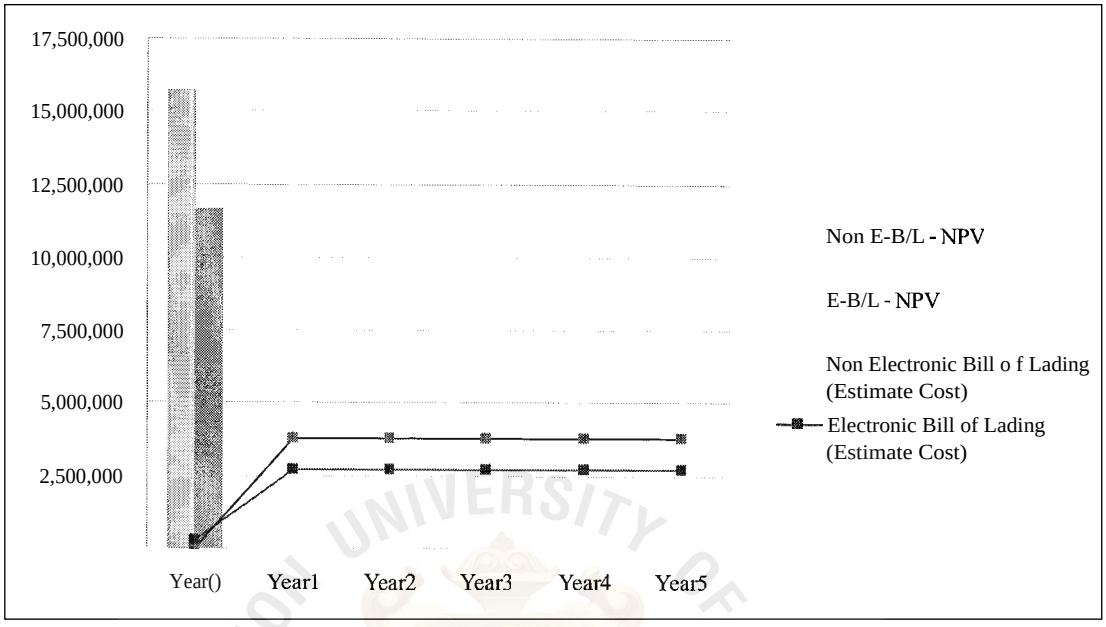
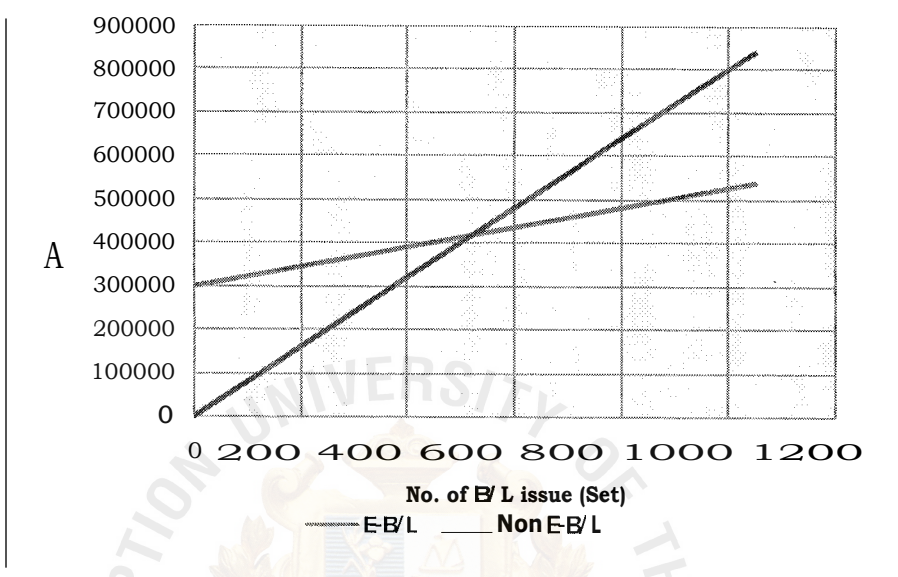
Figure 4.2: Cost comparison of issue bill of lading



