



CONTAINER DIRECT DELIVERY:
ROUND TRIP CONCEPT

By
DHANEEYA SUKKAEW

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

Martin de Tours School of Management
Assumption University
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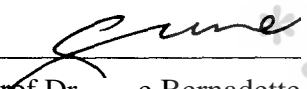
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ABSTRACT

Container leasing business is a worldwide business to support import and export activities. Whether the business is worldwide with its standard process flow, the business still requires improving or developing ideas to respond to economics crisis or world situational changes.

The increase in fuel prices causes more cost for a company due to inland transport activities. The way to reduce cost and smooth process flow while maintaining customer satisfaction is continuous improvement. This idea is called "Direct Delivery Concept". The containers would be released to customer haulage from the port of discharge to the customers' factory and returned directly to the port for loading without dropping it at the depot like the present process.

However, the current flow would be studied in order to compare it with the new ideas in terms of cost and benefits. The limitations and all recommended ideas from both customers and company staff -is taken into consideration as the new scheme is combined with old business processes.

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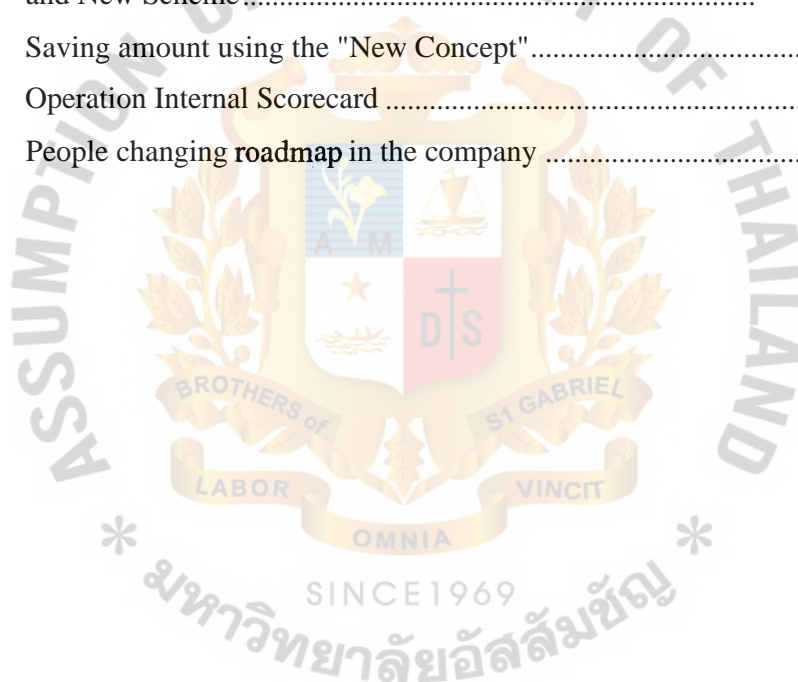
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CHAPTER I

GENERALITIES OF THE STUDY

Transport can be defined as "the physical link connecting . . . the fixed points in a logistics supply chain" (Coyle, Bardi, & Langley, 2003). It is a key integral process in contributing to the overall goal of successful supply chain management; the planning and control of material flow (Ellram, 1991), to delivery of superior value to the end customer (Christopher & Towill, 2000). Zhao and Stank (2001) benefits accruing from world class operations at the points of supply are pointless without the accompaniment of excellent transport planning and execution. All of them stand for the critical role of transport in the supply chain as an important part in an interlocking set of supply chain gears or wheels. It is important that all supply chain processes provide excellence in terms of optimized value and therefore it is critical that transport plays its proper role in terms of cost and service provision, rather than being seen as potentially the weakest link (Christopher, 1992).

In reviewing logistics cost proportion, transportation costs represent about 40-50% of the total cost of logistics and perhaps 4-10% of product selling prices. So, transportation becomes more strategic to business function as transport costs account for a larger percentage of the cost of goods sold (Mason, Lalwani, & Boughton, 2007).

Container transport is a major part of logistics and a substantial cost in many companies. In some sectors it contributes to a high percentage of the cost added to goods. Therefore the potential for savings is large and, there is much interest in improving container transport. (Kelleher, El-Rhalibi, & Arshad, 2003). This case study is about the integration of carrier of empty inbound and laden outbound for customers' empty inbound and laden outbound. The empty inbound will be delivered to customer premise directly and returned as laden outbound to the same inbound origin point, cutting one node of container stop and related handling. This will be named as "Roundtrip direct delivery". The carrier shares the cost of roundtrip haulage

with the customer while at the same time saving from omission of container re-handling activities, surcharges. The proposal for wider application of roundtrip direct delivery to serve other type of product category customers is proposed.

1.1 Background of the Study

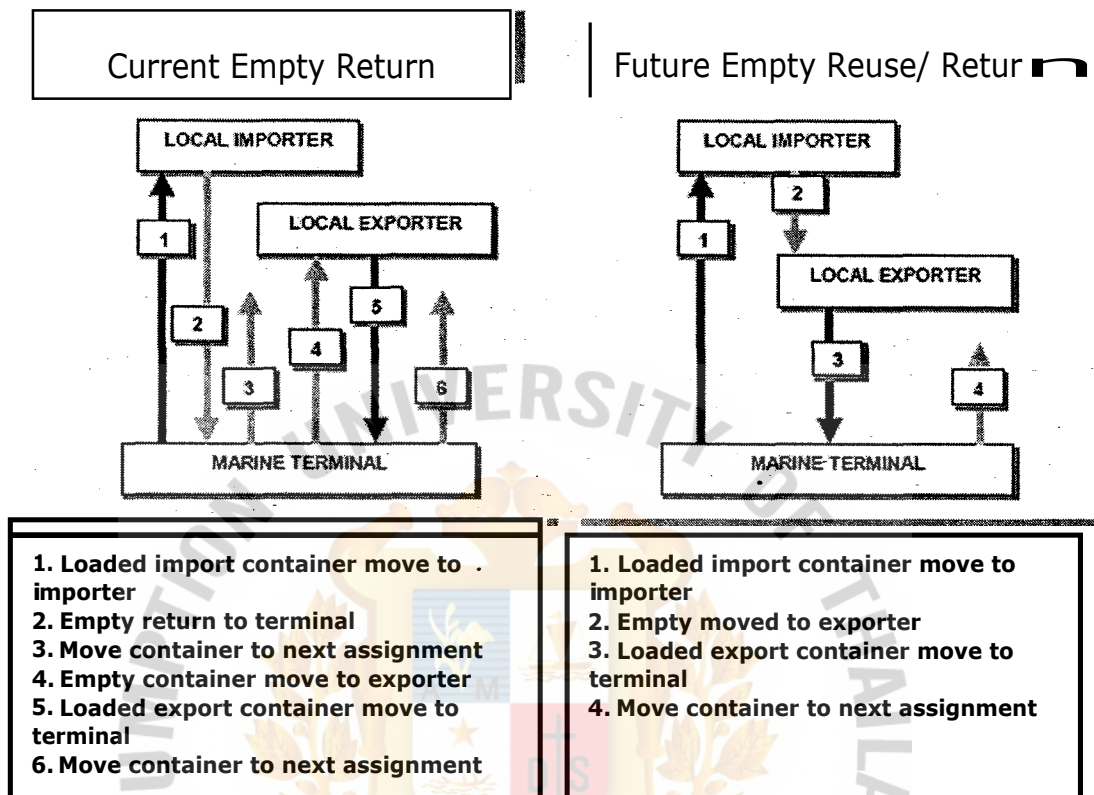
ABC Company is the sister company of the ABC international shipping line company who operate as liner agents, ship agents, cargo and charter brokers. The first company established in Thailand in the year 1949 and registered as a Thai company on November 1, 2007.

As a liner agent for ABC . international shipping line or carriers, ABC Company provides empty containers to exporters at Chonburi, Laem-Chabang areas and Bangkok, Lat-Krabang areas. The main releasing containers for exporters, is Bangkok specially the Lat Krabang depot which releases a proportion of 70:30. This liner company has to move empty containers from the ports of discharge like Laem-Chabang, Chonburi to the Lat-Krabang location to serve the demand with the cost THB 4,665 per container for size 20' and THB 6,489 per container for size 40'.

With the soaring fuel cost and increasing market competition, there is a need for a company to reduce the movement of empty containers in terms of cost while be able to maintain service to customers in order to save cost for the company and a sustain the competition in the market.

Currently, there are a few ideas proposed to tackle the problem of container movement which can be summarized as follows:

Figure 1.1: Synchronizing of Imports and Exports



Source: Mohaddes (2002)

Idea 1: Synchronizing of Imports and Exports

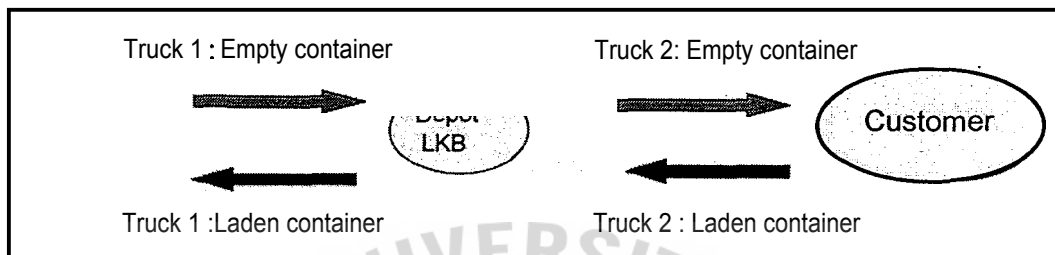
This idea proposed for synchronizing of imports and exports movement by street turn or empty reuse. The importer will hand the empty container to the exporter after unstuffing import shipment and then the exporter will load the export shipment into the empty container and return it back to the terminal.

Idea 2: Roundtrip Direct Delivery

ABC Company has implemented this round trip direct delivery from the port of discharge to their customer's factory and return back to the port of loading (which is the same location of port of discharge) by integrating ABC's transportations of empty containers. Their customer's transportation of empty containers to the factory and their customer's outbound containers are returned to Lat-Krabang. Their outbound

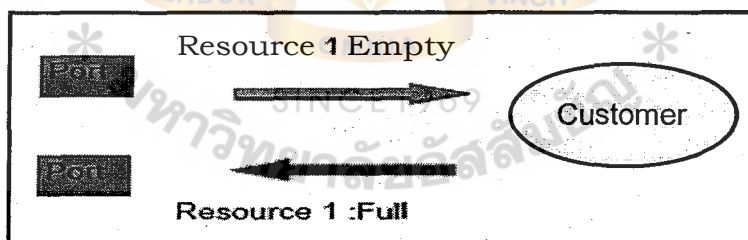
transportation from Lat-Krabang areas returned to port of loading at the Laem-Chabang area.

Figure 1.2: Current Container Logistics with Lat-Krabang Depot as re-handling node.



This study will deal with the round trip direct delivery concept to distribute empty containers from the port to the customer's premise and return laden containers back to the port. The carriers and customers share the integrated transportation price. At this preliminary stage, it will be difficult to design and implement ideas, because it requires a good synchronization of imports and exports across many shippers and consignees.

Figure 1.3: Proposing for Roundtrip direct delivery.



The **round** trip concept requires coordination, cooperation and collaboration between internal departments in the ABC Company (for customer service information, operations department for equipment availability, and intermodal dispatching), external customers (production planning) and ABC suppliers (trucking company whose dedicate trucks for matching round trips direct delivery service). The

mentioned collaboration requirements are information sharing especially in open book costs and joint planning for success of the project.

The cost saved by the company after implementation of the project should be without sacrificing customer satisfaction and service delivery. The pay back results of the projects yields benefits of cost saving not only to ABC Company but also stakeholders in the supply chain i.e. their suppliers (hauler) and customers. Apart from total cost saving sharing, reliability, inventory management (optimize equipment flow and stock management), and process efficiency are also obtained.

After the success of the pilot project of round trip direct delivery, a proposal was utilized the expansion of this strategy to another category of container i.e. dry containers. Dry containers are ABC's containers that provide service to customers whose products are to be put into the containers but do not need or require temperature, ventilation controlling or special instructions.

1.2 Statement of Problem

ABC Company pays large amounts to provide availability of containers at the Bangkok areas. This can be summed up as THB 652.08 million in the year 2008, which is 30% of the total company cost. Dry containers amount to 80% of total containers released for customers at Lat-Krabang hence it reflects 70% of logistics cost in providing container availability at Lat-Krabang. ABC Company pays large amounts to provide availability of containers in the Bangkok area because the company would like to gain benefits or able to save up inland logistics and transportation cost under the concept of direct delivery.

The company normally faces traffic jams at the Lat-Krabang depot due to many liner agencies also using the same locations so their suppliers (truckers) have to wait or line up to deliver empty containers into the depots while customers' truckers also wait or line up in same queue for picking up empty containers to be delivered. The total logistics time need to be reduced.

Since there are limited number of trucking companies available in the market most of the times. These truckers from different hirers are under a same few fleets or companies. The ABC Company has limited **intermodal** resources so the company is not able to serve all dry customers or tailor their resources for each customer requirement. Therefore in order to optimize and reduce total cost for the chain, the company needs to find ways to best allocate their limited resources while at the same time enjoy wider applications and benefits. Round trip direct delivery is proposed for the trucking company to enjoy the benefits of implementation.

Upon **roundtrip** direct delivery implementation proposal, the company clearly realized the benefits in saving inland logistics cost, without sacrificing customer satisfaction. Therefore **roundtrip** direct delivery * was considered as an important tool that enhancing better efficiency and effectiveness for the company operation toward inland logistic management. The research is to find key factors that effect **roundtrip** direct delivery implementation, the benefits of research adopting and how the company can implement this **roundtrip** direct delivery toward dry containers. The research findings will contribute to the company strategy and operations plans in the future.

