

Inbound Logistics for Liner Shipping Companies

Yui Yip LAU, Research Assistant
and
Tsz Leung YIP, Assistant Professor

Department of Logistics and Maritime Studies
The Hong Kong Polytechnic University
Tel: 2766 4631; Fax: 2330 2704; Email: lgttly@polyu.edu.hk

Introduction

Attention has been put to the roles of shipping lines as logistics services provider in international logistics. It is seldom discussed that the shipping lines themselves also need logistics services. It is gradually recognized that good inbound logistics function could contribute to the success of liner shipping companies (LSCs).

The major function of the purchasing department of the LSCs are to purchase supplies, including provision, bond stores and spare parts, from all over the world to fleet vessels so as to sustain the smooth operations on board. It is found that in the past several years, LSCs use third-party logistics (3PL) for inbound logistics service. Failures of inbound logistics repeatedly appear in 3PL services because of (1) the ships are mobile assets that are sailing around the world, requiring supplies of the right condition at the right time to the right place; and (2) the inventory level in ships is low because there are insufficient space for storage on vessels. In order to find out an optimal solution for the above problems, LSCs must be flexible but punctual, responsive but rapid to formulate and implement different sourcing strategies.

Current Practices in Inbound Logistics

On one hand, the Purchase Manager and the Assistant Purchase Manager usually search websites, marine spares purchasing guides, advertisements and marine engineering journals for possible supplies. Vessels report regularly to the Purchase Department about the quality and quantity of supplies. Vessels further feedback the performance and quality of products they received. On the other hand, Technical Superintendents inspect the status of supplies whenever they visit the vessels and report back to the Purchase Department. All these information goes into the Supplier Performance Record.

All purchase and supplies to the vessels are functioning well in general. One exception is to find suitable quality of spare parts for very old machineries. In this situation, the Purchase Department uses to replace these outdated machines by a new model with spare parts or repair service available worldwide. Ship demolition yards in India, Bangladesh and China are also good sources to get spares for such outdated

machinery.

In addition, a lot of suppliers are registered and they can be selected based on business scope, locality, and so on. The Purchase Department sends enquiries for spares by experience while selecting appropriate suppliers according to different selection criteria including price, delivery time, transport cost, origin of products, payment terms and conditions, reliability, and performance record of suppliers.

Major Issues and Problems in Current Inbound Logistics

There is no problem at all for provision and stores as ship chandlers usually deliver onboard by themselves after checking ships schedule with liner agents. But, it takes some time for spare parts to deliver on board from suppliers. The Purchase Assistant provides delivery instructions to suppliers when they carrying an order to deliver. Alternatively, the Purchase Assistant informs the appointed forwarders to collect from suppliers when and where the spares are ready. After the spares have arrived at forwarder's warehouse, some urgent spares are forwarded directly to the port where the vessel is calling or is going to call.

In order to save the logistics cost, the combined stock of spares are instructed to send to a hub port or a destination port for consolidation. It is because only one handling fee for all consolidated shipments and large volume of shipments can also enjoy lower freight rate. However, due to high volume of consignments, an aligned 3PL provider frequently fails to connect the vessels. The reasons are sometimes not knowing stock already in the warehouse, sometimes being behind ship schedule, sometimes being stuck at customs due to the mixing-up with other consignments and incompleteness of supporting documents, and so on.

Purchase Assistants usually do not have enough follow up actions on the forwarding matters. Purchase Assistants are always busy with dealing new requisitions that are received daily from their assigned vessels, sending enquiries for quotation to potential suppliers, getting approvals from Technical Department, placing purchase orders, and clearing the invoices. Purchase Assistants believe that spares will arrive simply according to their delivery instructions in the purchase order. Machinery spare parts and delivery times for each item are usually not identical, even within one single Purchase Order. Some of the items are on-shelf, ex-stock, but some of them take certain delivery time from a few days to months. Purchase Assistants need to frequently ask the suppliers to deliver in partial for ready spares first and then the remaining spares will follow when they are ready. Eventually, invoices come in a split manner for split deliveries.

As makers/traders deliver several times to forwarders, consequently some consignments fail to deliver, fail to update in the stock list because one single Purchase Order reference number is used. Thus, to sum up, the main problem of inbound logistics of LSCs are that the aligned 3PL services provider is not able to

provide stable, smooth and reliable delivery of the purchased spares and machineries to ships.

Inbound Logistics Strategies

In this part, three strategies are discussed with both benefits and drawbacks.