A result of comparing cost of current and new processes is indicated in Figure 4.2. It shows cost of electronic bill of lading is lower than non electronic bill of lading. The graph is flat graph because they consider the worst case of economic conditions from the company's internal records shows that during the last 10 years they have never issued less than 1,000 set of B/L. The data that is used for calculating is the data from the last 5 years. As a result in the current year, the cost of electronic processes is higher than the current process because the company has to invest in new system at 300,000 baht. The cost of electronic bill of lading is gradually lower because of the cost of electronic bill of lading that is fixed each month while the variable cost of non electronic bill of lading varies as the shipment come in. The variable cost of non electronic bill of lading will be increase if the company's shipments increase. Also as above graph indicates, the net present value of electronic bill of lading is still lower than non the electronic bill of lading because they have considered in the cost, which means that which one has lower cost can obtain more savings.

4.3 Breakeven Analysis

Figure 4.3: Breakeven of cost and volume



One tool that company used in evaluating the business feasibility of a new system is break-even analysis. The break-even point can be shown in terms of the number of issued bills of lading. That is, the break-even units show the level of bill of lading issued and company's revenue. Figure 4.3 indicates that at the volume of 468 sets of bill of lading issued the breakeven point is met which has no gain or loss. But the company issued an average of 1,000 sets per month it is can reach the break even point. So, it is concluded that the company can gain from the use of electronic bill of lading.

4.4 Other findings

Additionally, electronic systems are able to reduce man power in issuing bill of lading. Because 1,000 sets of bill of lading are issued in 8 hours of working time per day. According to assumption, non electronic bill of lading current staff has a total of 9 people and once the company applies E-B/L. It is able to reduce man power to 6

people and it causes the company to save salary payment by 45,000 baht/month or 540,000 baht/year.

Errors in issuing bill of lading will be reduced because operation and customer service staff do not have to retype details in the bill of lading form. They translate EDI file which was sent by the customer to issue the bill of lading. Because of this process, it is able to reduce the human errors. Since there were records of the electronic processes of 1St quarter of the year of 2009, the data that is used to compare are only applies to the 1st quarter of the year of 2007 and 2008.

Figure 4.4: Total B/L issued (1St quarter 2007 – 2009)

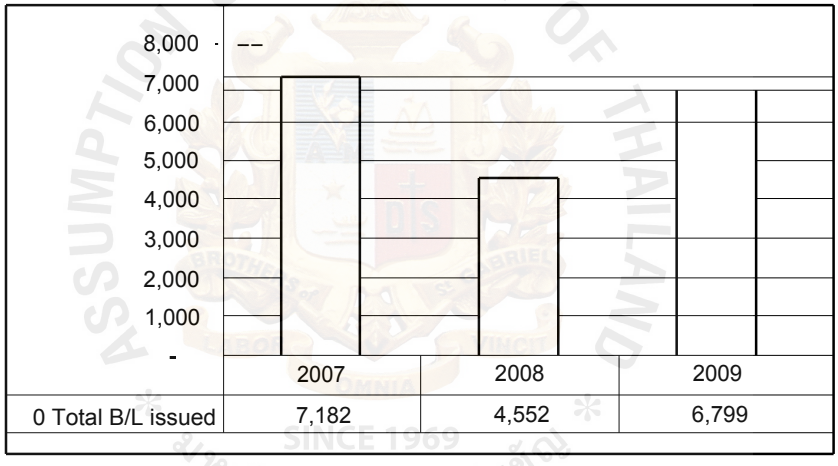


Figure 4.5: Total no. of B/L error (1st quarter 2007 – 2009)