1.3 Research Objectives

- 1.3.1 To investigate the current practice in delivering dry containers to customers (i.e. business process, costs, competitive position)
- 1.3.2 To identify the specific opportunities for providing round trip direct delivery to the dry-container customers
- 1.3.3 To specify key changes in the business of all parties involved in accommodating the **roundtrip** direct delivery service.
- 1.3.4 To develop a **roadmap** for the implementation of the **roundtrip** direct delivery service

1.4 Scope of the Study

The focus is especially designed to cover studying on integrated logistics and shared logistic cost of ABC Company from providing empty containers to receiving laden containers back into the terminal for sea transportations at **Laem-Chabang**, Thailand and the feasibility in expanding practices to other types of products offered

The data of the year 2008 data is used in analysis and evaluation of the study in order to achieve objectives in cost saving, container and truck utilization, and inventory management improvement. The implementation of roundtrip direct delivery strategy is basically achieved by integrating carrier's and customer's empty inbound with carrier's and customer's laden outbound, without dropping or picking it up mid-way. The integrated logistics cost will then be shared between carrier's and customer's on the basis that carrier save up cost in providing empty containers mid-way .while customers have carriers to absorb the price of pick up and return containers with a amount that was less than the previous amount.

The case study is the methodology for this research. The assessment of roundtrip direct delivery of dry container transportation cost saving, higher container and truck utilization, higher process efficiency without scarifying customer satisfaction represent the base analysis information. The additional supportive methods are "What-if" scenario examination by using a spreadsheet together with data collection. The outcome of spreadsheet scenario will be used for further examination in order to reach out for the best method, strategy of roundtrip direct delivery extension under the criteria of transport cost saving, higher container and truck utilization, higher process efficiency and maintain customer satisfaction.

1.5 Significance of the Study

The purpose of this research to study the extension of roundtrip direct delivery application to serve the ABC companies' other type of product category customers.

The research outcomes not only generate base line and increase awareness, knowledge upon implementing **roundtrip** direct delivery concept into business strategy but also propose the company to consider extending **roundtrip** direct delivery concepts to other types of product category transportation management based on various literature reviews. The research also points out the **roundtrip** direct delivery technique, implementation's advantage and difficulties, implementations' supportive and barrier factors together with suggestions for further study.

Optional of research means to create awareness and further development of liner agency industry toward transportation management strategy.

•1.6 Limitations of the Study

The research conclusions in this study are based on a case study of one shipping line, their suppliers, and their customers on the round trip direct delivery which lead to transport optimization in terms of cost and service delivery. The marketing strategy is concerned with different between market systems, firm sizes, presence of foreign competitors across markets and technology but intensity of price competition in the industry will not be included in the study.

Furthermore, there are limitations to the research study such as time constraints and lack of sales and customer service field experience.

Time constraint; once became the researcher has a full time job and research could be conducted only after working hours and the weekend. The rescheduling is needed to comply with the deadline.

Lack of sales and customer service field experience; once became the researcher is most familiar with operations and process flow but receives hardly any feedback from customers about container service which is important in the study.

1.7 Definition of Terms

Assignment: An act which involves transfer of rights, titles, and interest for the purpose of assigning goods by endorsement of the bill of lading

Berth: A location in a port where a vessel docks

Booking: Cargo commitment made to the carrier by the shipper.

Carrier: One who owns, operates or charters vehicles of transportation for movement of cargo

Consignee: The party listed in the Bill of Lading to whom the cargo or containers is destined

Container Depot: Storage location for empty containers

Container Lease: The contract by which the owner of containers gives the use of

- containers to a lessee (Carrier) for a specified period of time against fixed payments

Container Yard: A facility at which full and empty containers are received from or delivered to the Shippers by or on behalf of the Carrier

Cut Off: Last possible date cargoes may be delivered to a ship or a designated point

Demurrage: Additional charge imposed for exceeding the free time included in the freight rate for the use of equipment

Depot: A location designated by the Carrier where empty containers are kept in stock and received from or delivered to the container operators or Shippers / Consignees

Direct Delivery: Direct discharge from vessel onto railroad cars, road vehicles or barges

Discharge: The **unloading** of a vessel, vehicle, or aircraft

Forty Foot Equivalent Unit: Unit of measurement equivalent to one forty foot container

Free Time: Storage allowed at Carrier facility without penalties assessed

Freight: The amount of money due for transporting the goods, payable either in advance or upon delivery

Haulage: The inland carriage of cargo or containers between named locations

Haulier: Road Carrier

Lead Time: The time elapsed between the request of a service and the actual provision of such service

Liner: Vessel engaged in regular liner trade

Liner Shipping Company: A company transporting cargo over sea as a regular service

Port of Discharge: The port where the cargo is actually discharged from the vessel

Port of Loading: The port where the cargo is actually loaded on board the vessel

Positioning: The transport of equipment from a depot to the Shipper's premises or from the Consignee's premises

Pricing: The process of establishing freight rates for particular shipments

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Quotation: Offer providing the price according to tariff for certain services to be provided or issued to a customer with specification on conditions for carriage

Reefer Container: A thermal container with refrigerating machinery (mechanical compressor unit, absorption unit etc.) to control the temperature of cargo

Return Cargo: Cargo to be returned to original place of receipt

Round Trip: A voyage to a certain port or country and back again

Routing: The process of determining how a shipment will be moved between Shipper and Consignee - between place of receipt and place of delivery

Shipment: A separately identifiable collection of merchandise to be carried

Shipper: The merchant with whom a contract of carriage of goods has been assigned with a Carrier

Stack: An identifiable amount of containers stowed in a orderly way in one specified location

Storage Charge: Charge for goods held in railroad or other warehouses under fixed agreement for periods of time, and which are not included in other service arrangements

Stripping: The unloading of cargo out of a container

Stuffing: The loading of cargo into a container

Surcharge: An additional charge levied in addition to the usual or customary freight

Tariffs: A schedule of rates and charges offered for ocean transportation. Rules and regulations governing a particular trade are also contained in this publication. List of rules, regulations and rates is applicable to specific trade lanes

Terminal: Area closely aligned to dock used to collect, store and dispatch containers and cargo

Terminal Handling Charge: A charge assessed by the terminal for the positioning of cargo within the terminal/yard

Tracing: The action of retrieving information concerning the whereabouts of cargo and equipment

Tracking: The function of maintaining status information, including current location, of cargo and containers, whether full or empty

Transit Time: The time the vessel takes for moving from one port to another

Twenty Foot Equivalent Unit: Unit of measurement equivalent to one twenty foot container

Yard: Open or fenced off outdoor storage and/or repair area

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter is primarily designed to highlight the Round-Trip direct delivery and collaboration concept for direct delivery processing together with its pros and cons.

2.1 Round-Trip Direct Delivery Concept

The potential impact on the customer from logistics services is directly related to operation system design. The business performance requirements in many phases cause to a complex design of operation tasks, which must be offered to balance performance, cost and process flexibility toward customer requirements (Bowersox, Closs; &.Cooper, 2002).

The application of store direct delivery that was widely used in foods, beverages, and personal home care products under wholesale and retail distribution business, is appreciable for container leasing business. It would present the intention in making the balance between operational performance and company cost according to Bowersox et al. (2002). The direct delivery is the structure in which container product will be shipped directly from the original place of discharge to the customer's destination and brought back again as a round trip loop, transferring containers to ports awaiting be shifted aboard.

According to Ody and Newman (1991), direct distribution typically uses premium transport combined with information technology to rapidly process customer orders and achieve delivery performance. Thus, the combination of capability between technology and designed process is useful for effective and efficient delivery cycle with cost reduction and smooth processing on time premised.

2.2 Collaboration

Roundtrip direct delivery concept foundations are **roundtrip** matching concepts and direct delivery concepts which both require collaboration between business units (internal) or business organization (external) in order to minimize waste on transportation and related costs, and also optimize benefits in supply chain.

A collaborative supply chain simply means that two or more independent companies work jointly to plan to execute supply chain operations with greater success than when acting in isolation (Simatupang & Sridharan, 2004).

Collaborative relationship in supply chain management is a simple and useful term/dimensions (Mason et al., 2007):

2.2.1 Vertical Integration covers the relationship between customers and suppliers or across internal functions. Integration can be upstream or downstream at different degrees of implication in the supply chain or between businesses units that previously works as a separate unit and be functionally oriented to be harmonized and process oriented. Collaboration has bigger value for supply chain because it enhances relationships.

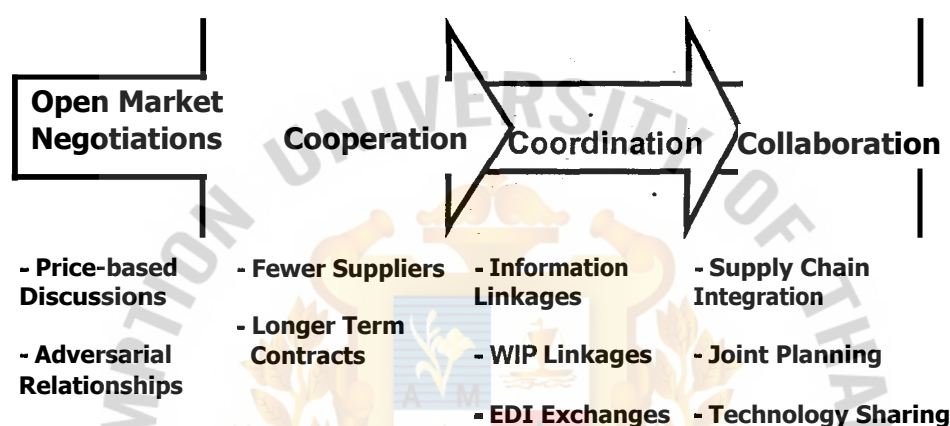
2.2.2 Horizontal Integration which covers relationship between complemented partners or competitors, and supply networks. This is a way to overcome each company limitation on capacity, resources by networking each other into a group and offering more competitive products, services in the supply and value chain.

2.2.3 Lateral Collaboration covers relationships that combine the relationship of vertical and horizontal integration together demonstrates a superior business model. The limitation boundaries of each company is enlarging due to networking or pooling capacities and at the same time, the company- is able to be more effective in asset utilization through the vertical approach i.e. closely coordinate with customers. Therefore asset flexibility, high level of efficiency, better capacity optimization can be achieved by

lateral collaboration which at the end, results in transport optimization and being more competitive in market position.

The relationship between customers and supplier in the market before the collaboration approach is drawn and given below in figure 2.1.

Figure 2.1: The key transition from open market negotiation to collaboration



Source: Spekman, Kamauff, and Niklas (1998)

Figure 2.1 shows the linear step of changes from an important supplier of the customer to becoming the supply chain partner. Most of business would start with the open market negotiation step for primarily price discussion and product recognition, and then move on to more relationship after trust is built in. The longer term contact is created with on hand customers or suppliers. More coordinated activities will be adopted by exchanging of workflow and information if there is more expansion in business but still not as a true partner until become the final stage of collaboration. At last stage, there is more trust between partners and there is integration of resources, information technology, research and development and future plan sharing for each other as business partners.

Mason et al. (2007) have compared the traditional and contemporary supply chain management approaches.

Table 2.1: Comparing traditional and contemporary supply chain management approaches

SCM view	Aim	Meant	Scope	Supplier base numbers	Management
Traditional View	Optimize cost (through lowest purchase)	Adversarial (arms length negotiations)	Purely operational	Many	Short term contracts
Contemporary view	Optimize value	Collaborative	Strategic and operational	Selected few	Joint and on-going management

Source: (Mason, Lalwani, & Boughton, 2007)

The contrast between Figure 2.1 and Table 2.1 is that the Open Market Negotiations stage is like the Traditional View of supply chain management, where many short term business contracts are built based on product or service cost and promotion are under their own operation. While the Contemporary View is in the collaborative stage, there is strong relationship created for business value earning rather than price consciousness. There is sharing in the business strategy and operations comply jointly with management.

The collaboration study on transport collaboration management reveals that transport collaboration management either in form of vertical, horizontal or lateral- integration enhance the supply chain partners to enjoy benefits of improving logistics performance as it allows better coordination, communication to match inbound and outbound transport which reflects better transport assets utilization in reducing empty running, total cost minimizing, value optimizing, improved service levels, improve visibility and gain customer satisfaction.

Collaboration case example;

1. FGP/ Factory Gate Pricing case study in year 2001. The UK retail industry and transportation service providers have collaborated with each other through the Factory

gate pricing concept. **F**GP is the consolidation centre that match is requirement of transportation in the network e.g. manufacturers' inbound or outbound for transport efficiency. The leading company in the retail industry who adopted **F**GP together with their transportation service providers is **Tesco**.

The results of implementation of **F**GP are increase of asset utilization for vehicles, increase of saving on waste/ empty haul expenses, 23-25% reduction of total products travel distance between suppliers and stores, improved visibility in supply chain, improved customer response and reliability of service delivery, reduction of waiting time, compressing supply chain lead time, inventory, costs and freight rates.

2. In the Skylark case study (Mason et al., 2007), three leading grocery manufacturers have collaborated with transport service providers through the Skylark system. The Skylark system is the open telemetric internet that allows users (shipper, carrier, trucker) to track vehicle positions, consolidate load/trips and reduces empty hauls.

The Skylark benefits users on transport visibility, transparency, flexibility and customization which then supports the delivery time, better asset utilization and reduces supply chain cost.

3. In the Pallet network case study (Mason, Lalwani, & Boughton, 2007), haulage companies have collaborated with UK pallets consortium. The collaboration between both parties allows for transport optimization which is derived from vertical and horizontal collaboration through the single point of operation control without integration to other systems.