	Supplier + Logistics	Single Sourcing	Multiple Sourcing
Advantages	<ul style="list-style-type: none"> ✓ Increase productivity due to staff has no need to keep an eye on the products at anytime ✓ Reduce operational cost ✓ Become more reliable to deliver the products to the assigned destination on time. 	<ul style="list-style-type: none"> ✓ Develop a long-term relationship between buyer and supplier ✓ Allow both parties to work together more closely ✓ Have stronger commitment of the supplier pertaining to invest the facilities or information technology and share the real-time information ✓ Get suppliers involved early in product development stage and thus control upstream in the supply chain as soon as possible ✓ A lower purchase cost resulted from a much higher volume from one single supplier ✓ Easier in vendor 	<ul style="list-style-type: none"> ✓ Intensify competition among suppliers ✓ Provide reliable service and lower cost ✓ Avoid over dependence from single supplier so that buyers can gain higher bargaining power in terms of price and service level ✓ More flexible to respond to unexpected demand in the market

		management	
--	--	------------	--

	Supplier + Logistics	Single Sourcing	Multiple Sourcing
Disadvantages	<ul style="list-style-type: none"> ✓ Increase probability of supply interruption due to a small number of suppliers, particularly for asset specific products ✓ Increase search cost 	<ul style="list-style-type: none"> ✓ Difficult to manage relationships ✓ Difficult to push time for price negotiation and put less effort to improve their performance, due to less competition among suppliers ✓ Lead to a higher chance of supply interruption, especially for asset specific products ✓ Increase vulnerability of product quality and service 	<ul style="list-style-type: none"> ✓ Difficult to monitor each supplier's performance in the large supplier base ✓ Difficult to build up long term relations with suppliers

Recommended Strategy for Inbound Logistics

As considered the advantages and disadvantages of the above three strategies, a combinatorial approach – the mixed strategy may be optimal for the LSCs. The main idea of the mixed strategy as follows:

1. To align with one dedicated 3PL to send a consolidated shipment from hub ports for less weight shipments (less than 50 kg), and their branch offices/agents in destination ports for onboard delivery;
2. To diversify among 3PLs for the area where they are competitive;
3. To ask the suppliers to send the spares to destination ports if they have logistics department and arrange at a cheaper dispatch cost, especially for heavy spares (more than 50 kg).

One dedicated logistics supplier is selected from a pool of suppliers. It serves the less weight shipments (less than 50 kg). The aligned supplier cannot connect a large volume of consignments, so it will only be used to take charge of the less weight shipments.

Multiple sourcing, with its high flexibility is the key point in purchasing strategy. It was found that aligned 3PL is weak in some countries, because they must have their branch offices or their agents in most of the ports as LSCs vessels are trading worldwide. The Purchase Department diversifies the consignments, used other 3PLs in some countries whoever is strong rather than accounting on the aligned 3PL everywhere. The local agents are responsible for delivering onboard, and collecting the machinery parts from vessels for repairs in shore workshops. Local 3PLs perform more efficiently and effectively than aligned 3PL in some regions.

The Purchase Department also asks some suppliers the freight cost if they send directly to destination ports instead of asking aligned 3PL to collect from them. It can save transport cost and also reduce the workload of aligned 3PL significantly. Moreover, the suppliers of long-term relationship take the responsibility to supply goods as well as logistics services. The reduction of consignments serves as a penalty of delivery failures, and the aligned 3PL improve or otherwise will receive fewer orders. Better communication between the two partners and understanding of the logistics practices help to maintain the accurate delivery for the purchasing department. It is essential in the key products purchasing. So far, mixed strategy is found much better, more economic and efficient to dispatch spares to vessels.

Acknowledgements

This research was supported by the Hong Kong Polytechnic University under a research grant (project code: G-458). The first author thanks Suki Kwong for her support and suggestions on this paper.

References

1. Chopra, S. and Meindl, P. (2004), *Supply Chain Management: Strategy, Planning and Operation (2nd Ed)*, New Jersey: Prentice Hall.
2. Costantino, N. and Pellegrino, R. (2009), 'Choosing between single and multiple sourcing based on supplier default risk: A real options approach', *Journal of Purchasing and Supply Management (in press)*.
3. Jessop, D. and Morrison, A. (1994), *Storage and Supply of Materials*. 6th edition. England: Prentice-Hall.
4. Simchi-Levi, D., Kaminsky, P. and Simchi-Levi, E. (2008), *Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies (3rd Ed)*, Boston: McGraw-Hill.
5. Stock, J. R. and Lambert, D.M. (2001), *Strategic Logistics Management*, New York: McGraw-Hill.