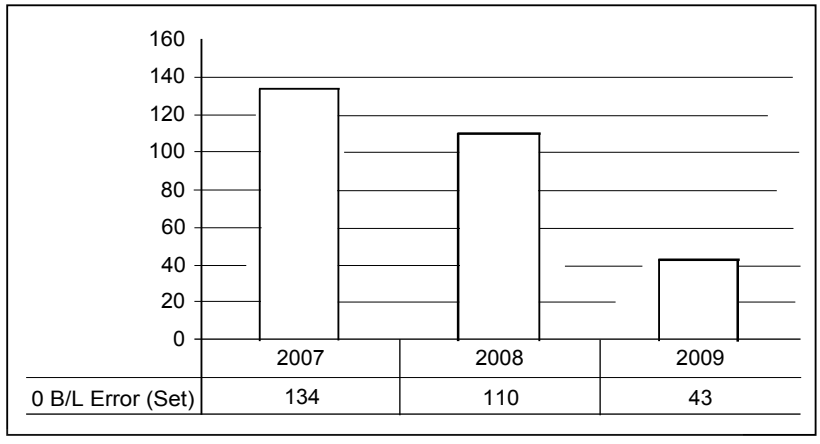


Figure 4.4 & 4.5 indicates that electronic processes can reduce the amount of errors in issuing bill of lading when comparing with year 2007 & 2008. Although the number of bill of lading issued have increase from 4,552 sets in 2008 to 6,799 sets in 2009, the amount of errors are still reduced from 110 sets in 2008 to 43 sets in 2009. The main reason that causes reduction in errors that the operation staff can be translate all data from EDI file that customer has sent, these staffs do not have to retype the details again and the detail will be put in B/L form immediately.

4.5 Electronic bill of lading shipment performance growth

Figure 4.6: E-B/L performance growth

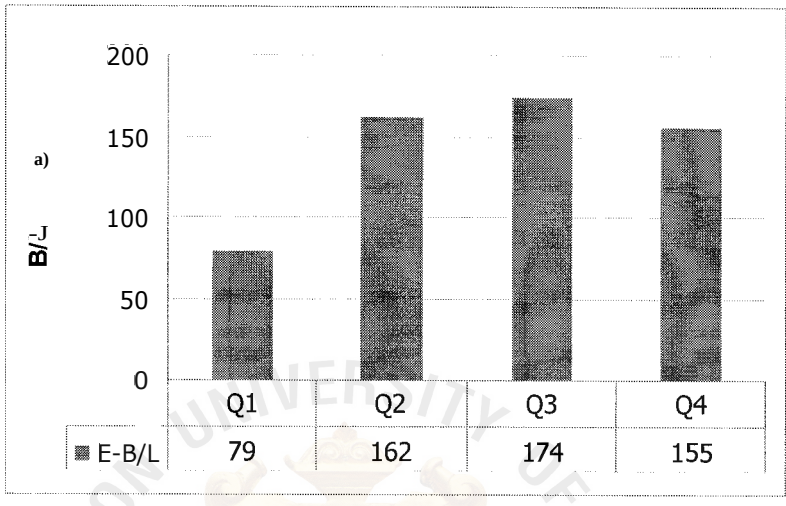


Figure 4.6 indicates that there is gradual increase in using electronic bill of lading in each quarter which it is the good sign for the company and possibility of success of this project. By the year 2009 the company has set the target of electronic bill of lading to be 400 sets and by the end of 3rd quarter the total issue by electronic bill of lading will be over the target of 415 sets. By the beginning of 4th quarter the company issues 155 sets of bill of lading and they estimates that it will be more than 155 sets by the end of 4th quarter. So, it is concluded that this company's project is successful.

CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

Chapter 1 mentioned the importance of objectives of this case, which are as follows; (1) To study how to implement and start the electronic bill of lading (E- B/L) project, (2) To understand the relevant persons/department in E-B/L process, and (3) To explore possibility of project success in term of financial value benefit, time benefit, information accuracy, etc. The study of problem indicates the reasons for late service, late the delivery of export documents to customers and this to find the root cause of problem. The survey methods is used for finding out customer's attitude towards to using electronic bill of lading. The most important key factors for customers for the above services are speed in receiving bill of lading and accuracy of documents.