The result of this collaboration are; increase of shipment handling efficiency, inventory reduction, increase of supply chain efficiency, lead time reduction, and ability to offer competitive price in the markets. The project had further development by including customers into the collaboration which allows stronger networks, supply chain and supply chain rate reduction.

4. Collaboration between liners, truckers, customers and port operator; Gunnar Stefansson conducted a survey with port operators and related network/industries to find out what ports can increase value added and reduce cost in supply chain based on Bichou and Gray (2004) literature. The survey reveals that shipping line, haulage companies, large shippers, and ports can collaborate to identify cost-effective and better performance in the supply chain. The expected results are; supply chain cost reduction, better productivity in supply chain, better effectiveness, and reliability for transportation operation which benefits shippers, consignees, and hauliers.

5. Vertical integration between customers, hauliers,- liners and port/depot operators allow for superior performance, and optimize, improve supply chain integration especially integration across supply chain. A vertical integration allows product's and service value additional to value and supply chain and allows for critical improvement in cost and cycle time reduction, and quality delivery improvement Hans van der Hoop mentioned in his literature about how to make transportation fit with logistics system. 1. Integration of activities, functional and specialization of companies and 2. Better cooperation and link between companies in the chain to support better management of overall transport activities are important factors to create transport to fit into the logistics system. Therefore transport collaboration management approach is not the only way to reap benefits of improving logistics performance but also a way to make the transportation supplier fit with the existing logistics system or in other words, way to being "lean" (Hoop, 2007).

CHAPTER III

RESEARCH METHODOLOGY

This research is case study which is based on survey information from customers and all related staff of the ABC Company. The selected customers will be used as the pilot case for studying for the new business processes with new benefits as compared to the current business processes. The research will show; why the depot activities would be cut out and how to manage the container as well as logistics flow to compromise the new scheme.

A case study is a research methodology which is based on an in-depth investigation of a long term study of a single individual, group, or event. Case studies can be as descriptive or explanatory. Case studies provide a systematic way of looking at events, collecting data, analyzing information, and reporting the results. The researcher would gain a sharpened understanding of why the instance happened, and what might become important to look at in future research studies. Case studies methods support its' context by both generating and testing hypotheses. Furthermore, case studies should be defined as a research strategy. An inquiry is used to investigate a phenomenon along with its context. Case study research can be categorized as either single or multiple case studies. Even case studies can be sourced as qualitative data but can be included with quantitative circumstances which have multiple sources of evidence. Benefits from the prior development can be useful for data analysis and further measurement.

The case study method is very useful for this research. Interviews were used as the element of information gathering which are discussed as qualitative data analysis. As a qualitative example, the research has been conceptualized as an ethnographic case study, focusing on interpretations, meanings and the cultural significance of some behaviors.

Information will be acquired in terms of qualitative data in depth investigation of interesting points. This investigation can follow a sequence of 6 steps which are as follows:

1. Current process investigation in order to obtain a good understanding of the current business processes.
2. Criteria identification to select preferred customers for the scheme.
3. Customer selection as a pilot case and data collection.
4. New business processes designed to accommodate the new scheme.
5. New scheme's benefits and cost assessment.
6. Roadmap development.

3.1. Current Process Investigation in Order to Obtain a Good Understanding of the Current Business Processes

The research focused on process activities which were covered from the customer contacts the shipping line to request a booking until the shipping line delivers the container to the port of loading. The flow of product (container & truck flow) and information will be presented and developed in a total process map (flow chart). The analysis of the flow will be done in order to check any problems or obstacles in the current working process.

The current process investigation will be supported by;

3.1.1 Reports and documents of the ABC Company.

3.1.1.1 BSAA Statistics year 2008 (Show the ABC company share on Import and Export Volume at Lat Krabang)

3.1.1.2 ABC Thailand YTD Import and Export year 2008 (Customer share and volume of the ABC company Thailand)

3.1A.3 Financial report of the year 2008 (Show the ABC company cost and revenue)

3.1.2 A critical methodology for obtaining data is an interview. The focus group will be identified as well as an interview conducted a specific set of questions are

used for balancing and facilitating an open-ended discussion. This type of interview would be called a semi-structured interview. The interviewees can express their opinions, concerns and feeling towards the given frameworks, explore service issues of the ABC Company. The researcher would obtain the relevant information from specific targets with detailed issues. Furthermore, ABC Company's customers who are the interviewees would have freedom for participating in issues, but it consumes time for each interview and requires more caution while selecting questions. The researcher should have interviewing skill combined with data analytical skill and the questions should not lead the interviewee to answer a closed or one side perceptive. The avoidance of closed questions for customers can ensure that the interviewer gets information that valid. Information can be reviewed by all of interviewee or sources for checking.

The company's staff interview will be separated into two sessions, one session will be for the operation team and another section will be for the sale representative. The number of interviewees would be at least two persons from each side; two operation staffs from both intermodal and equipment team, and two persons from sales and customer service of the ABC Company. The question will be specified as:

- 3.1.2.1 The information related with steps and processes of container releasing.
- 3.1.2.2 Operations staff task requirements.
- 3.1.2.3 Is there any customer that complained because of longer lead time taken by company activities?
- 3.1.2.4 What do you think the company will implement the round trip concept?

Information from the customer side would be acquired by the ABC Company's sales representatives with a separate interview conducted by the same interviewee selecting criteria. The selected interviewees must be the persons who have working experience and joined the company for more than two years for both ABC Company staff and selected customer representatives. It is to ensure that information is gathered from the

right person to prevent any errors during the research study. The questions and critical interview results can be found in the Appendix B and Appendix C.

3.2. Key Criteria Identification to Select Preferred Customers for the Scheme

The key criteria for selecting customers would be created to minimize and eliminate all errors that may occur during the study and to avoid all failure to the new process implementation. Not all of the customers will be better off from this scheme. It depends on volume which may reflect the company cost, the customer locations are important as cost according to factory location, and finally the year of business relation when customers join the selected company. It is essential for them to be willing to collaborate in this new scheme as old customers and new customer can be gathered at the same time.

In addition to the three key criteria above, there are 3 other considerations that the research will focus on; operational performance, low cost/ cost saving, and customer satisfaction. They are given below and as follow:

3.2.1 Operational performance;

3.2.1.1 Service reliability can be reflected in product availability. The service should be able to provide right products (premise volume) at the right time, and the right place (location concerning). This can be measured by container delivery at the customers' factory (on time).

3.2.1.2 Inventory management reflects easiness and efficiency of inventory management. The measurement is the number of inventory locations managed the releasing volume, and the total time per release.

3.2.1.3 Responsiveness which reflects the total lead time in providing products (container and trucker) to serving customer demand.

Therefore selected customer volume and their factory locations can affect the company operational performance as discussed above.

3.2.2 Low Cost/ Cost saving;

3.2.2.1 Inventory management cost saving. The measurement is the saving amount related to each management style.

3.2.2.2 Transportation cost saving. The measurement is the saving amount related to transportation for the chain.

3.2.2.3 Overall chain saving. The measurement is the saving amount on each stakeholder.

More volume created reflects to more cost incurred in the business. The new scheme must present the relationship of how the cost can be saved parallel with the assigned volume.

3.2.3 Customer satisfaction;

Customer Delivery Adherence affects customer satisfaction by delivery of a container per customer's requirement. This can be measured by container delivery at the customers' factory (on time in full).

There are many factors that affect customer satisfaction as reflected from specific requirement. The researcher is required to present strong benefits that the customer can receive by new scheme adaptation.

3.3. Customer Selection as a Pilot Case and Data Collection

The data for research analysis was derived from the operations and the financial departments in terms of export shipping volume and value spending of the year 2008. The data analysis is performed through simulation by excel spreadsheet to show "what-if" scenario to derive the resource allocation efficiency in terms of spending value and operations performance. Thus, past volume from operation department and reviewed cost from the financial department would be brought to consider for the new scheme design and for customer selection as a pilot case to prevent the failure of process implementation.

3.3.1. Operational volume data would show the outstanding customers their related year and volume history reflect most of the company's volume and all operational activities.

3.3.2. The interview with company's sale representative and selected customers would be adopted to see the intention to this change by presenting research analysis of the new benefits offered from the new scheme and collecting data as summary feedback.

The above steps show, how the data can be collected and how it can be used in relation to the pilot case for company's outstanding customer.

3.4. New Business Process Design to Accommodate the New Scheme.

The new business process design to accommodate the new scheme will be presented to show how product (container and truck) and information flow will be together with the new process map. This new scheme can be called "The Round Trip Delivery Concept" requires cooperation and collaboration between internal departments in the ABC Company and between ABC's suppliers and customers:

3.4.1 The product flow design; it would be reviewed and designed with smooth flow by cutting all depot activities.

3.4.2 The information flow; by cutting off the activities, the communication chain would be tighter to adapt for the change and the simplify work from inside the organization through outside organization.

3.4.3 Timing and Work Schedule; customers must share their production plan with the company and work schedules will be coordinated with the operation team via the company sale representatives as assigned volume of the container must be delivered to the customer factory with the premise

time and returned back to port without wasting haulage of the truck dispatcher time.

3.4.4 Assignment of responsibility or authority; the equipment team and intermodal team have full of responsibility for this new scheme. The change in responsibility will be present with a figure to see the differences. The following chart can be referred to.

3.4.5 Change in contract terms; once the activity responsibility as well as cost responsibility swap from customer to company, the freight and service charge would be re-contracted with the new premise rate and with new terms of responsibility to protect the company from any unpredictable situation.

3.5. New Scheme's Benefits and Cost Assessment.

After plotting the understanding of business process from step 3.1 to 3.4, the research will analyze benefits and costs of the new scheme, The stakeholders in this supply chain are truckers, customers and shipping line who enjoy benefits in different proportion.

For Haulier Company; they will receive the same income however they are able to unlock unused capacity by not wasting time at Lat-Krabang due to traffic and further use of other commercial trips.

For customer; they will enjoy cost saving through a transportation cost sharing with the shipping line while at the same time enjoy container availability at any time. The roundtrip direct delivery solution is not only able to provide equipment availability at the customer premise at an economic rate but also provide flexibility and quantity in time demand.

For shipping line; they will enjoy total logistics cost reduction as the main benefit. Apart from total cost saving sharing, reliability, inventory management (optimize equipment flow and stock management), process efficiency can be also obtained. This is another initiative of offering value added service that is economic service to customer. However, the benefits and costs should cover points of operations performance, customer satisfaction, and cost saving.

3.5.1 The data for research analysis is derived from operations and financial departments in terms of export shipping volume and value spending in the year 2008. The data analysis is performed through simulation by using the excel spreadsheet to show "what-if" scenario to derive the resources allocations efficiency in terms of spending value and operational performance which will show total amount of saving cost from the new concept, how much that customer or company can save and which activity helps to save.

3.5.2 The operational performance indicator will be included as one of the measurement for this research. Each objective will be set up. The percentage will be calculated from each responsibilities team with its formula to see the improvement trends of each objective especially all that is related with equipment and intermodal task.

3.5.3 As mentioned before about customer satisfaction, it's the one of the supply chain criteria for consideration. The research will only show change in customer lead time toward the ABC Company service provided. It can automatically identify customer satisfaction by its meaning. If less time is used, it creates much satisfaction. This research will compare the present lead time used by ABC Company with the new time design in terms of the figure below in order to give the new time premise to customers when using the company services.

Figure 3.1: Current Lead time used with current business process 4X hrs.

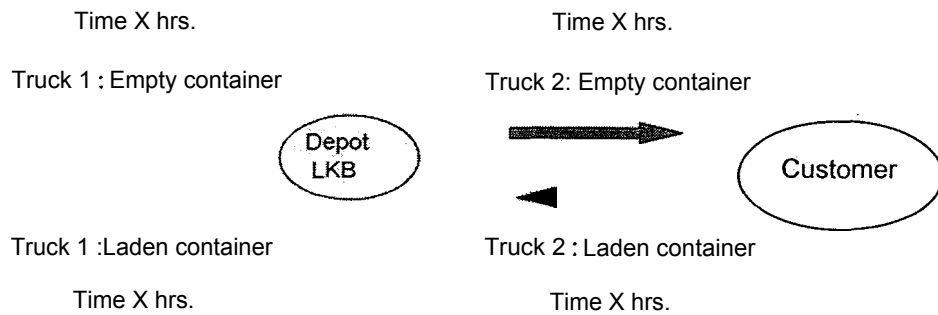
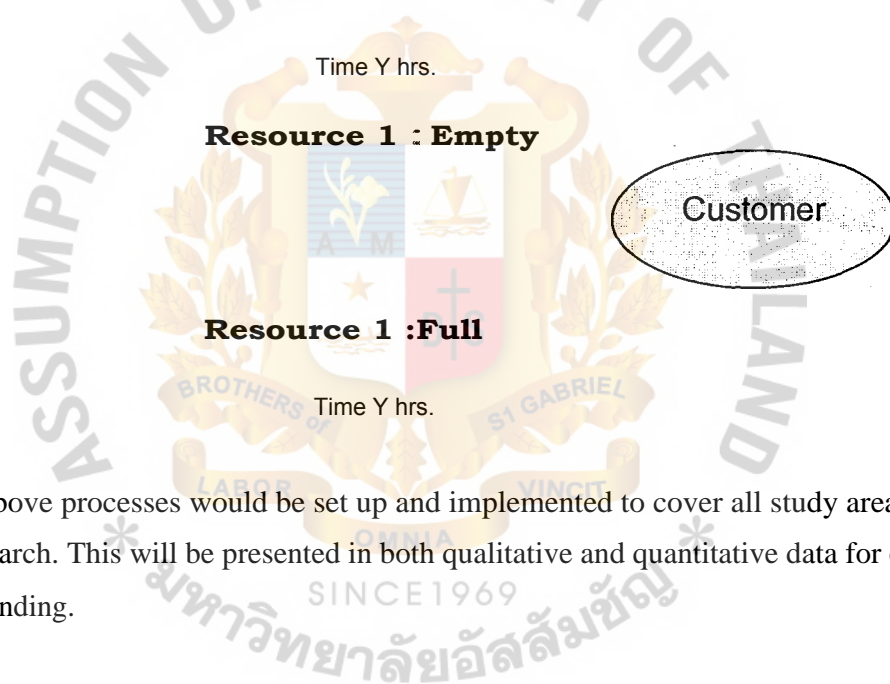


Figure 3.2: New Lead time used with New Scheme design 2Y hrs.



All of above processes would be set up and implemented to cover all study areas of this research. This will be presented in both qualitative and quantitative data for easy understanding.

3.6. Roadmap Developing

After all steps were implemented by using the information analysis method as mentioned, there should be the change to the organization. The **roadmap** will be used as a tool to eventually show how for the resent progressed and present all changes that required for adopting the new method and how to measure each successful element.

3.6.1 All changes required with its schedule

3.6.1.1 Change in people: the **roadmap** will be created for each team responsible for the process, how many elements they have completed and how long they should take for each of these **elements**.

3.6.1.2 Change in processes and tools: the **roadmap** will be created as a time frame to see that how long the company requires for each of the processes such as business processes (in starting to the new adopting), contract term with customers and with the suppliers (the customer contracts the old process terms and each truck dispatcher that acts as the company supplier will be reviewed to checked for the benefits to both company and each of the stakeholders). The hardware equipment and all information technology- will be included in the time frame to see the changes as well.

3.6.2 Target setting for status measurement

3.6.2.1 The target would be set for each schedule made by the organization to check changes in plans such as, the change in human resource above would be completed within one month for example or the change for each process would be completed within some target set.

3.6.2.2 The success of the implementation must be measured to indicate the success of the project. As mentioned in new scheme benefits; cost saving target per unit, operation time performance and capability will be set up with the specific targets. The percentages and numbers will clearly **present** the successfulness and goal accomplishment.

After all of the research processes are designed, the study schedule would be set up to outline each process with the appropriate time for completion of the plan. The Project will be conducted step by step in order to summarize all points of concern in accordance with the time frame. At first, the current process will be studied and then compared with new scheme.

CHAPTER IV

PRESENTATION AND CRITICAL DISCUSSION OF RESULTS

This chapter discusses how the new business process can benefit the ABC Company as well as customer. The data collection of company reports and all interviewing's from selected customers will be presented and clearly explained.

4.1 Discussion of the Current Process

According to the normal practice, the shipping line will provide empty containers to selected depots or terminals and customers or shippers need to pick up containers at the designated areas unless the trading terms between shipper and carrier is under Store Door terms.

Store Door (SD) term specify that the carrier or shipping line has to provide containers to the factory gate from the terminal however SD term is not popular for export but rather for import. The empty containers belong to sea carriers and leasing companies lease those empty containers to sea carriers. Most of empty containers belong to leasing companies. They will be leased under "leasing contract" with rate, number of container leased, duration, on-hire (lease) and off-hire (return container) procedures.

The empty containers will be moved on a trailer with standard chassis in order to relocate between marine terminals and depots for storage purpose. Shipper's haulier will pick up empty containers and dray it to the shipper's premise. Once the containers are loaded, they will be returned to the sea carrier at same depot where customers pick up empty containers for further inland haulage to the terminal or return directly to the terminal for sea carriage.

In Thailand; the empty containers will be available over terminal or depots. To make the empty containers available at the depot, the empty containers will be drayed out from the terminal to the releasing locations where liner's customers can pick up empty containers which are called as inland container depots or ICD. The largest ICD that empty container flows in Thailand is at Lat-Krabang as Port Authority of Thailand statistic show that major containers flow in Thailand from Laem-Chabang Port to the main depot or ICD which is the Lat Krabang ICD. Those empty volumes are drayed to ICD Lat-Krabang for customers to pick up and further drayed to their factories.

The shipper's hauler will pick up the containers from the terminal or depots and then deliver to the shipper's premise factory. Therefore the intermodal (or inland transport) of empty container was defined by the shift of container responsibility from one party governance to another party. There will be 3 shifts defined in this study i.e.

1. The shift between ocean carrier and hauler.
2. The shift between hauler and depot.
3. The shift between hauler and shipper.

There are 2 types of ABC's empty containers available for customer i.e. dry and reefer types. Dry container is the container that is suitable for loading cargoes that need no temperature, humidity and ventilation control. The example of cargoes are e.g. automobile, electronic goods; and etc. Dry containers accounts for 80% of overall container category available for customer to stuff the product in Thailand and accounts for 70% of containers released at Lat-Krabang. While reefer container is the container that is designed for cargoes that needs temperature, humidity, and ventilation control. The example of cargoes e.g. fruits, vegetables, seafood. Reefer container accounts for 20% of the overall container category available and account for 30% of containers released at Lat-Krabang.

There are two types of loading characters that haulier faces i.e. drop off and waiting. The drop off scenario is the scenario where the haulier needs to drop containers and chassis over customer premise for loading and then returns later to pick up the laden

container. The waiting scenario is the scenario where the haulier needs to wait for the customer to perform loading without leaving the factory. After the customer finishes loading, then the haulier will dray, deliver that laden container back to the Lat-Krabang depot.

Therefore; under the drop off scenario, the customer's assigned haulier wastes the head haul as empty in order to pick up empty containers to the factory and also wastes head haul as empty in order to pick up laden containers from the factory to the Lat-Krabang ICD. Unless the trucker is able to match up volume with other customers in the same area, then they will be able to reduce waste haul and might be able to give cheaper round trip rate to the shippers.

Figure 4.1: Drop off containers at factory scenarios with waste haul.

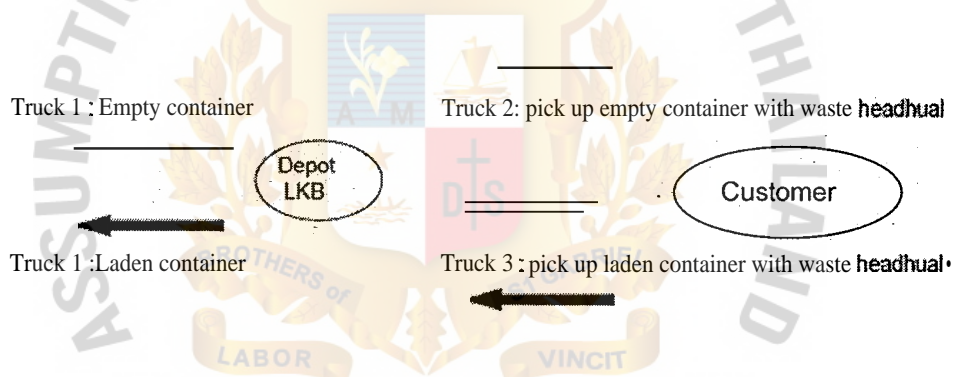
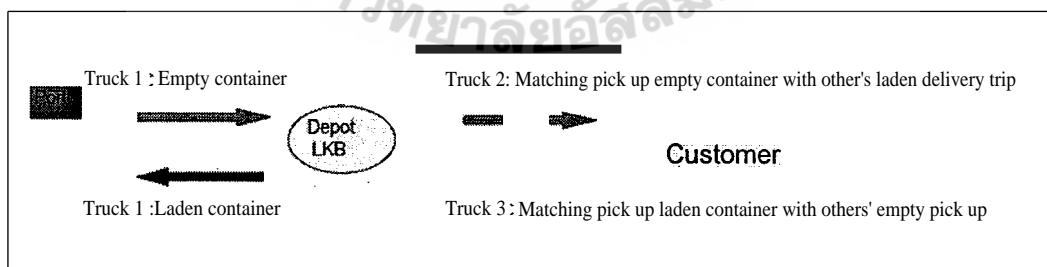


Figure 4.2: Drop off containers at factory scenarios with matching haul.



Another **scenario** for the trucker is that the trucker wait for stuffing. In this case, the customer needs to pay waiting time charge for the trucker but enjoy cheaper rate because the haulier does not need to perform two trips to deliver and pick up

containers. In waiting scenario, the haulier will waste head-haul to pick up empty container unless the trucking base is in the **Lat-Krabang ICD**.

Figure 4.3: Waiting for stuffing scenarios with waste haul to pick up empty container at the **Lat-Krabang** depot.

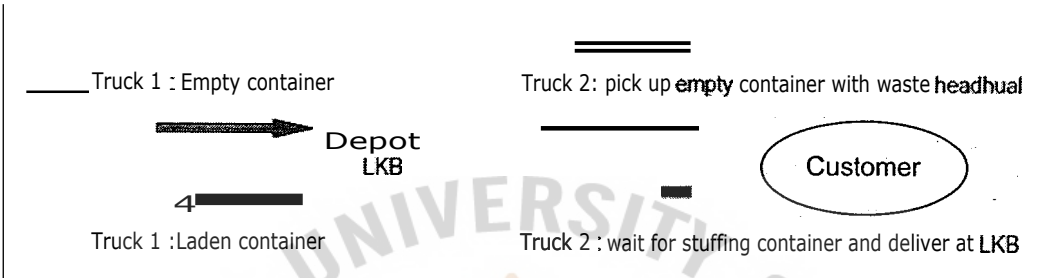
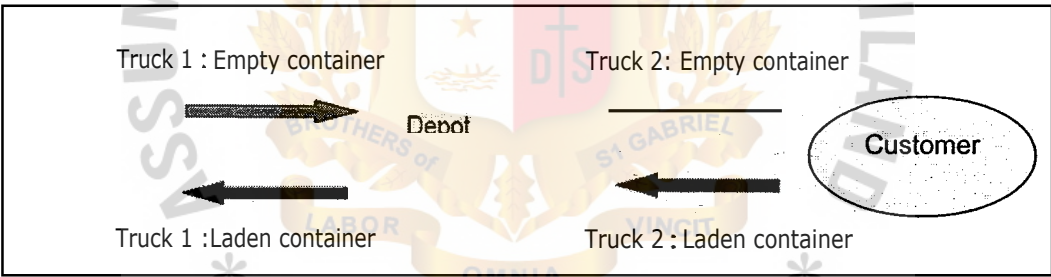
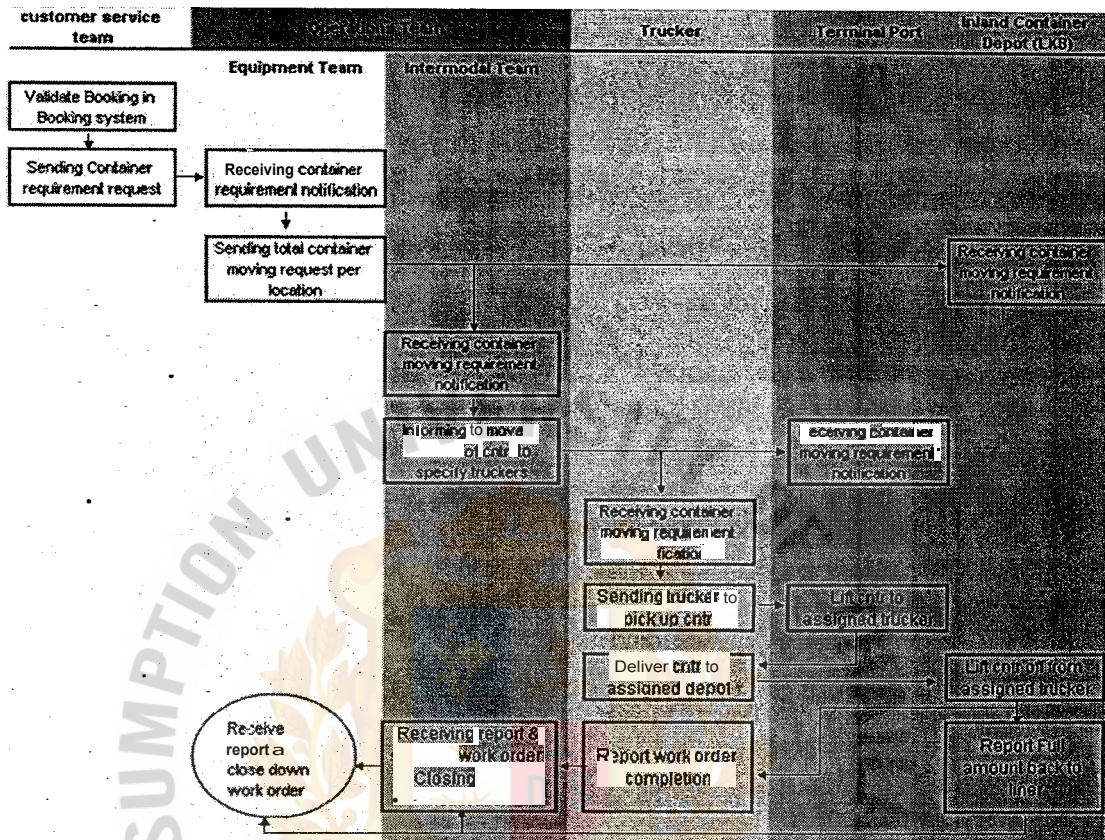


Figure 4.4: Waiting for stuffing scenarios without waste haul by using truck base at the **Lat-Krabang** depot.