Initially, the most crucial issue for this case was to reduce the time processing while reducing cost of delivery by using electronic bill of lading process. First, they have notify the problem about the delay in service. The fishbone diagram is used to find the root cause of problem. After problem analysis the main cause for delay in delivery is there are too many internal steps in issuing original bill of lading and also carelessness of the staff in issuing bill of lading. Also they have look overall processes by drawing the flow chart of current processes in issuing bill of lading which starts from customers call in at the company till delivery of the bill of lading to customer at their office. Then identifying the time spent of each process and the total time spent for current process which is 170 minutes. They have to spend 120 minutes to print the draft of bill of lading and send it to customers to approve before issuing the original bill of lading. Then the manager must approving it again before delivering bill of lading to customers. For the electronic bill of lading the company use the **EDI** system issued for support and to improve time spent for issuing bill of lading. Customers will transfer the information from their location to the company. They can

revise the details in bill of lading and sent for approve to the company and the company can print the original one without printing any draft bill of lading. As the result, the company can saves time by 120 minutes and the telephone, fax and paper expenses are also reduced. A comparison between non E-B/L and E-B/L shows that the cost of E-B/L is lower and can save as 4,099,942 for over 5 years with ROI 35.24%.

5.2 Limitations

The methodology used indicates, there were limitations in implementing the bill of lading, which are as follows;

5.2.1 Time limitation. The electronic bill of lading project is beginning in 2009, and some record are still incomplete.

5.2.2 This project is in the trial period; the company has made records since the beginning of this year, 2009. So, the data which is used to analyze is based on historical data, and may not match which the actual data.

5.2.3 Some data at the company is confidential; it may be just and estimate of data such as some internal cost and revenue and the name of customers.

5.3 Recommendations

5.3.1 To acknowledge customer satisfaction with of this project, the company should do the survey after implementing of the program. The customer's comments are the useful to study any problem and to improve company's satisfaction.

5.3.2 Training company staff is necessary to familiarize them with the new program and reduce mistakes in the concerned processes.

5.3.3 Arrange internal evaluation for each department concerned to study the problems and use it to improve work efficiency and effectiveness.

5.4 Future research

5.4.1 To study how to reduce the cost of electronic bill of lading processes to be the cost leader in electronic bill of lading services.

5.4.2 Study the reason and attitude of customers who do not use company's service and customers who used the service in the past.

5.4.3 To study the expectation of customers who use company's services to determine the company's strategy and revenue.

5.4.4 Keep records, analyze and evaluate continually to increase company's efficiency and service.

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APPENDICES

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APPENDIX A:

Research Tool

Survey for E-B/L Project

Questionnaire for E-B/L project

NAME_____ POSITION_____

COMPANY_____

1. Which type of B/L does your company use?

    1.1 Direct B/L amount (%) _____

    1.2 Leo's B/L amount (%) _____

        1.2.1 Original H B/L amount (%)

        1.2.2 Seaway Bill amount (%)

        1.2.3 Surrender amount (%)

    Total shipment or B/L that your company uses through freight forwarder service_____ per month

2. Which is your company's trading condition?

    Do not open L/C amount (%) _____

    Open L/C amount (%) _____

3. Currently, which commercial bank does your company use for their services? (Please rank the frequency of using service from 1 to 7: use the most = **1,** use the least = 7)

    _____ Kasikorn Bank

    _____ Bangkok Bank

    _____ Siam Commercial Bank

    _____ Siam City Bank

    _____ TMB Bank

    _____ Citibank

    _____ HSBC

    _____ Other_____

4. Currently, which telecommunication does your company use most often when you send the documents to the liner or freight forwarder (Please rank from 1 to 5: the most important = 1, the least = 5)

_____ Email

_____ Fax

_____ Telephone

_____ MSN, Yahoo Messenger or other program chat such as Skype

_____ Other_____

5. Does your company allow using email for receiving the information or for communicating with outside parties (customers or supplies)?