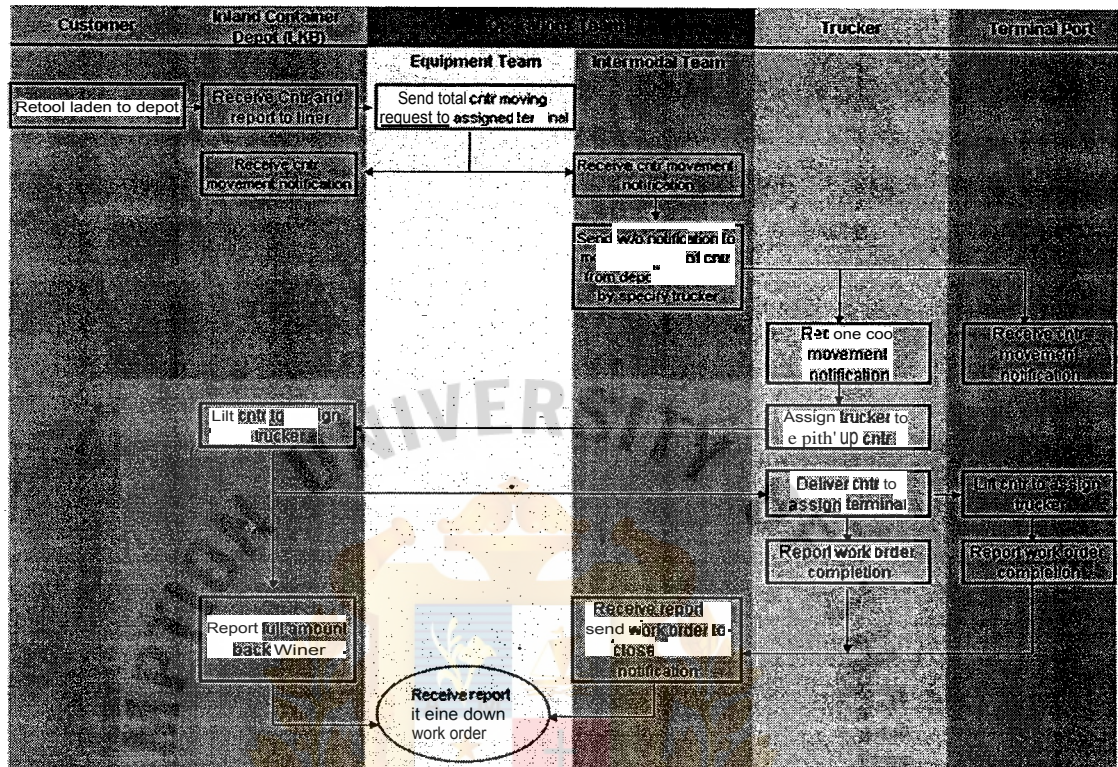
Furthermore on the communication flows under the old business processes. Export bookings will be created via customer service system and request will be sent to the equipment teams for container availability checking and requests of the **Lat-Krabang** depot. The customers will pick up empty containers at the depot for stuffing at their factory and then return back to **Lat-Krabang** after completing their stuffing process. This can be viewed in Figure 4.4 given above.

Figure 4.5: Current operations process of ABC empty logistics to Lat-Krabang depot



The communication flow for the ABC Company's shuttling plan is carrier control by the intermodal teams who check for vessel closing time for full containers that have already been returned by the customers and drayed at the Lat-Krabang depot. The shuttling plan will be prepared to move containers to the Laem-Chabang port for each loading vessel. This process requires the communication to track suppliers at the Laem-Chabang terminal. This process can be viewed in detail in Figure 4.5 above.

Figure 4.6: Current logistics flow of ABC laden back to the Laem-Chabang Port



ABC Company's Cost of Logistics

From container flow logistics, the container routing can be grouped as follows:

1. Laem-Chabang Port to Lat Krabang ICD (LZP-LKB)
2. Lat-Krabang ICD to customer premise (LKB – Customer)
3. Customer to Lat-Krabang ICD (Customer – LKB)
4. Lat-Krabang ICD to Laem-Chabang Port (LKB – LZP)

Figure 4.7: Container logistic route.

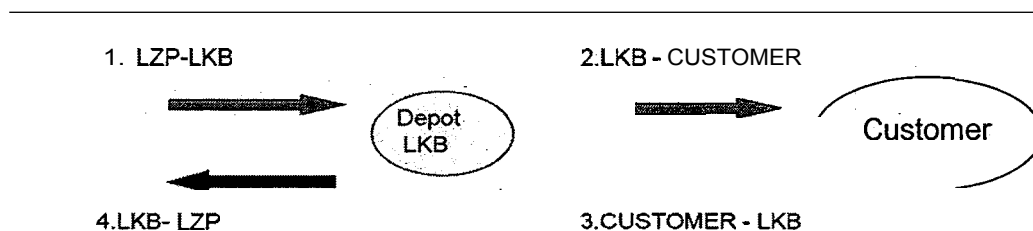


Table 4.1: Cost of Position Container to Lat-Krabang

	SIZE 20'	SIZE 40'
Lift-on (Empty) at Laem-Chabang	159	239
Empty Positioning from Laem-Chabang to Lat-Krabang	1,125	2,250
Lift-on when customer picks up Empty at Lat-Krabang	321	535
Shuttling from Lat-Krabang to Laem-Chabang	2,250	2,250
Lift off at Laem-Chabang	810	1,215
Total Cost	4,665	6,489

Relocating container to ICD Lat Krabang and back to Laem Chabang costs the company THB 4,665 per container for size 20' and THB 6,489 for size 40'. Those costs are considered as total logistics cost for the ABC Company. •

4.2 Key Criteria for Customer Selection

As indicated from the previous chapter that the key criteria for customer selection would be by the proportion of the volume reflecting, customer's factory, and year related to the company. The results were found as given below:

4.2.1 Customer Volume Proportion

The company volume report for the year 2009 showed that, about 56% of total export volume by passed Lat-Krabang Depot. For the import, the percentage is 55% of total import volume. Types of customers were separated to each segment for both imports and exports. This can be viewed in Figure 4.8 Lat-Krabang Customer Segments (Export) and Figure 4.9 Lat-Krabang Customer Segments (Import)

Figure 4.8: Lat-Krabang Customer Segments (Export)

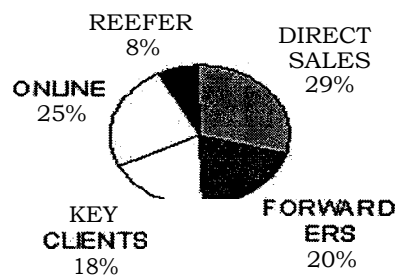
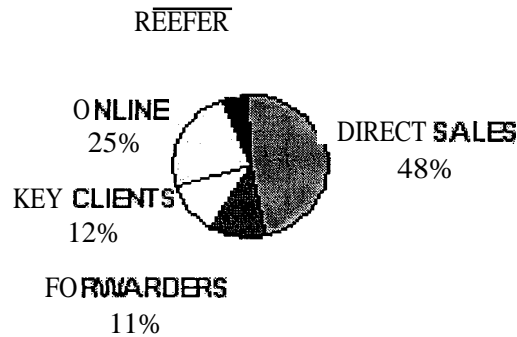


Figure 4.9 Lat-Krabang Customer Segments (Import)



From the recovered proportion, the researcher decided to focus and adopt the interview with Key Client Customers who have high booking volumes with the ABC Company. The customers also have their owned factory. This customer category is responded by the ABC Company's sales representative toward Direct Sales Customer Function.

4.2.2 The Year of Joining the ABC Company

The year that the company was joined will be used as one of the considerations to narrow the list that is on hand. Not only volume or distance is considerate but the selected customers must always have transactions with ABC Company or worked with the company for at least 3 years. This is because the reflection of customer satisfaction with the company is easier to communicate, measure, and the results can be compared to the current processes that customers use in ABC Company.

4.3 Selected Customer and Data Collection Discussion

PH Company was selected after reviews and interviews conducted with the Sale Teams and Operations Teams. PH customer mostly used export service from ABC Company via direct sale channels through **Damko** Logistics which is categorized as the key client customer of the ABC Company.

4.3.1 Selected Customer Previewing

PH Company always created volume for ABC Company of almost 100 Forty Foot Equipment Units (FFE) per week or 400 FFE per month, by picking up container at Lat Krabang depot and transporting containers to the factory located at Petchaburi province. The present container flow will be the same as *(Figure 4.2 drop off container at factory scenarios with matching haul)*. The distance is around 204 km. from Lat Krabang depot to the factory at Petchaburi while further away from Laem chabang for 294 km.

Table 4.2: Current Cost Situation for Position Containers to Lat-Krabang and Return to Laem-Chabang

Costs (THB)	ABC	Customer	ABC	Customer
Gate-Out Surcharge at Lat-Krabang	-	107	-	107
Transportation to factory and return to depot	-	9000	-	9000
Weight Surcharge'	-	32	-	32
Lift-off when customer returns laden container to Lat-Krabang	-	535	-	963
Gate-In Surcharge at Lat-Krabang	-	107	-	107
Inland Hualage Export (IHE) cost pay to ABC		1,650		3,300
Extra Cost for using Lat-Krabang from tab 4.1)	4,665		6,489	-
Total	4,665	11,431	6,489	13,509

- Cost for ABC Company	4,665	6,489
Cost for the Customer	11,431	13,509

The Table above shows present cost incurred from present processes of using Inland Container Depot (ICD) at Lat Krabang. As PH customer mostly used container size 40' as main product then the cost per container is THB 13,509 while ABC Company responds to only THB 6,489. Then, the total logistics cost is at THB 19,998 for PH customers.

4.3.2. Criteria Reviewed for Selected Customer

The customer was categorized as one of the company Key Client Customers who always create volume to the company and use the company service since the year 2005; it's almost a five year relationship.

The price can be adjusted as spot rate based on the present processes. Adding more cost adjusts with the increase in distance. This is presented in the next topic.

4.3.3 The Discussion with Internal and External Party toward New Ideas

This was separated into three sessions which are selected customers, sale representatives, and operations staff. The interview can be concluded as follows.

4.3.3.1 Key Client Customers; PH customer compared to- the old service, PH has no need to find out trucking supplier by themselves for empty picking up and dropping off container at the depots. Customers have more time on their production line by eliminating waiting time for container repositioning from the port and do the repair or many operation activities are conducted at the depot. The risk of cargo damage while traveling or from many activities while waiting at the depot and transfer to the port was eliminated. However, PH customer still aware of the communication flow as it requires much effective communicate between themselves and operations teams pass through sale persons in order to make an appointment for haulage and container arrangement. The response for cost in case of inappropriate container prepared for them and the waiting time charge in case of miss-evaluation of stuffing time was brought to question.

4.3.1.2 The Sale Representative; they are quite satisfied as there is an increase of service, to serve different customer demands. The freight charge was clearly explained by separating revenue and all cost incurred. This was new at first- to encourage and promote customers but the benefits itself from the project can be witnessed and easily presented to customers.

4.3.1.3 *The Operation Staff*; they focused to reposition or intermodal and equipment repairing cost that can be reduced. The process must be reviewed to eliminate some task or at least reduce unnecessary job or staff. The question was how much of customer free time could be gained after delivering containers to the factory. The new process will be adopted by increasing some task of operation teams with customer connections and communications. It was also pointed that the different in factory distance must be quoted with different transfer costs.

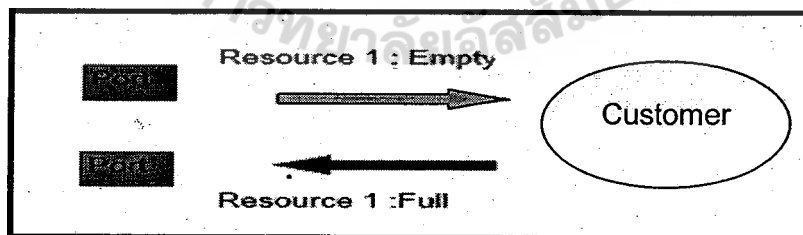
After discussing all feedback and concerns about the new concept, new business process and flows were presented and created to cover all concerned points. It is mentioned in the next topic given below.

4.4 New Business Presenting

4.4.1 *Product Flow Changing*

Empty containers will be delivered since they are discharged from the Laem-Chabang port to customers directly and returned as full containers from the customer factory to the port without passing it through depot anymore. The Figure 4.10 presented the process clearly.

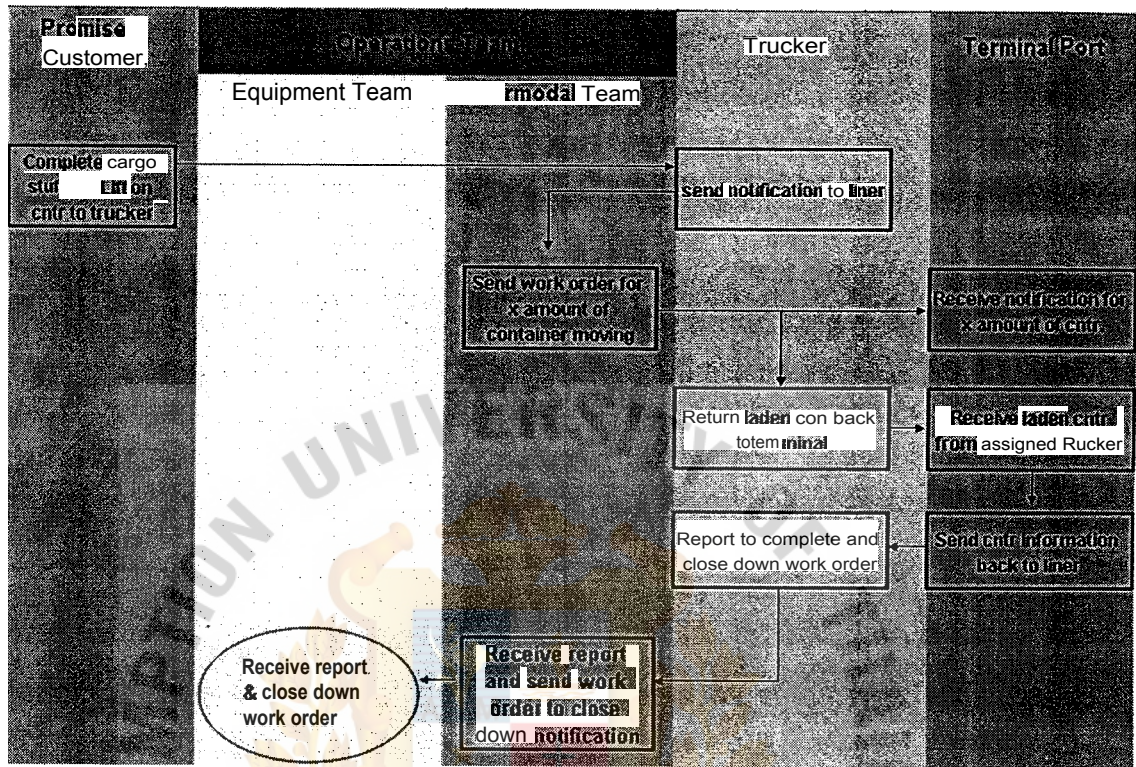
Figure 4.10: Container Flow for Roundtrip Direct Delivery Concept



4.4.2 *Information Flow Changing*

Internal flow and External flow for the new scheme are required to integrate between ABC's transportations of empty containers, their customer transportation of empty

Figure 4.12: New scheme of information flow for laden container returning



External cooperation are; firstly from customer in giving production planning information and secondly ABC suppliers e.g. trucking company whose dedicate trucks fleet for matching round trip direct delivery service. Mentioned collaboration requirement are information sharing especially joint planning and open book costs for success of the project.

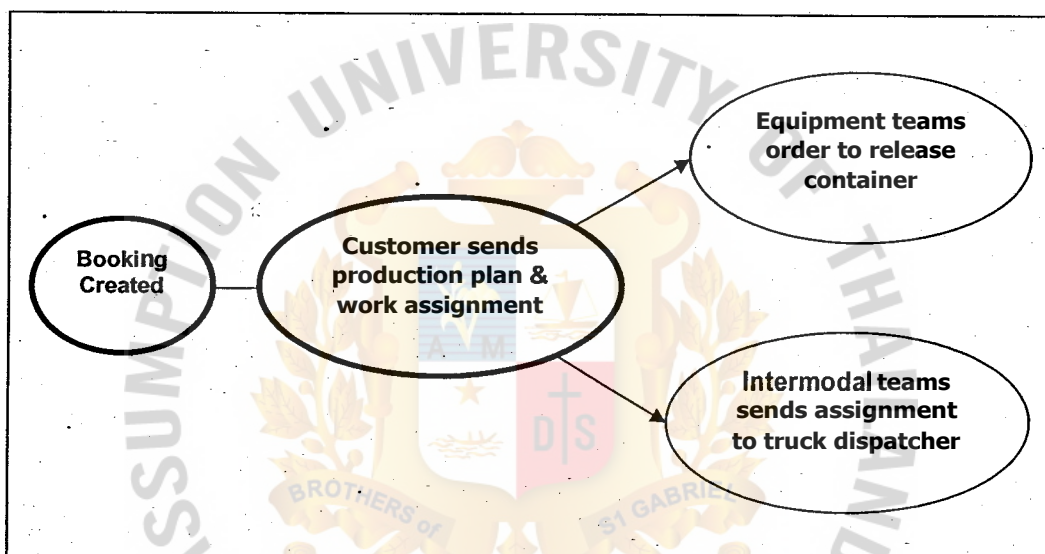
4.4.3 Timing and Work Schedules

Once the customer sent information to ABC Company about their production plan, the operation teams would assign both depots for container release and trucking dispatchers for container pick up and return to the port. Both will share plan with each other. The agreed time would be set up as 24 hours since containers were picked up and the haulage was kept at the customers' factory until full containers returned to the port for export shipment.

4.4.4 Assignment of responsibility or authority

Once the customer has booked in the system, the premise volume of container must be well prepared and managed by the equipment teams and work will be passed to the intermodal teams by assigning the trucking company in haulage the arrange pick up all empty containers from the port to the customers factory and return it back with a full container from the customers factory to the port.

Figure 4.13: Flow of Responsibility and Assignment



4.4.5 Change in contract terms

Both of customer and ABC Company representative agree to send special contract terms for applying the new service as it relates with many cost responsibilities between the company and customers so any claim issue can be avoided.

4.5 Discussion of New Scheme Benefit and Cost Assessment

There is a cost recovery from the Company Profit and Loss Estimated Report. The cost recovery is about 30% of the company profitability. The target would be set up regarding the sale forecast per FFE per year. There is an **IHI** (Inland Haulage Import)/**IHE** (Inland Haulage Export) to apply and cover those inland repositioning cost for

1650/3300 THB for size 20'/40'. These IHI and IHE were applied from freight charge that is collected from the customers and repositioning cost payment is applied.

It would be better if the company can eliminate cost while enjoying the same benefits. Thus, the direct delivery or round trip concept would be idea that can support what was found.

4.5.1 New Scheme Cost Assessment

The current cost situation was brought to elaborate and find out what should be eliminated as the new scheme was set up. It shows the save up amount for both the company and the customers.

From selected customer (PH), it is found that the increase in transportation price is around THB 9,000 measured from Lat-Krabang depot to Petchaburi while another distance counted from Laem Chabang port to Lat Krabang depot was shared by ABC Company with the amount of THB 3,500. Thus, all trucking cost would be paid to trucking company which is the amount of THB 12,500. Another shared cost is Lift off charge when the containers are returned as full at the port. The rest would belong to customers or the PH Company. All detail can be found in the Cost Table below.

Table 4.3: New Scheme Cost Assessment toward Direct Delivery

Costs (THB)	ABC	Customer	ABC	Customer
Lift-on (Empty) at Laem-Chabang	-	159	-	239
Transportation to factory and return to terminal	3,500	9,000	3,500	9,000
Extra Cost	-	-	-	-
Lift-off at Laem-Chabang	310	500	465	750
Inland Haulage Export (IHE)	-	-	-	-
Total	3,810	9,659	3,965	9,989

Table 4.4: Cost Comparison between Current Business Processes and New Scheme

Costs (THB)	ABC	Proposed COS		
		Customer	ABC	Customer
Lift-on (Empty) at Laem-Chabang	239			239
Empty Positioning from Laem-Chabang to Lat-Krabang	2,250			
Lift-on when customer picks up Empty at Lat-Krabang	535			
Gate-Out Surcharge at Lat-Krabang				
Transportation to factory and return to depot		9000		
Weight Surcharge		.32		
Lift-off when customer returns laden container to Lat-Krabang				
Gate-In Surcharge at Lat-Krabang		107		
Inland Hualage Export (IHE) cost pay to ABC		3,300..		
Transportation to factory and return to terminal			3,500	9,000
Transportation from Lat-Krabang to Laem-Chabang				
Lift-off at Laem-Chabang	1,215		465	750
Total	6,489	13,509	3,965	

The Cost comparison will focus on container size 40' because it is the product volume for PH Company, selected customers. The following figure will present the summary of the amount saved for both the ABC Company and the PH Company.

Table 4.5: Saving amount using the "New Concept"

	20'	40'	Saving Percentage
Savings for ABC (Improvement in OY)	855	2,524	33.90%
Savings for Pit Customer	1,772	3,520	26.06%
Total Logistics Cost Saving Over Initial Cost Spent (all saving THB6,044/ old scheme cost THB19,998)			30.22%

The saving amount for ABC Company is about THB 2,524 or 38.90% while customers can save up to THB 3,520. The saving would be calculated and focused to only container size 40' which is the product served for PH customers. Thus, the ABC

Company can save up to THB 252,400 per week or THB 1,009,600 per month regard with to volume 100 FFE per week as mentioned in the previous topic.

4.5.2 Operations Performance Assessment

As discussed by the operation teams, all key performance would be set up to measure all improvement or at least to maintain service quality.

Even the process changes, performance is required to be improved or at least maintained to satisfy customers and bring on company value. The business process changed with the new scheme is related to equipment management, equipment maintenance and repairing, and inland transport management.

Table 4.6: Operation Internal Scorecard

O	GOAL	1.1'1	Current	Target
EQUIPMENT & EMR	Increase Turn Time for Containers and maximize the use of our assets	Turn time for import full container	<5 days	<3 days
		Turn time for export full container	<7 days	<5 days
	Reduce Positioning Costs	Empty container rejected – Defect Ratio	0.15%	0.10%
	Reduce Storage Cost	Empty container storage unit cost	175 THB/ FFE	150 THB/ FFE
		Trucking cost per FFE	4500 THB	3500 THB
INTERMODAL	Reduce Intermodal Cost	Non-Hualage costs per FFE	4500 THB	3500 THB
		Truck single trip ratio	5%	3%
		Truck single trip ratio	5%	3%
	Ensure timely delivery as agreed with Customer	Import on-time delivery	85%	90%
	Ensure cargo shipped as agreed with Customer	Number of late gate in Laem-Chabang due to shuttling	<5%	<3%

4.5.2.1 Equipment & EMR (Equipment Maintenance and Repairing)

The new concept is to release containers directly from the depot thus equipment and EMR teams are required to ensure that all the assets are maximized the use for both import and export containers by having more turn time. Maximize containers can also help to reduce storage cost at the depot or terminals without utilizing the equipment

while the rejection and return route of the containers are required to be low as well. It affects the service quality when ABC Company provides to customers.

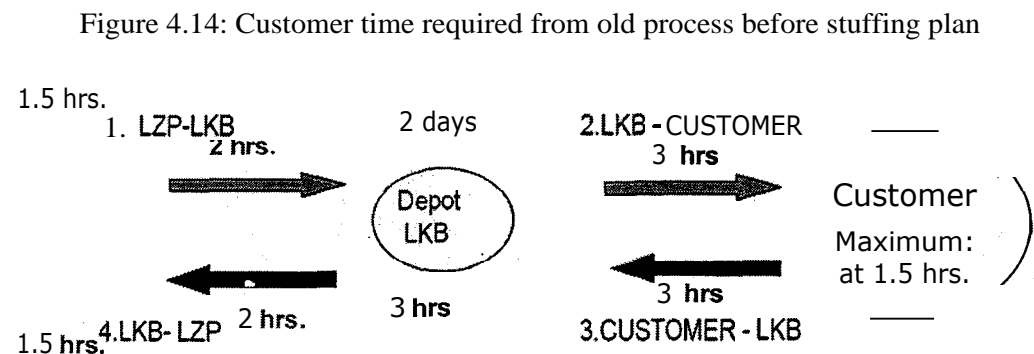
4.5.2.2 Intermodal

Intermodal is related with inland transportation covering all modes such as rails, trucks, and barges. Truck mode will be discussed only as related to the project. The trucking cost should be controlled however it may be flexible depending on the fuel price. With- less single trips, there should be non haulage of containers back from place to another place. In order to control fleet in the premise time for customers, the focus should be on since empty containers were picked up from the customer's factory at the premise time and also returned full status at the terminal at the premise time as well. It also reflects service quality for customers.

The above explanation presents service quality to ensure to customers therefore the process change or not. Target and KPI is also needed to measure company performance in order to improve service or at least maintain it.

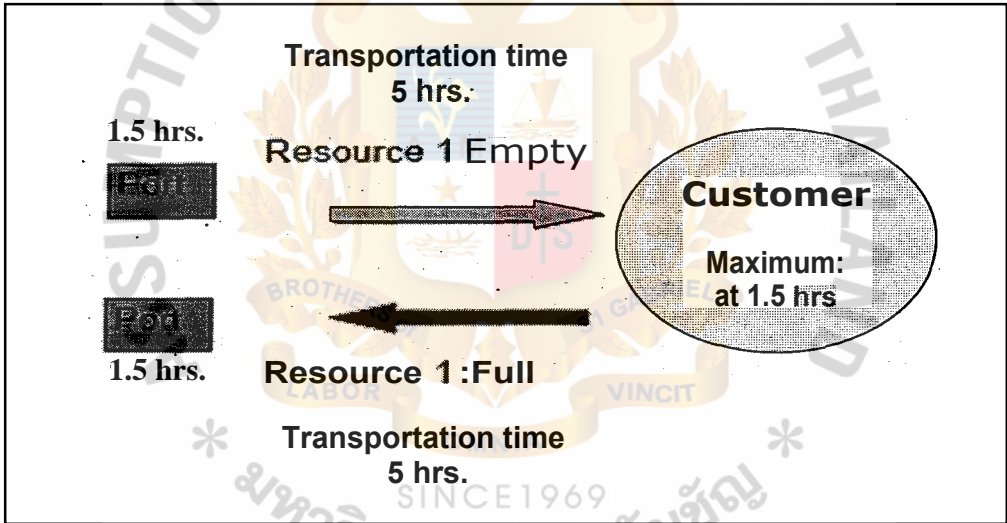
4.5.3 New Lead Time Design

To gain most customer satisfaction by adopting the new design, the benefits that customer receives should be shown. This research also shows the time improvement for customers. As mentioned before that communication flow will occur through work assignments to equipment and intermodal teams. Customers can immediately get their requirement toward their shared plan.



The old business process required 2 days and 14.5 hours. New business process is adopted by cutting or eliminating the Lat-Krabang mode, 2 days for all depot activities such as, empty positioning and surveying, container repairing and maintenances, traffic jams, and empty picking up process could be saved. Those depot activities will be performed at the terminal and containers can be picked up at premise by the customers. Customers have no need for container availability at the Lat-Krabang depot. Another 3 hours that ABC Company could save up is from laden return activities which is almost 1.5 hours and another 1.5 hours is laden pick up to transfer to the Laem-Chabang terminal. Thus, total time that we can be saved through the whole supply chain is about 2 days and 3 hours.