_____ Allow to use (go to no.6)

_____ Do not allow (go to no.8)

6. If you use e-mail which type of e-mail address does your company use?

_____ Company's e-mail address

_____ Webmail or free mail such as Hotmail, Yahoo, Gmail

_____ Use both

7. Which program does your company use for sending and receiving e-mail?

_____ Outlook Express

_____ Microsoft Outlook

_____ Incredible Mail

_____ Eudora

_____ Lotus Note

_____ Other_____

8. Does your company allow using internet while working?

_____ Allow to use

_____ Do not allow (go to no. 10)

9. Does your company allow using MSN, Yahoo Messenger?

_____ Allow to use

_____ Do not allow

10. If you able to issue B/L at your office, do you think which method is the most convenient for you?

_____ Print B/L through company's website by log in at Leo's website

_____ Install software for B/L printing in your computer

_____ Both ways are convenience

11. Which factors influence you in using B/L print at office? (Please rank from 1 to 5: the most influencing = 1, the least influencing = 5)

_____ Convenience and speed in receiving B/L

_____ The correct data in B/L

_____ Convenience and speed in selling L/C note

_____ Convenience and speed in sending B/L to end customer

12. Which factors are the obstacles to use B/L printing at office? (Please rank from 1 to 8: the most influencing reason = 1, the least influencing reason = 8)

_____ Lack of computer

_____ Lack of printer

_____ not inconvenience in using internet

_____ Not many shipments

_____ Unconfident in selling note

_____ Not ready in working staff

_____ Depend on management level

_____ Others_____

13. Are you interested if the company provides electronic B/L and you are able to print B/L at your office?

_____ Interested

_____ Not interested (reason)_____

14. Besides of E-B/L, which online service is you interested in?

_____ Track & Trace

_____ E-Payment

_____ E-Freight rate / E-quotation

_____ E-Booking

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Questionnaire for E-B/L project

ชื่อ_____ ตำแหน่ง_____

_____

1. ประเภทของ B/L ที่ท่านใช้

1.1 B/L เรือ จำนวน (%) _____

1.2 B/L Leo จำนวน (%) _____

1.2.1 Original B/L จำนวน (%) _____

1.2.2 Seaway Bill จำนวน (%) _____

1.2.3 Surrender จำนวน (%) _____

จำนวน Shipment หรือ B/L ที่ใช้บริการกับ Forwarder มีจำนวน _____ ต่อเดือน

2. การซื้อขายระหว่างท่านกับลูกค้าเป็นแบบไหน

L/C จำนวน (%) _____

เปิด L/C จำนวน (%) _____

3. ปัจจุบัน ของท่านใช้บริการอยู่ (กรุณาเรียงลำดับความถี่ของการ ธุรกรรม จาก 1 (มากที่สุด) ถึง 7 (น้อยที่สุด)

_____ ธ.กสิกรไทย

_____ ธ.กรุงเทพ

_____ ธ.ไทยพาณิชย์

_____ ธ.นครหลวงไทย

_____ ธ.ทหารไทย

_____ ธ.ฮ่องกงแบงก์

_____ _____

4. ปัจจุบันท่านใช้อุปกรณ์ใดในการติดต่อสื่อสาร และ/หรือ ส่งเอกสารให้กับสายเรือ หรือ freight forwarder (เรียงลำดับความสำคัญ Ain 1 (มากที่สุด) ถึง 5 (น้อยที่สุด)