Figure 4.15: New Lead time used with customer Premise time



The new scheme not only creates cost benefits to the company but also brings performance assessment to present service quality that the company have while also satisfying customers at the same time with new lead time design. The new lead time is directly from customer premise plan, thus it fully satisfies the customers becomes of their own design.

4.5.4 Comparison and conclusion of Pros and Cons for Direct Delivery

The summarization of the study is to compare pros and cons of the **roundtrip** direct delivery concept which is given as follows:

Pros; the concept is designed for cost saving in both transportation and inventory cost of operations. Time will be used with more efficiency as well as improvement in the overall performance of the company. The transportation optimization would be adopted like reduce in empty running and improve the capacity of utilization.

Cons; first, there is increased collaboration required therefore the investment of shared resourced e.g. human, information technology, and time would be require. Secondly, the high escape cost in case the suppliers turn to be sole suppliers in **the** long run and high cost of leaving set up by restructuring with new supplier. Third, there is a waiting time for truck in order to fill in the return trip. Fourthly, in the collaboration concept in which the integrated system is required, the risk is sharing and transferring to every concerned party. It requires understanding of persons as risk of transfer and management is such that we do not own our resource (outsourcing and controlling performance). Fifth, if volume increases, it is difficult to manage. Sixth, it may effect to the change in freight charge per petrol price but we quote fixed rates with customers. Lastly, the terminal handling charge has to be absorbed by paying first.

4.6 Discussion about the Roadmap

The presentation and discussion passed to the last round is set up to change schedules including all target setting to see all improvements to the overall process.

The required changes are people and process and tools. Each one is required to pass the training process, system training as the system changes and the final step is to make the trial period. Table 4.7 will present time consumed for each person. Figure 4.17 will present the time schedule for equipment and tools change. Further details of each change required will be discussed in the next paragraph.

4.6.1 People Change

Since change requires time for training, all related staff are required to sacrifice working hours to ensure that the information was correctly understood for all parties. Thus, there is an opportunity cost incurred by sacrificing working time.

Table 4.7: People changing roadmap in the company

Who?	Elements					
	Process Training		System Training		Trial Period	
	Time (hrs)	Opportunity Cost (THB)	Time (hrs)	Opportunity Cost (THB)	Time (hrs)	Opportunity Cost (THB)
Sale representative	1	105	1	210	3	315
Customer Service	1	75	1	150	3	225
Equipment team	1	75	2	150	3	226
Intermodal team	1	75	2	150	3	225

Sale representatives are required to attend the process training in order to correctly and effectively communicate to customers. The trainings are concerned with conceptual knowledge, supply chain change, and cost and benefit sharing.

Customer services are the persons who directly support to all customer requirements and do transaction creation. They are like the sale team but give details to all parties concerned and are like contact point because customer services act like intermediate person.

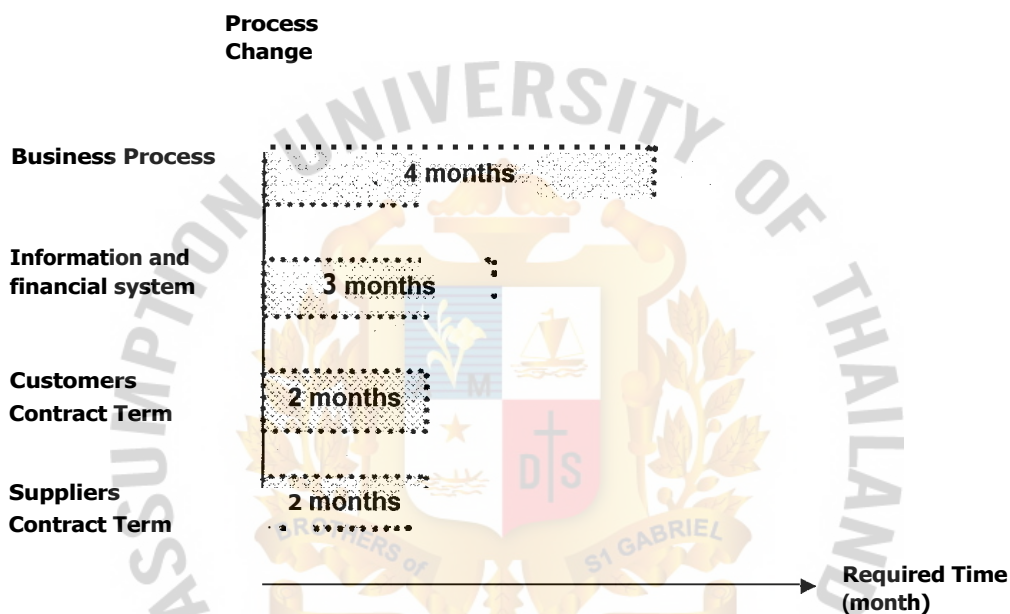
Equipment teams are required to understand and correctly communicate to the depots or the terminals in terms of container releasing regarding with orders are assigned from customers.

Intermodal teams are required to understand and correctly communicate to haulage dispatchers in term of haulage assigned with the appointed date and time. All steps will be focused on in order.

4.6.2 Process and Tool Change

When the new process is adopted, all equipment and tools are required to be made use of for and smooth working conditions. It needs time for communication or training to all the related party. The Figure 4.16 will show equipment and the tools list that were required to change with the time required for each change.

Figure 4.16: Process Change Schedule



4.6.2.1 Business Process change

It is related to the changes in all operations in all modes of communication since the customers contact sale persons or customer service of the ABC Company. It requires 4 months for knowledge to prepare for changing equipment volume at the terminal instead of the Lat-Krabang depot and all customs allowance will be handled by Port Authority of Thailand.

4.6.2.2 Information and financial system changes

There is a new cost scheme incurred with the new business scheme. Accountancies are required to be adjusted because of the change. The Purchasing order that is sent from ABC Company to all suppliers will be directly communicated in order to change

and adjust to the new cost scheme. It requires 3 months for financial review and adjusts work.

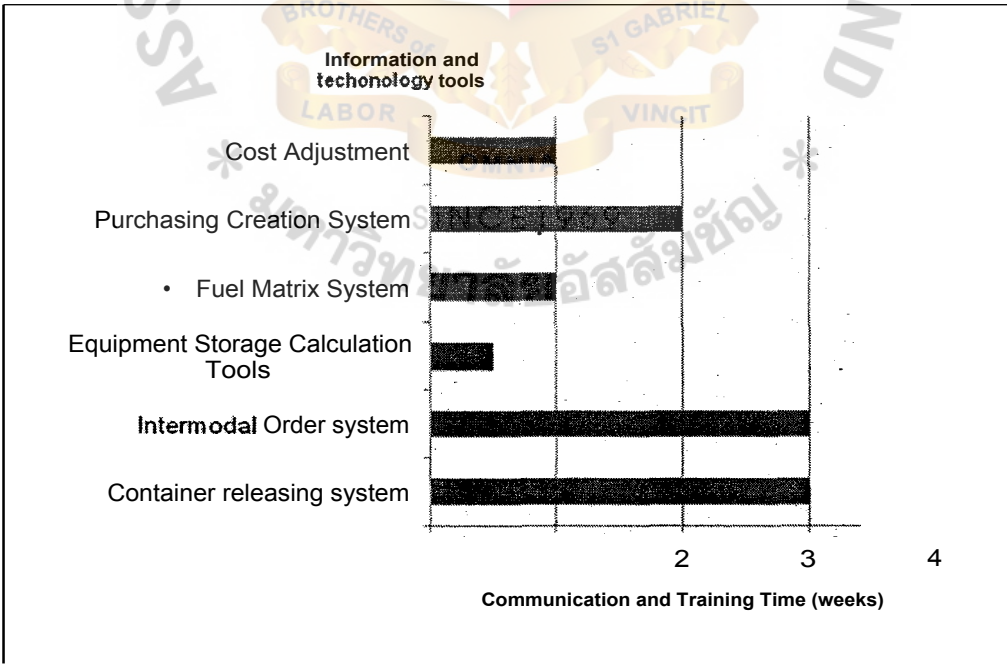
4.6.2.3 Customer contract term changes

Old contract terms with the old processes should be reviewed and re-adjusted to response with the new scheme as it affects the company responsibility in both cargo security and transport management. All liability would be re-signed. It required for two months respond to each of the organization processes.

4.6.2.4 Suppliers contract term changes

In terms of changes in container pickup place and transport distance recovered, there are many considerations under review such as cost consideration, process adapting, and responsibility in all liabilities when handing cargo. The list would be written to cover all supplier responsibilities. Any additional or unexpected cost will be directed to responsibility party. The change requires two months.

Figure 4.17: Information and Technology Tools Change Schedule



In terms of information and technology tools change, there are six factors that were required. First is cost adjustment. The mentioned new scheme cost would be adjusted in ABC accountancy system. Second is purchasing. Order creation system after cost was adjusted to the system. The way of sending purchasing orders or billing suppliers would be adjusted with new structure indicated in the change. Thirdly, fuel matrix will be brought depending on the customer distance with economics fuel price adjustment. The increasing in THB 1 of oil price will increase the trucking cost as THB 100 per trip. Fourthly, equipment storage calculation tools will be differently used from the past of the **Lat-Krabang** depot. Now containers will be released from the terminal with new negotiation methods and price reviews by the new scheme adopting. Last two are **intermodal** ordering system and container releasing system. Both must be talked above or communicated to suppliers. Both haulage and terminals changed by processes change with the new contact person and data system transfer. All data sent from the depots or haulage must be in real time with accuracy.

The above changes schedules are set up after communicated team and discussion to all concern parties so as to see the effective improvement in the new process. The target would be set up as well for operational performance measurement. There would be some opportunity cost incurred from training staff but there is no any additional cost from other changes. Even if the process changes, it does not affect the whole business. The company just provides more solutions to customers for cost saving without sacrificing any money. All technology or systems are still usable but some method of calculation or time measurement is added.

CHAPTER V

SUMMARY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The last chapter will provide a summary of all the research findings. The findings are related to company cost and benefits of the current process performed compared to the new business idea. However, there are some limitations discovered after the interview adopted. Furthermore this research also suggests some actions that the company could take in the future and makes some recommendation as well.

•5.1 Summary of the Findings

The current business process for ABC Company, created cost of repositioning containers from the terminal after the containers were discharged until container transferred to the Lat-Krabang depot waiting to be released. That recovered cost is about 30% of the company revenue or THB 652,361,226 million from the last year record. They incurred this lift on and other operations at the port between repositioning. Also storage and operation charge at the depot for containers is added. The HI/ IHE cost was applied to cover inland repositioning after gaining overall benefits from freight charge. Thus, the researcher would like to present the new idea of round trip concept in order to reduce the incurred cost and fully enjoy benefit received. IHI/ IHE will not be applied anymore but containers will be transferred directly from the port of discharge to the customers factory by having transportation cost shared with the customers.

The research was conducted by using a case study as the research methodology. Sample customers were chosen for a pilot case. The company name is PH Company which is under customer selected criteria. Customer current processes and their satisfaction levels were studied. The profit and loss was analyzed including benefits by comparing the old business processes and the new idea. The new idea can eliminate cost of repositioning including with tightening the process time and cutting

unnecessary modes of task performed at the depot. It adopted new business process design with new lead time presented to customers. The new process will not include extra revenue for the company. It is just a way to save cost.

According to collaboration stage in the contemporary supply chain management view, the new proposed idea for ABC Company integrates information technology with terminal where empty containers are discharged. The truck suppliers, and customers, as well as strategic plan sharing through the whole process, the clear linkage picture was presented in Figure 4.12, ABC Company will act as a business partner with the PH customers, terminal, and hauliers, in order to set strategic plan together under effective communication channels in achieving business cost and time efficiency. Thus, the roundtrip direct delivery approach is considered as vertical collaboration due to its integration with customers and suppliers i.e. liner, hauliers, port/depot operator within the supply chain. Lastly, ABC Company would get customer satisfaction as a final result.

5.2 Recommendations for Implementation

There are limitations that are incurred by customers and also by the company side. This would important to explain for effective research implementation.

5.2.1 Customers' special requirement becomes a main reason but it cannot be set as standard price or standard freight rate for all shipments in ABC Company's pricing system due to the difference in cost per volume, location and other special requirements.

5.2.2 More collaboration and task integration are required between teams and outside company. Since ABC Company is an international company the system is widely implemented to the same way as a global company. All the changes must impact the work processes in global terms. The increase in volume will be difficult to manage.

5.2.3 **Intermodal** Teams might lose the opportunity in haulage utilization to turn the round trip for other current business units if customers cannot finish their cargo stuffing within the promised time.

5.2.4 Equipment shortage situation can occur at terminals due to lack of the repair and maintenance capacity unlike depots that operate this task as the main activities and have more experience or specialized equipment than terminals.

5.2.5 The Port Authority of Thailand's regulation is that terminal business should not fully operate container repairing. It could be done in limited scope such as cleaning and primary repairing for little damage only. Thus, containers with serious damaged status still required depot business to serve the service and ABC Company is requires to maintain depot activities. Customers may pick up containers at **Lat-Krabang** when there is a shortage situation.

Thus, all direct delivery quotations would be evaluated for each customer depending on volume, location and requirement due to no standard tariff per container size and route. Quotations are tailor made for each customer depending upon volume, location, requirements, supplier's cost and the amount of savings to be obtained.

The new business idea will not fully apply to all business units but will be combined with the current one to serve only new and special requirements from customers who use this new business.

In additional to the new business design, both teams are required to communicate well and interact with each other for container availability and transportation for haulage arrangement to customer factory. A flexible plan would be studied in case of shortage or peak volume situation by asking customers to swop the containers pick up place without double positioning cost to ABC Company.