_____ อีเมล์

_____ แฟ็กซ์

_____ โทรศัพท์

_____ MSN, Yahoo Messenger หรือ Program Chat อื่นๆ เช่น Skype

_____ อื่นๆ _____

5. บริษัทฯ ของท่านอนุญาตให้ท่านใช้ เมล์ ในการติดต่อสื่อสาร หรือรับ-ส่งข้อมูล กับบุคคลภายนอก (ลูกค้า หรือ supplier) viรือไม่

_____ WU (ตอบข้อ 6)

_____ ใช้ไม่ได้ (ข้ามไปตอบข้อ 8)

6. ถ้าใช้ได้ ท่านใช้ e-mail address ประเภทไหน

_____ Email Address ของบริษัทฯ

_____ Webmail หรื Free Email เช่น Hotmail, Yahoo, Gmail

_____ ใช้ได้ทั้งสองแบบ

7. ถ้าเป็น Email Address ของบริษัทฯ ท่านใช้ โปรแกรมใดในการเปิด รับ-ส่ง Email

_____ Outlook Express

_____ Microsoft Outlook

_____ Incredible Mail

_____ Eudora

_____ Lotus Note

_____ อื่นๆ _____

8. บริษัทฯ ของท่าน อนุญาตให้ท่านใช้ Internet ในการทำงานหรือไม่

_____ ใช้ได้

_____ ใช้ไม่ได้ (ข้ามไปตอบข้อ 10)

9. บริษัทฯ อนุญาตให้ท่านใช้ MSN, Yahoo Messenger

_____ ใช้ได้

_____ ใช้ไม่ได้

10. หากท่านสามารถพิมพ์ B/L ได้ที่ออฟฟิสของท่าน ท่านคิดว่า วิธีไหนจะสะดวกมากที่สุดสำหรับท่าน

_____ พิมพ์ B/L **Phu** Website ของบริษัทฯ161E1 log in มาที่ Leo Website พิมพ์เอกสาร

_____ ติดตั้ง software บน computer ของท่านเพื่อที่จะสามารถพิมพ์ได้

_____ สะดวกทั้ง 2 แบบ

ข้อเสนอแนะ

_____

_____

11. ปัจจัยข้อใดที่ทำให้ท่านอยากใช้บริการ print B/L ที่ออฟฟิส (โปรดเรียงลำดับความสำคัญ **1** = สำคัญมากที่สุด, 5 = สำคัญน้อยที่สุด)

_____ สะดวก และรวดเร็วในการได้รับ B/L

_____ ความถูกต้องของข้อมูลใน B/L

_____ สะดวก และรวดเร็วในการขายตั๋ว Bank

_____ สะดวก และรวดเร็วในการส่ง B/L ให้กับลูกค้าของท่านที่ปลายทาง

_____

12. อุปสรรคข้อใดที่ทำให้ท่านไม่สามารถใช้บริการ print B/L ที่ออฟฟิสได้ (โปรดเรียงลำดับความสำคัญ 1 = สำคัญมากที่สุด, 8 = สำคัญน้อยที่สุด)

_____ จำนวน computer ไม่เพียงพอ

_____ จำนวน printer ไม่เพียงพอ

_____ ไม่สะดวกในการใช้ Internet

_____ จำนวน shipment ไม่มากพอ

_____ ไม่มั่นใจว่าสามารถขายตั๋ว Bank ได้

_____ ไม่พร้อมในส่วนของพนักงาน

_____ ขึ้นอยู่กับนโยบายของผู้บริหาร

อุปสรรคอื่นๆ _____

13. หากทางบริษัทฯ เปิดบริการ Electronics B/L (E-B/L) สามารถพิมพ์ B/Lได้เองที่ออฟฟิส villa นใจที่จะใช้บริการหรือไม่

_____ สนใจ

_____ เพราะ _____

14. นอกจากบริการ E-B/L

(โปรดเรียงลำดับความสำคัญ 1 = สำคัญมากที่สุด, 4 = สำคัญน้อยที่สุด)

_____ Track & Trace

_____ E-Payment

_____ E-Freight Rate/ E-Quotation

_____ E-Booking

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