5.3 Recommendations for Future Research

5.3.1 Because regulations by the Port Authority of Thailand, terminal business could not fully operate container repair and maintenance activities which should belong to depot business. Thus, future research study should cover and identify regulations detailing together with cause and effect on the ABC Company

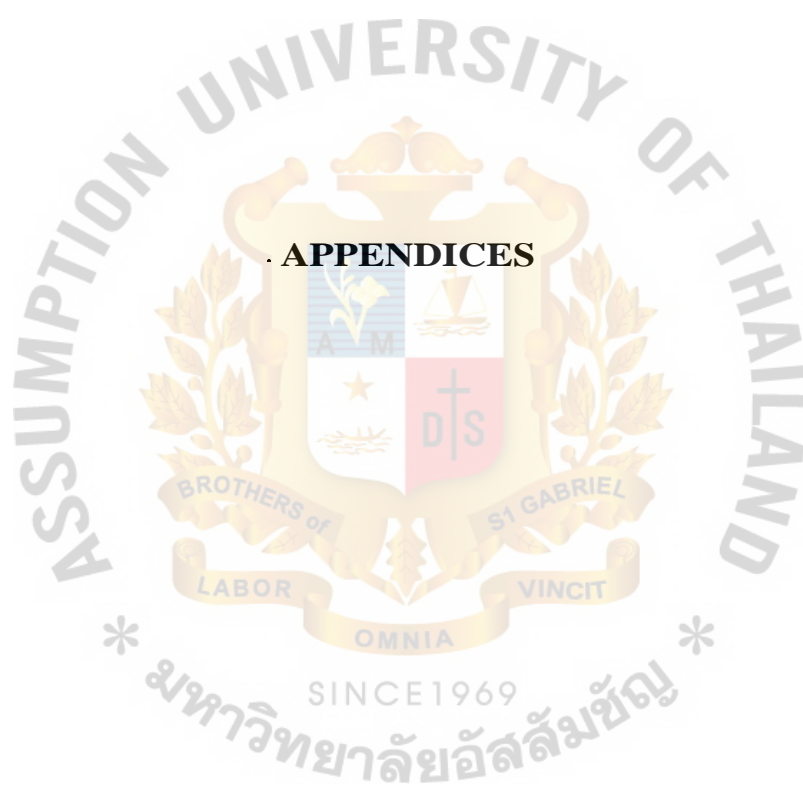
5.3.2 Most complains from customers are related with traffic jams in front of the Lat-Krabang gate. The causes were because of the repairing of main roads in front of the gate. The peak volume during specific peak time was also caused by the same customers' production finishing time. Thus, the future research would be studied about how to response and finding methods to solve problems or at least reduce full container return or empty pick up time during the gate process to make it faster. The research may discuss about yard operating time. The time will not only reduce at the gate but also for the whole process at Lat-krabang.

5.3.3 The new processes are required direct communication between the customers and the ABC Company's operation staffs unlike the last processes. This communication flow can effect to the company standard processes which customer must contact to the customer services only.

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APPENDIX A

Port Authority of Thailand statistics

ICD Lat-Krabang volume and share in Year 2007-2008

Port Authority of Thailand statistics show ICD Lat Krabang shares export volume for 35.39% of total export volume by truck as 73.6% and rail as 26.35%

(Unit: TEU)

Month	Total LKP outbound 2007	Total outbound from LKB 2007	% of LKB to LKP outbound 2007	Truck	Train	Rail Share 2007	Truck share 2007
Jan	171,701	64,760	32.36%	46,332	18,428	28.5%	71.5%
Feb	174,343	68,403	33.88%	50,383	18,020	26.3%	73.7%
Mar	197,502	78,386	33.09%	58,184	20,202	25.8%	74.2%
Apr	183,152	67,630	33.22%	48,500	19,130	28.3%	71.7%
May	211,360	72,901	32.94%	52,632	20,269	27.8%	72.2%
Jun	191,045	72,027	31.66%	51,619	20,408	28.3%	71.7%
Jul	209,638	74,605	33.78%	54,734	19,871	26.6%	73.4%
Aug	204,873	76,329	34.63%	56,133	20,196	26.5%	73.5%
Sep	204,475	78,632	35.01%	58,790	19,842	25.2%	74.8%
Oct	219,614	76,163	35.25%	56,058	20,105	26.4%	73.6%
Nov	204,164	76,492	40.05%	54,903	21,589	28.2%	71.8%
Dec	225,633	83,150	40.85%	61,848	21,302	25.6%	74.4%
Total	2,397,500	889,478	34.64%	650,116	239,362	26.9%	73.1%

Unit: TEU

Month	Total LKP outbound 2008	Total outbound from LKB 2008	% of LKB to LKP outbound 2008	Truck	Train	Rail Share 2008	Truck share 2008
Jan	200,118	77,849	38.90%	57,770	20,079	25.8%	74.21%
Feb	201,889	73,876	36.59%	53,428	20,448	27.7%	72.32%
Mar	236,865	85,063	35.91%	63,268	21,795	25.6%	74.38%
Apr	203,572	70,372	34.57%	51,666	18,706	26.6%	73.42%
May	221,328	81,176	36.68%	59,993	21,183	26.1%	73.90%
Jun	227,487	83,294	36.61%	63,088	20,206	24.3%	75.74%
Jul	220,880	84,574	38.29%	63,296	21,278	25.2%	74.84%
Aug	220,428	85,180	38.64%	65,673	19,507	22.9%	77.10%
Sep	224,582	78,231	34.83%	57,723	20,508	26.2%	73.79%
Oct	216,094	78,025	36.11%	57,683	20,342	26.1%	73.93%
Nov	190,982	67,372	35.28%	49,114	18,258	27.1%	72.90%
Dec	203,537	63,060	30.98%	45,984	17,076	27.1%	72.92%
Total	2,567,762	928,072	36.14%	688,686	239,386	25.8%	74.21%

PAT (Port Authority of Thailand) inbound volume statistic reflects that around 32.5% of inbound containers will be drayed to Lat Krabang ICD by rail 25% and truck 76% in average base on year 2007 and 2008 statistic from BSAA.

nit: TEU

Year 2007/month	Total inbound at lzp	Total inbound at lkb	% of lkb	truck	rail	% of truck draying	% of rail draying
Jan	182,727	58,360	32%	43,614	14,746	74.73%	25.27%
Feb	175,263	63,155	36%	50,498	12,657	79.96%	20.04%
Mar	202,216	73,977	37%	59,469	14,508	80.39%	19.61%
Apr	196,944	67,159	34%	51,241	15,918	76.30%	23.70%
May	193,023	66,834	35%	52,024	14,810	77.84%	22.16%
Jun	184,838	68,408	37%	55,575	12,833	81.24%	18.76%
Jul	205,856	70,699	34%	54,491	16,208	77.07%	22.93%
Aug	209,915	73,885	35%	58,001	15,884	78.50%	21.50%
Sep	196,558	66,288	34%	52,514	13,774	79.22%	20.78%
Oct	225,331	77,221	34%	58,863	18,358	76.23%	23.77%
Nov	204,771	68,914	34%	51,453	17,461	74.66%	25.34%
Dec	224,554	70,267	31%	55,006	15,261	78.28%	21.72%
Total	2,401,996	825,167	34%	642,749	182,418	77.89%	22.11%

nit as TEU

Year 2008/month	Total inbound at lzp	Total inbound at lkb	% of lkb	truck	rail	% of truck draying	% of rail draying
Jan	198,322	63,845	32%	46,620	17,225	73.02%	26.98%
Feb	198,921	67,070	34%	53,139	13,931	79.23%	20.77%
Mar	230,618	72,421	31%	57,672	14,749	79.63%	20.37%
Apr	223,118	70,967	32%	52,929	18,038	74.58%	25.42%
May	209,183	71,121	34%	52,972	18,149	74.48%	25.52%
Jun	210,720	66,585	32%	50,150	16,435	75.32%	24.68%
Jul	216,308	72,611	34%	54,873	17,738	75.57%	24.43%
Aug	215,589	75,470	35%	56,964	18,506	75.48%	24.52%
Sep	215,907	63,952	30%	46,739	17,213	73.08%	26.92%
Oct	224,377	65,863	29%	48,616	17,247	73.81%	26.19%
Nov	203,362	59,275	29%	42,152	17,123	71.11%	28.89%
Dec	213,870	54,369	25%	39,434	14,935	72.53%	27.47%
Total	2,560,295	803,549	31%	602,260	201,289	74.95%	25.05%

From BSAA statistics year 2008, ABC Company shares 27.34% of Lat-Krabang export volumes and 32.60% of Lat-Krabang import volumes. The company shares 50% for empty inbound to Lat-Krabang ICD and 13.81% for empty inbound to Thailand.

Month	Total outbound from LKB	Total inbound to LKB	Total empty inbound to LKB	ABC outbound from LKB	ABC inbound to LKB	ABC empty inbound to LKB	% of ABC outbound from LKB	% of ABC inbound to LKB	% of ABC empty inbound to LKB	% of ABC empty inbound to country empty inbound
Jan	64,760	63,845	28,970	18,007	19,079	13,157	27.81%	29.88%	45.42%	13.81%
Feb	68,403	67,070	34,347	18,270	23,454	17,646	26.71%	34.97%	51.38%	16.56%
Mar	78,386	72,421	36,858	21,083	22,453	16,723	26.90%	31.00%	45.37%	13.08%
Apr	67,630	70,967	31,506	19,185	21,605	15,080	28.37%	30.44%	47.87%	12.96%
May	72,901	71,121	29,107	21,422	21,422	13,879	29.38%	30.12%	47.68%	13.07%
Jun	72,027	66,585	28,579	22,793	20,912	14,477	31.65%	31.41%	50.65%	14.28%
Jul	74,605	72,611	30,057	22,714	23,895	15,302	30.45%	32.91%	50.91%	15.09%
Aug	76,329	75,470	31,142	22,611	26,513	17,504	29.62%	35.13%	56.21%	17.86%
Sep	78,632	63,952	23,798	21,280	22,112	13,205	27.06%	34.58%	55.49%	13.31%
Oct	76,163	65,863	28,828	20,798	22,966	15,705	27.31%	34.87%	54.48%	12.61%
Nov	76,492	59,275	24,092	17,353	19,179	11,644	22.69%	32.36%	48.33%	12.88%
Dec	83,150	54,369	24,752	17,699	18,363	11,733	21.29%	33.77%	47.40%	10.92%
Total	889,478	803,549	352,036	243,215	261,954	176,055	27.34%	32.60%	50.01%	13.81%

APPENDIX B

Customer Information Acquisition session

Customer Satisfaction toward Old Business process and New Scheme Development
(Round Trip Direct Delivery)

1. How satisfied are your customer with on-time delivery of your cargo?

"Customers realized that ABC Company always delivers their cargo to destination on time premise. Whether, it is import or export under ABC Company's responsibility. They are satisfied"

2. How satisfied are your customer with In-full and in good quality delivery of your cargo?

"Selected customers have never faced with cargo damage or cargo lost during in transit process, they can track to their shipment at any time"

3. How satisfied are your customer with availability of equipment?

"Customers are quite satisfied with the equipment availability. Except in high season, they have to wait for container positioning from Laem-Chabang port to Lat-Krabang depot as shortage of container during peak demand."

4. Is there any customer complain due to longer lead time consumed by company activities?

"The only comment to ABC Company is longer time consume at Lat-Krabang depot which caused from traffic jams, empty pick up or laden return process, and the staffs discriminate to most familiar trucking company."

5. What do you think about the company will implement the direct delivery concept?

"Customer is appreciated to the new idea but need more time to study for cost and benefits comparison, and assess company current practice style to response with the new idea"

6. What does your customer think with the company current process related with container released and drop off at Lat-Krabang depot?

"It is a traditional practice with standard process. Customer is familiar with current process. However, there is a recovery of traffics problem and customer is needed to find out trucking company by themselves to arrange transportation for cargo stuffing. Sometime, it create the workload to them"

7. Does your customer company suffer in term of cost and process control with current process in pick up container at Lat-Krabang?

"In term of process control, all of monitoring since empty container was pick up till full container was returned at Lat- Krabang depot were belong to their responsibility and work plan. It seems like work load to customer but customer can diversify risk and cost in choosing other liner or other container leasing company for different vessel route."

8. If company presents the direct delivery with cost and time reduction to your customer, does your customer interest to join this one?

"If the benefit is obviously seen, customer is preferable to use the new process offering"

9. What will be reason for not joining or preventing customer from joining this project?

"Specific container requirement which is required for special maintenance and repairing and customer preferable with organization that hardly to change are reasons that customer will not be attracted by new scheme"

10. Suggestion/ comment:

"Company is not only looking for easier and smooth process control but they need to know what exact they have to spend in order to compare with current traditional. Customer also needs the clear explanation on communication flow and the flexible regarding to production time."

11. Your customer name:

"PH company, the key account customer from direct sale team"

APPENDIX C

Internal Information Acquisition session

The Current process information to identify Operations Staff task list
And the idea towards New Scheme Development (Round Trip Direct Delivery)

1. How many steps in container releasing? What is it?

"There are 3 main steps for operations responsibility such as, booking information receiving, empty container positioning ordering, truck assigning for full return to port."

2. What was the specific task to each team?

"Equipment team responses to container volume and demand at each depot while intermodal team responses to truck assigning and supplier controlling"

3. Is there any obstacle from current process?

"The manual task assignment to each party caused workload to them"

4. If there is the new process design (Round Trip Delivery), what would you think about?

"If the new design can present the eliminate task and improve the overall performance while customer is preferable, they would prefer to it as well"

5. Is there any recommendation to the research?

"They thought that ABC Company cannot stop using all activities at Lat-krabang at all due to the requiring of depot expertise in container repairing to support specific requirement from various customers"